Model Class Screening Report

Embedded Culvert Projects in Small Fish-Bearing Streams on Forestry Roads in British Columbia

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1 INTRODUCTION

The Department of Fisheries and Oceans Canada (DFO) reviews stream crossing proposals that have the potential to cause the harmful alteration, disruption or destruction of fish habitat and that have the potential to impede fish passage. DFO follows a hierarchy of preference[1] in the review of stream crossing proposals, advising proponents to avoid impacts to fish habitat where possible through the appropriate location and selection of stream crossing structures. Typically those structures that span the stream channel without affecting fish habitat and natural channel dynamics are the preferred structure. However, where such structures are not feasible and impacts to fish habitat are unavoidable, DFO may issue an authorization under subsection 35(2) of the *Fisheries Act*.

Embedded culvert installations requiring an authorization under the *Fisheries Act* are subject to a screening level of environmental assessment under the *Canadian Environmental Assessment Act* (the Act). They are defined as a "project" under the Act and require an authorization from a federal authority (DFO) in order for these projects to be carried out.

Embedded culvert projects usually cause environmental effects that are well understood and readily mitigable using best management practices described in this document and in the Fish Stream Crossing Guidebook (BC Ministry of Forests 2002). After environmental mitigation and/or habitat compensation has been undertaken these structures normally result in no net loss in fish habitat and are not likely to cause significant adverse environmental effects. Since these projects are always routine, repetitive and result in environmental effects that are predictable, well understood and mitigable, DFO initiated the preparation of this class screening in order to establish a consistent streamlined planning and environmental assessment procedure.

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 licence). 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 or minimize these effects. Screenings are conducted for projects which are not on the Exclusion List Regulations or the Comprehensive Study List Regulations and have not been identified as requiring mediation or an assessment by a review panel.

The screening of some routine 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 the likely 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 effects, design standards and mitigation measures) needed for each project assessed under the MCSR, and concludes on the significance of environmental effects of that project.

1.1.1 Model Class Screening Report (MCSR)

A Model Class Screening Report (MCSR) sets out the environmental assessment 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.

[1] *Habitat Conservation and Protection Guidelines (DFO, 1998)*

1.1.2 Class Screening Project Report (CSPR form)

A Class Screening Project Report (CSPR form) is a project specific screening report that is prepared for each project assessed under the class in accordance with the procedures outlined in the MCSR. The CSPR form contains additional site specific information to supplement the information contained in the MCSR. Typically, they are designed as forms for the Responsible Authorities to fill out and sign-off. Together, the MCSR and the CSPR form constitute a class screening and provide the basis for meeting the requirements of the Act.

1.2 Applicability of Class Screening to Embedded Culvert Projects

When DFO issues a subsection 35(2) *Fisheries Act* authorization for the installation of embedded culverts in British Columbia, an environmental assessment is required in accordance with subsection 15(3) of CEAA, which states that:

> *"an environmental assessment be conducted in respect of every construction, operation, modification, decommissioning, abandonment or other undertaking in relation to that physical work that is proposed by the proponent, or that is likely to be carried out in relation to that physical work."*

It is recognised that structures other than culverts are commonly used by the forest sector in British Columbia. However, there are certain situations where embedded culverts are the only cost-effective structure for a stream crossing. The Fish Stream Crossing Guidebook (BC Ministry of Forests 2002) establishes best management practices for stream crossings and identifies where embedded culverts might be considered applicable. Given that many of these small-scale projects have environmental effects that, when properly constructed, are predictable and mitigable, DFO sought to develop a class screening to establish a consistent streamlined planning and environmental assessment procedure. The anticipated results of the class screening are high quality environmental assessments while reducing the costs and time required to conduct the environmental assessment of each project.

The model class screening report on embedded culverts in small fish-bearing streams in British Columbia meets the requirements of a class screening as outlined below.

1. Well-defined Projects

The construction, operation and decommissioning of embedded culverts consists of a number of common activities. The Fish-stream Crossing Guidebook provides guidance on how to design, install, maintain and deactivate fish-stream crossings that comply with the Forest Practices Code and the *federal Fisheries Act*. The MCSR developed to address embedded culverts in fish-bearing streams uses these guidelines as a basis for decision-making on when embedded culverts are appropriate and how they should be designed, installed and maintained. The specific design considerations for embedded culverts subject to this model class are outlined in section 2.2

2. Well-understood Environmental Settings

The MCSR only applies to a specific environmental setting, small streams of a specific channel width and gradient (as outlined in section 2.2). Any culvert proposal subject to the class screening will include a fish habitat evaluation. Therefore, the stream dynamics and fish habitat of small streams that may be affected by an embedded culvert will be well understood.

3. Unlikely to Cause Significant Adverse Environmental Effects, Taking Into Account Mitigation Measures

The procedures and guidance in the "Fish-stream Crossing Guidebook" were developed to avoid harming fish and fish habitat, and provide fish passage at fish crossing sites. Since these guidelines were prepared under the direction of a multi-agency steering committee, with technical input from provincial and federal government agencies, resource industries and individuals in private practice, it is unlikely that fish stream crossings undertaken according to the guidelines would cause significant adverse environmental effects.

4. Follow-up Measures

Ongoing follow-up measures may be required. Details are outlined in CSPRs.

5. Effective and Efficient Planning and Decision-Making

DFO is responsible for the application of the *Fisheries Act* and is the only Responsible Authority for the projects subject to this model class. DFO will refer to any other Federal Authorities as required.

6. Public Concern Unlikely

It is unlikely that the construction, operation or decommissioning of embedded culverts subject to this model class would result in any public concern. The Fish-stream Crossing Guidebook upon which this model class is based, were developed under the direction of a multi-agency steering committee, with technical input from provincial and federal government agencies, resource industries and individuals in private practice. The guidelines are the product of considerable communication and consensus-building and address many of the previous issues related to fish-stream crossings.

1.3 Consultations

During the development of this MCSR, contacts were made with Environment Canada, Transport Canada, Department of Indian and Northern Affairs, and the province of British Columbia including the Ministry of Water, Land and Air Protection (MWLAP), the Ministry of Sustainable Resource Management (MSRM), and the Ministry of Forests. These contacts served to identify key environmental issues associated with the construction, maintenance and decommissioning of embedded culvert projects, and to ensure that required design standards and mitigation measures were captured in the MCSR.Following the submission of the MCSR to the Agency, it was subjected to a public review prior to declaration in accordance with the Act.

2 EMBEDDED CULVERT PROJECTS SUBJECT TO THE CLASS SCREENING

The purpose of an embedded culvert is to allow for the construction of a forestry road over a stream channel in such a way that natural stream channel dynamics are not significantly altered and continuous fish passage is achieved. To determine whether the proposed project is subject to a class screening under the MCSR several steps must be followed.

Step 1: The proponent will have a qualified professional or technologist with adequate training and knowledge of fish habitat conduct a fish habitat evaluation in the field. A proponent application plan will then be completed which contains a project description, the location of the project on a map of an appropriate scale, and all mitigation measures that are to be applied to prevent avoidable impact to fish and fish habitat (Section 2.1)

Step 2: The proponent will demonstrate that the project meets the criteria established to fit this MCSR (Section 2.2)

Step 3: The proponent will confirm that the project is not excluded from this MCSR due to concerns from other federal departments that are not already addressed by mitigation measures contained in this MCSR (Section 2.3 and 2.4).

2.1 Proponent Application Plan

The proponent application plan provides the necessary details of the project for DFO to determine whether an authorization under subsection 35(2) of the *Fisheries Act* can be issued. It contains the following details.

2.1.1 Fish and Fish Habitat Evaluation

A detailed description of the existing fisheries resource values of the area that could be affected by the proposed works, including hydrologic features, water quality, species of fish that frequent the waterbody, fish habitat present (e.g. spawning, rearing, over-wintering, or migration) and riparian vegetation. The sensitivity of the habitat to disturbance should also be described in this section (eg. soil type, bank stability, substrate type, and gradient).

2.1.2 Location and Description of Proposed Activities

A detailed description of the proposed works, along with general arrangement drawings that indicate how the works are to be carried out, including all machinery and materials to be used, road maintenance requirements and deactivation plans. A project time schedule is required, which should include activities and applicable timing windows that may apply. In addition, methods to maintain fish passage for the lifespan of the structure must be clearly stated.

2.1.3 Impacts to the Fisheries Resources

Identification of anticipated impacts to fisheries and habitat values, including the identification of the nature, duration, magnitude and location of potential impacts, and effects on fish and fish habitat in downstream areas. All anticipated changes to fish habitat as a result of construction, maintenance and deactivation should be stated.

2.1.4 Mitigation Proposed

A description of all measures, including actions and contingencies plans that will be taken to avoid, reduce or eliminate any impacts.

2.1.5 Environmental Monitoring

A description of whether environmental monitors will be used in the project.

If the information contained in the proponent application plan is adequate for DFO to conduct a review under the *Fisheries Act* and a decision to issue an authorization has been made then the next step is to determine whether the project falls within the criteria established within this MCSR[2]

2.2 Description of Key Criteria for Embedded Culverts to Meet the MCSR

Embedded culverts are closed bottom structures that consist of a round pipe or an elliptical pipe arch with a simulated stream bed retained within the structure to provide for fish habitat and fish passage. Specific culvert design, environmental protection measures and construction considerations for embedded culverts are all identified in the Fish Stream Crossing Guidebook (BC Ministry of Forests, 2002). Criteria summarized below have been established to permit unimpeded fish passage during the lifespan of the culvert.

[2] *More than one embedded culvert structure may be included in the CSPR form if they are contained within the same subsection 35(2) Fisheries Act authorization.*

- The stream channel must be less than 2.5m in channel width measured at normal high water.
- The stream channel must be less than 6 % average channel gradient over minimum 50m reach.
- The culvert must be embedded to permit the formation and retention of a natural streambed within the structure.
- The culvert must be sized to be greater than the width of the channel at normal high water after embedment.
- A fish habitat evaluation must have been conducted by a qualified professional or technologist with adequate training and knowledge of fish habitat and the habitat must **not** be classified as critical fish habitat[3] .
- The proposed culvert must be less than 15 metres in length.

2.2.1 Channel width

The stream channel width should determine the required culvert diameter width. The culvert size should be greater than the width of the substrate in the culvert is equal to or greater than the natural stream channel width to replicate the natural stream and to prevent deposition, scouring or other damage at the outlet. The natural stream channel width is to be maintained for all embedded culverts (See Figures 1 and 2).

2.2.2 Embedment

Round culverts are to be embedded to 40% of the culvert diameter of 0.6m (whichever is greater) (Figure 1). Pipe-arch culverts are to be embedded to 20% of the vertical rise of the arch (Figure 2). Clean rip-rap will be used to provide scour protection for material potentially exposed to erosion.

2.2.3 Channel gradient

A simulated streambed is to be created in the culverts to emulate the natural streambed. The streambed should consist of sufficient layers of unconsolidated sediment lying on top of the bedrock to allow for proper embedment. Embedded culverts are to be sized to accommodate the 100-year return peak flow after embedment. They are also to be designed and installed at the same slope as the stream and should retain the same stream substrate characteristics (Figure 3).

For streams that have a greater than 3% gradient, an in-stream weir should be established within 1 to 2 channel widths downstream of the culvert outlet to maintain the substrate within the culvert and allow for fish passage.

[3] *Habitat that is critical in sustaining a subsistence, commercial or recreational fishery or species at risk because of its relative rareness, productivity and sensitivity (Habitat Conservation Guidelines 1998).*

2.3 Embedded Culvert Projects that Require Referrals to Other Federal Departments

In certain circumstances, embedded culvert projects may require a referral to a federal department for expert advice or for an approval. For example, certain projects may warrant a referral to Environment Canada for advice on migratory birds and migratory bird habitat or Species at Risk, or under the *Navigable Waters Protection Act* for any project that has the potential to interfere with navigation (Paragraph 5(1)(a) and any named works in Section 5(2)) in, on, over, under, through or across navigable waters).

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

Section 6 of the MCSR provides a description on how referrals should be conducted when filling out the Class Screening Project Report forms.

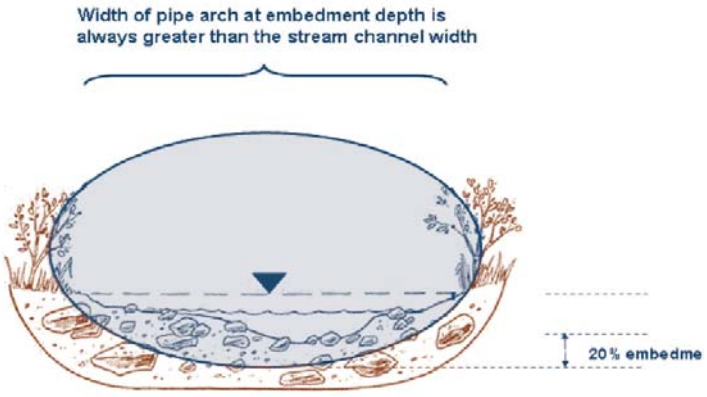

Figure I: *Pipe arch embedded 20% into the natural streambed.*

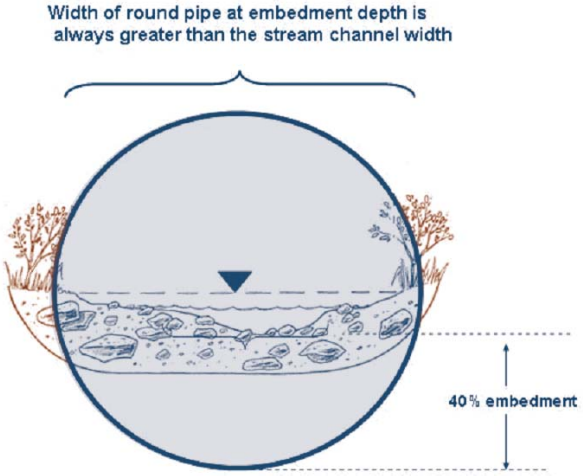

Figure II: *Round embedded 40% into the natural streambed*

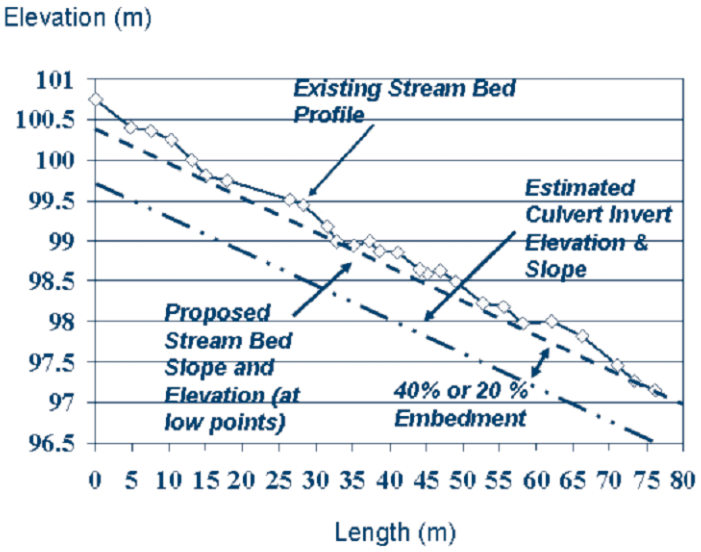

Figure III: *Stream channel slope is determined by joining the lowest points of the channel bed as this represents the depth of scour. The culvert inlet is then placed below the existing stream bed profile at 20% embedment for a pipe arch or 40% embedment for a round pipe.*

2.4 Embedded Culvert Projects Not Subject to the Model Class Screening Report

Embedded culvert projects that are not subject to the MCSR are those that do not meet the criteria in Section 2.2 above or involve decision making by other Responsible Authorities. These include culverts that are located in streams that are:

- in a National Park;
- in a Migratory Bird Sanctuary or National Wildlife Area;
- on Indian reserves; or
- where the project may adversely affect Species at Risk.

3 DESCRIPTION OF ACTIVITIES ASSOCIATED WITH EMBEDDED CULVERT PROJECTS THAT ARE SUBJECT TO THIS MCSR

Projects are carried out by a variety of proponents working for forestry companies, provincial agencies or private land owners. Physical works and activities associated with embedded culvert are summarised in Section 3.3. Activities are categorised for each project phase including: site preparation, construction/modification, equipment operation, site restoration (post construction), operation/maintenance, accidents/malfunctions and decommissioning/abandonment.

3.1 Typical Seasonal Scheduling and Duration of Projects

Fish and other aquatic organisms are present in a water-body throughout the year; thus, in-stream work must be planned when disturbances of resident or migrating fish and other aquatic organisms will be avoided. In freshwater habitat, the fisheries' optimum window for in-stream construction is specific to the species using the stream and the location of the stream within the province of BC[5]. Provincial and federal fisheries agencies should be consulted for local timing windows for instream works.

Construction activities typically last 1 - 2 weeks depending on the specifics of the installation. Modification, maintenance or repair activities are generally of shorter duration and are undertaken every 3 years unless a major change is required. In this latter case, the project may take as long as the original construction to complete. Decommissioning and abandonment of embedded culverts may take a week (including landscaping) to one month depending on the location and complexity of the structure(s) being removed.

3.2 Effects of Environment on Project

Under the Act, an environmental assessment must consider the potential effects the environment may have on the project as part of the evaluation of effects. Potential effects of the environment on embedded culvert projects could include:

- Heavy precipitation, wind and flood events can adversely affect the physical integrity of embedded culverts;
- Extreme weather events may increase the rate of soil erosion, sedimentation into waterbodies, the transport of contaminants into soil and waterbodies and adversely affect erosion control and reclamation efforts;
- Drought conditions may affect the success of reclamation and revegetation efforts; and,
- There is the potential for ice movements to adversely affect the physical integrity of a culvert structure.

These weather related effects that have been identified are considered mitigable through design and siting, and standard operating, maintenance and repair procedures. Mitigation measures to reduce these potential effects are described in Table 4.

3.3 Physical works and activities associated with embedded culverts

3.3.1 Site Preparation

- clearing vegetation (grubbing, felling, trenching removing stumps);
- installation of coffer dams;
- construction of by-pass channel for diverting stream flow around worksite;
- excavation of soil under and around proposed crossing site;
- salvage of fish;
- dewatering of excavations to remove excess water;
- removing topsoil and overburden for reuse;
- disposal/storage of vegetation and overburden; and
- site grading.

3.3.2 Construction/Modification[6]

- placing gravel, rip rap or other foundation and stabilisation materials;
- installation of concrete or metal culverts and intakes;
- installation of silt fences, curtains and sediment traps;
- installation of large woody debris (for habitat creation);
- installation of weirs (3-4 boulders projecting from the streambed surface; and
- placing of signs.

3.3.3 Equipment Operation

- heavy machinery including, backhoes, trucks, bulldozers, bobcats, jackhammers, compactors, trenchers; and
- hand machinery including pumps, generators, cement mixers, compressors, chainsaws, drills, and carpenters' equipment.

3.3.4 Site Restoration (Post Construction)

- backfilling, compacting and grading;
- instream site restoration and enhancement;
- installation of appropriate fill;
- bank stabilization;
- drainage control measures;
- overall clean up of the site (remove garbage and debris);
- disposal of construction waste, surplus materials and hazardous waste;
- revegetation of stream banks;
- placing of signs;
- weed control measures; and
- fencing.

3.3.5 Operation/Maintenance

- vegetation maintenance;
- clearing and removal of debris; and
- inspection of structures to determine whether streambed substrates are being retained in the culvert and inspection for deteriorated structures;
- repair or replacement of rip-rap at the inlet/outlet;
- inspect for scour and repair with clean gravel; and
- repair damage to streambank and streambed.

3.3.6 Accidents/Malfunctions

- fuel spill from equipment operated on site;
- spills of uncured concrete or grout into surrounding waterbodies; and
- erosion/overflow of sediment traps and slope failure caused by heavy rains during construction.

3.3.7 Decommissioning / Abandonment

- installation of silt fences and curtains;
- installation of large woody debris for habitat creation;
- revegetation of disturbed areas;
- ensure vehicle access not possible after decommissioning; and,
- placing gravel, rip rap or other foundation and stabilisation material.

4 ENVIRONMENTAL REVIEW

This section of the MCSR identifies the potential environmental effects that may result from the interactions between project activities and the environment for embedded culvert projects. Environmental assessment boundaries and the environmental setting are described to focus the environmental assessment. Valued ecosystem components (VECs) are selected and the resulting environmental effects of embedded culvert projects on these VECs are analyzed. Mitigation measures are summarized.

The characteristics of any residual environmental effects are described through determination of the significance of adverse environmental effects. Cumulative effects are discussed and will largely be addressed on a site specific basis using the Class Screening Project Report (CSPR) form. Follow-up and monitoring are discussed.

4.1 Environmental Assessment Boundaries

The projects covered under this MCSR are regularly conducted routine culvert projects. The culvert projects may occur on any small stream in British Columbia. The spatial boundary for basing a determination of potential effects includes the culvert installation site and 50 metres upstream and downstream of the crossing site. These spatial boundaries are considered to include components of terrestrial, freshwater, marine, and socio-economic environments.

Temporal boundaries include all of the project phases from site preparation through to decommissioning. Project activities for embedded culvert projects continue on a year round basis, however, most will take place in summer. The temporal boundaries of any environmental effects should be limited to one to two weeks during construction, maintenance (conducted every three years) and decommissioning. It is unlikely that temporal effects would last longer than the disruption period during project activities.

Ecological boundaries have been considered during issues scoping and the identification of potential environmental effects. Significance ratings have been assigned based on consideration of the range or extent of the VEC that could be affected by project development.

Socioeconomic boundaries have been considered during issues scoping and the identification of potential environmental effects. Significance ratings have been assigned based on consideration of the scope or extent of the VEC that could be affected by project development.

Technical boundaries have been considered during issues scoping and the identification of potential environmental effects. Most technical aspects of embedded culvert projects in small fish-bearing streams are well understood.

Administrative boundaries have been considered during the development of the model class screening report. Both federal and provincial requirements have been addressed in the MCSR and the CSPR.

4.2 Environmental setting

The proponent application plan submitted to DFO provides the most relevant information regarding environmental setting for proposed culvert projects. This document provides a detailed fish and fish habitat evaluation. Since most of the potential environmental effects of culvert projects are related to fish and fish habitat (water quality and hydrology, soil, vegetation), the proponent application plan serves as the basis for information on the environmental setting.

Since the projects that are subject to this MCSR are well defined, the mitigation measures are well established, and the potential environmental effects are well understood, descriptions of the environmental setting of projects subject to the MCSR are not required here. Site specific information will be provided for subsequent projects through the completion of the CSPR form. Site-specific details will include information on related environmental components other than fish and fish habitat, that could also be affected (e.g. species at risk, wildlife, recreation and cultural resources).

The amount of information on the environmental setting will vary with the complexity of the project, the extent of project-environment interactions, and the ability of mitigations to ensure no significant adverse environmental effects result. If project-specific mitigation is required, then a follow-up program may be required.

4.3 Issues Scoping and VEC Selection

Based on a review of issues related to culvert operations, CEAA's definition of the "environment" and evaluation of the interactions between the project and the environment (Table 2), Valued Ecosystem Components (VECs) were selected for assessing the potential environmental effects of embedded culvert projects. Table 2 outlines interactions during project phases rather than specific project activities since a number of activities of short duration occur during each project phase.

The resulting VECs are as follows:

- Vegetation
- Soil
- Water Quality and Hydrology
- Fish and Fish Habitat
- Wildlife and Wildlife Habitat
- Cultural Resources
- Recreation

VECs	Potential Environmental Effects	Construction	Operation	Maintenance	Decommissioning	Accidents/ Malfunctions
Vegetation	Loss of vegetation	■		■	■	■
	Contamination	■		■	■	■
Soil	Erosion	■		■	■	■
	Contamination					■
Water quality	Sedimentation	■	■	■	■	■
	Contamination					■
Fish and fish habitat	Habitat alteration	■	■	■	■	■
	Interference with fish passage/ migration	■	■	■	■	■
	Mortality					■
Wildlife and wildlife habitat	Habitat alteration	■		■	■	■
	Disturbance	■		■	■	■
Cultural resources	Disturbance or alteration	■			■	■
Recreation	Interference with boat passage	■	■	■	■	

Table 2: *Project/Environment Interaction for Embedded Culvert Projects*

Vegetation is valued because of its importance to terrestrial ecosystems. Vegetation may be disturbed by installation of culverts.

Soil is an important component of terrestrial and aquatic ecosystems. Soil may be disrupted with the implementation of culvert projects. Since soil degradation can affect water quality, vegetation and wildlife, soil is considered a VEC.

Water quality and hydrology are fundamental elements of ecosystems. Water quality and hydrology may be affected by the implementation of culvert projects. Degradation of water quality may reduce its capacity to support aquatic life, affect the potability of drinking water, and reduce recreational use.

Wildlife and wildlife habitat is valued in forest ecosystems. Wildlife may be disturbed by noise and habitat may be affected by construction activities during culvert projects.

Fish and fish habitat are valued components of aquatic ecosystems. Fish and fish habitat may be disturbed by construction and operation of culverts, and is therefore considered a VEC.

Cultural resources are valued because of the information they reveal about past and contemporary ways of life, cultural identity, and relationships and interactions with other cultures and the biophysical environment. Cultural resources could be disturbed or damaged during construction and decommissioning activities.

Local residents and visitors value the ability to use streams for recreational purposes. The construction and operation of a culvert could disturb the ability of boaters to use waterways. Therefore "recreation" is considered a VEC.

Air quality was reviewed for consideration as a VEC. However, since the only possible effects on air quality would be vehicle emissions during culvert construction and maintenance, and small amounts of dust, air quality is not considered as a VEC for this model class screening.

4.4 Analysis of Environmental Effects

The potential environmental effects on each VEC are described and analyzed in the following discussion.

Environmental effects were identified through consideration of the interactions between project activities and VECs, as outlined in Table 2. The nature of each environmental effect is outlined and appropriate mitigation measures are summarized to gain an understanding of the residual environmental effects that will remain after mitigation has been implemented.

The significance of any residual adverse environmental effects is determined based on consideration of magnitude, geographic extent, duration, frequency, reversibility and ecological context of the effect. Ratings for these criteria are provided in Table 3. Residual environmental effects, mitigation and significance are summarized by VEC and project phase in Table 4.

Any additional environmental effects that could result from site specific conditions will be described in the Class Screening Project Report.

Magnitude (M):
1 Low (e.g., within natural variation)
2 Medium (e.g., temporarily outside range of natural variability)
3 High (e.g., outside the range of natural variation)

Geographic Extent (GE):
1 localized within project footprint (<50m2)
2 within vicinity of project area (<150m2)
3 outside the vicinity of the project area (>150m2)

Duration (D):
1 < 1 week
2 1-12 weeks
3 13-51 weeks
4 1-3 years
5 > 3 years

Frequency (F):
1 < 2 events/year
2 2-12 events/year
3 13-52 events/year
4 53-365 events/year
5 Continuous

Reversibility (R):
R Reversible
I Irreversible

Ecological Context (EC):
Descriptors

Table 3: *Criteria for Determining Significance*

Table 4 - Mitigation and Significance of Residual Environmental Effects

VECs	Environmental Effects	Project Phase	Mitigation
Vegetation	Loss of vegetation	Construction Maintenance Decommissioning	Only the vegetation required to meet operational and safety concerns should be removed. No vegetation clearing outside the proposed work area. Restore site to pre-crossing conditions after decommissioning.
	Contamination	Accidental event	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.
Soil	Erosion	Construction Maintenance Decommissioning	Stabilize all soils after construction, maintenance or decommissioning works to prevent erosion and transport.
	Contamination	Accidental event	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.
Water quality	Sedimentation	Construction Maintenance Decommissioning	Sediment should be controlled at source. Sediment traps and barriers should be used to capture sediment in transport to waterbodies.
	Contamination	Accidental event	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.
Wildlife and wildlife habitat	Habitat alteration (vegetation loss/ alteration)	Construction Maintenance Decommissioning	Only the vegetation required to meet operational and safety concerns should be removed. No vegetation clearing outside the proposed work area. Restore site to pre-crossing conditions after decommissioning.
	Disturbance due to noise and human presence	Construction Maintenance Decommissioning	Identify any wildlife and habitat that may be impacted by activities. Schedule activities to avoid critical life stages for identified wildlife (breeding, nesting, and rearing).

Fish Stream Crossing Guidebook (BC Ministry of Forests 2002) reference	Criteria for Determining Significance						Significance of Residual Effects
	M	GE	D	F	R	EC	
Section 4.1 p. 34 Section 6 p. 47	2	1	2	1	R	Should not affect fish or wildlife	not significant
Section 4.7 p. 42	2	1	2	1	R	May contaminate fish and wildlife habitat temporarily	not significant
Section 4.6.3, 4.6.4, 4.6.5, 4.6.6, 4.6.7	2	1	2	1	I	May alter habitat available to fish and wildlife	not significant
Section 4.7 p. 42	2	1	2	1	I	May contaminate fish and wildlife habitat temporarily	not significant
Section 4.6.8, p. 41	2	2	3	1	R	May alter fish habitat temporarily	not significant
Section 4.7 p. 42	2	2	1	1	R	May contaminate fish and wildlife habitat temporarily	not significant
Section 4.1 p. 34 Section 6 p. 47	1	1	2	1	R	Wildlife may seek other habitat temporarily	not significant
	1	1	2	1	R	Wildlife may seek other habitat temporarily	not significant

VECs	Environmental Effects	Project Phase	Mitigation
Cultural resources	Disturbance	Accidental event	Ensure activity is suspended until permission to proceed is granted by Provincial authorities. Some information may be recorded and this may mitigate the loss of cultural information.
Recreation	Interference with boat passage	Construction Maintenance Operation Decommissioning	Should it be necessary to ensure navigability of the stream, appropriate signage identifying that an obstruction is ahead as well as preparation of a portage route will be required. Any other conditions and recommendations contained in the NWPA approval shall be implemented.
Fish and fish habitat	Habitat alteration	Construction Maintenance Operation Decommissioning	Use of embedded culverts can only occur following the design and installation methods outlined in the Fish Stream Crossing Guidebook. Streambeds are to be replaced in the culvert and continuous bedload recruitment is to be achieved through appropriate design specifications.
	Interference with fish passage	Construction Maintenance Operation Decommissioning	Instream works only to occur during approved work windows. Work windows are periods of time when work in and about a stream can be conducted with least risk to fish and fish habitat. Fish migration does not occur during these periods. Any fish within the isolated worksite are to be salvaged. Appropriate design specifications are to be followed to ensure flow conditions within the culvert replicate natural streamflow conditions outside the culvert in order to achieve fish passage. Restore site to pre-crossing conditions after decommissioning.
	Mortality (contamination or stranded fish in isolation channel)	Accidental event	Ensure contingency plan is developed and implemented in the event of an accidental spill.

Fish Stream Crossing Guidebook (BC Ministry of Forests 2002) reference	Criteria for Determining Significance						Significance of Residual Effects
	M	GE	D	F	R	EC	
	1	1	5	1	I	Information on previous cultures may be lost	not significant
	1	1	1	2	R	Portage route should mitigate minor disruption to travel	not significant
Section 3.2 p. 22	2	2	2	1	R	Fish may seek other habitat temporarily	not significant
Section 2.3 p. 11 Section 4.6.2 p. 37 Section 6 p. 47	2	1	1	1	R	Temporary fish passage obstruction during any works in or near culvert	not significant
Section 4.7 p. 42	3	1	1	1	I	Potential reduction in fish population	not significant

4.4.1 Vegetation

Construction activities will affect vegetation in the immediate area of the culvert. Riparian areas, wetlands and plants could be damaged during construction, maintenance and decommissioning. The use of machinery during project construction, maintenance or decommissioning could result in accidental spills of fuels or chemicals on vegetation. Effects on vegetation could alter the quality of fish and wildlife habitat through the loss of feeding and cover areas, changes in water temperatures and reduced stream bank stability.

Mitigation measures will consist largely of minimization of vegetation removal and revegetation after culvert installation (and decommissioning). Spill prevention and contingency plans will minimize effects of any accidental spills.

After application of mitigation measures, the residual environmental effects evaluation results in the following conclusions for this VEC. The magnitude of any adverse effects to this VEC is predicted to be temporarily outside the range of natural variability. Accidental events would be of a temporary nature and of low likelihood, given implementation of best management practices. The geographic extent of potential adverse effects on this VEC would be within the project footprint. The duration and frequency of these effects would be relatively low. None of the potential adverse effects would be permanent and thus all are considered reversible. With respect to ecological context, vegetation contamination (as a result of an accidental fuel spill) could alter fish and wildlife habitat temporarily.

Due to the limited magnitude, geographic extent, duration, frequency, ecological context, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on vegetation.

4.4.2 Soil

Construction activities could cause soil erosion and result in a greater potential for slope failure. Stockpiles of topsoil or exposed soil could contribute to increased sedimentation in nearby waterbodies. The use of machinery during project construction, maintenance or decommissioning could result in accidental spills of fuels or chemicals on soil.

Mitigation measures will consist largely of minimization of disturbance to streambanks, working "in the dry"(through temporary stream diversions), and suspension of work during heavy rainfall. Spill prevention and contingency plans will minimize effects of any accidental spills.

After application of mitigation measures, the residual environmental effects evaluation results in the following conclusions for this VEC. The magnitude of any adverse effects to this VEC are predicted to be temporarily outside the range of natural variability. Accidental events would be of a temporary nature and of low likelihood, given implementation of best management practices. The geographic extent of potential adverse effects on this VEC would be within the project footprint. The duration and frequency of these effects would be relatively low. Any residual soil erosion is generally considered irreversible unless streambanks are reconstructed. Minor alteration of streambanks may alter fish and wildlife habitat, and an accidental fuel spill could cause temporary habitat avoidance.

Due to the limited magnitude, geographic extent, duration, frequency, ecological context, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on soil.

4.4.3 Water Quality and Hydrology

Culvert construction, maintenance and decommissioning could result in increased sedimentation in water. Accidental spills could release contaminants into water. These effects could also alter the quality of aquatic and riparian habitats for fish and wildlife.

Mitigation measures will focus on sediment control and streambank stabilization. By isolating the site through temporary stream diversions, and suspending work during heavy rainfall, water quality and hydrology should remain relatively unchanged.

After mitigation measures have been implemented, the magnitude of all residual adverse effects to this VEC are predicted to be temporarily outside the range of natural variability. Accidental events would be of a temporary nature and of low likelihood, given implementation of best management practices. The geographic extent of any adverse effects on this VEC may extend beyond the project footprint into the project area. The duration and frequency of these effects would be relatively low. None of the potential adverse effects would be permanent and thus all are considered reversible. The ecological context of project or accidental (e.g. fuel spill) effects may be temporary disturbance to fish habitat.

Due to the limited magnitude, geographic extent, duration, frequency, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on water quality and hydrology.

4.4.4 Fish and Fish Habitat

Fish and fish habitat could be affected by all phases of project activity. Changes to water velocity and sedimentation rates and distribution could reduce habitat quality and the availability of food. If not installed and maintained appropriately, culverts can impede fish passage and migration.

Accidental events could result in fish mortality. An accidental fuel spill could contaminate fish habitat and cause fish mortality. Fish could become temporarily stranded and could die if left in isolation channels during culvert installation. If channel dewatering is conducted, fish would

be salvaged from the dewatered area and returned to the stream. Fish could die if mishandled or left in isolation channels for an extended period of time. However, salvage operations would be undertaken by qualified personnel who have all necessary permits, so mortality is unlikely to occur.

Mitigation measures to prevent adverse effects on fish and fish habitat will focus on appropriate scheduling of culvert installation to avoid critical biological periods, avoidance of sediment and vegetation disturbance, minimization of fish habitat disturbance upstream and downstream of culvert, verification of design specifications for fish passage, streambank stabilization and revegetation, prevention of deleterious substances from entering streams, and appropriate fish salvage procedures.

After application of mitigation measures, the residual environmental effects evaluation results in the following conclusions for this VEC. The magnitude of all residual adverse effects to this VEC is predicted to be temporarily outside the range of natural variability. Accidental events would be of a temporary nature and of low likelihood, given implementation of best management practices. The geographic extent of any adverse effects may extend beyond the footprint into the project area upstream and downstream of the culvert. The duration of the effects may last a few weeks longer than the one to two week culvert installation period and the frequency of these effects would be relatively low (initial disturbance followed by maintenance activities every three years). None of the potential adverse effects would be permanent and thus all are considered reversible, with the exception of any accidental fish mortality. Fish may seek other habitat temporarily and may avoid the area if any contaminants are accidentally released. Accidental mortality could reduce the local fish population.

Due to the limited magnitude, geographic extent, duration, frequency, ecological context, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on fish and fish habitat. Since fish mortality is not likely to occur, this residual effect is considered to be not significant.

4.4.5 Wildlife and Wildlife Habitat

Construction activities could alter small amounts of wildlife habitat. Human presence and noise may disturb wildlife for short periods of time (several weeks) during construction, maintenance and decommissioning.

Mitigation measures to prevent habitat alteration, as well as noise and visual disturbance will include avoidance of critical biological periods and minimization of vegetation removal.

After application of mitigation measures, the residual environmental effects evaluation results in the following conclusions for this VEC. The magnitude of any adverse effects to this VEC is predicted to be temporarily outside the range of natural variability. Accidental events would be of a temporary nature and of low likelihood, given implementation of best management practices. The geographic extent of potential adverse effects on this VEC would be within the project area. The duration and frequency of these effects would be relatively low since construction would occur within 1-2 weeks and maintenance would take place over a shorter period every three years. None of the potential adverse effects would be permanent and thus all are considered reversible. Wildlife may seek other habitat temporarily.

Due to the limited magnitude, geographic extent, duration, frequency, ecological context, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on wildlife and wildlife habitat.

4.4.6 Cultural resources

The likelihood of the presence of cultural resources would be established in advance of construction activities through discussions with provincial authorities. Any areas where cultural resources may be located will be avoided. However, there is a small likelihood that previously unidentified cultural resources could be accidentally disturbed during construction, maintenance and decommissioning. An archaeologist will be consulted and activity will stop if evidence of cultural resources is discovered.

The main mitigation for disturbance or damage to cultural resources is avoidance of areas likely to contain this VEC. If cultural resources are discovered, provincial authorities will be contacted to ensure information is recorded and appropriate preservation procedures are followed.

Assuming archaeological discussions or investigations are conducted in advance of culvert installation, any discovery or damage of a cultural resource would be accidental. The magnitude of all potential adverse effects to this VEC are predicted to be within the range of natural variability since areas where cultural resources would be likely to occur would be avoided, and any inadvertently discovered would be subjected to natural weathering processes along streambanks anyway. The geographic extent of potential adverse effects on this VEC would be within the project footprint. The duration of an effect would be long-term since the discovery or alteration would be irreversible. Frequency of these effects would be relatively low since cultural resources are unlikely to be found. The ecological or socioeconomic context of the effect is that cultural information could be lost. However, some information may be recorded and this may mitigate the loss of cultural information.

Due to the limited magnitude, geographic extent and frequency of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on cultural resources.

4.4.7 Recreation

There is unlikely to be much recreation along small streams affected by culvert projects subject to this MCSR due to their low flow and small size. Boaters travelling down streams with culverts could be minimally affected during all phases of culvert installation. Once a culvert is installed, boaters would be required to portage around it. Construction, maintenance and decommissioning activities would also necessitate a portage around the worksite.

Mitigation would consist mainly of appropriate signage and preparation of a portage route should this be necessary to ensure navigability of the stream.

After application of mitigation, the magnitude of all potential adverse effects to this VEC are predicted to be within the range of natural variability since boaters in small streams are generally prepared for low flow conditions. The geographic extent of potential adverse effects on this VEC would be within the project footprint. The duration and frequency of these effects would be relatively low since few boaters use small streams. None of the potential adverse effects would be permanent and thus all are considered reversible since the opportunity to portage around a culvert enables continued travel on the stream. The ecological or socioeconomic context of the effect is a minor inconvenience to boat passage and recreation.

Due to the limited magnitude, geographic extent, duration, frequency, ecological context, and reversibility of the potential adverse effects on this VEC, culvert projects subject to this MCSR are not likely to cause significant adverse environmental effects on recreation.

4.5 Accidents and Malfunctions

The likelihood of accidents and malfunctions causing negative environmental effects is minimal. Examples of possible accidents and malfunctions include spills of herbicides, fuels/chemicals, and hazardous materials that could contaminate waterbodies, vegetation and soil and cause short-term habitat alteration.

Regardless of the extent of accidents and malfunctions, any residual negative effects would be short-term and minimal. Following Workers Compensation Board regulations and normal safety procedures, preparing emergency response plans and maintaining emergency equipment on site will help to overcome the majority of these situations. Appropriate siting and design measures, source controls, timing of construction and standard operating, maintenance and repair procedures should also mitigate any effects (see Table 4).

4.6 Mitigation Measures

Mitigation methods to avoid or minimize environmental effects of culvert projects are well established. The mitigation measures described in this MCSR are based on DFO experience with embedded culvert projects, federal and provincial guidelines, standards and regulations. The Fish Stream Crossing Guidebook (BC Ministry of Forests 2002) provides the most recent summary of mitigation measures applicable to the culvert projects subject to this MCSR. Mitigation measures are summarized in Table 4. These mitigation measures include mitigation necessary to address the effects of the environment on the project. The application of these mitigation measures should ensure there are no significant adverse environmental effects related to culvert projects.

Site specific conditions for a culvert project may necessitate implementation of site specific mitigation. Information on site specific environmental conditions, additional potential environmental effects and appropriate mitigation measures will be provided on the Class Screening Project Report form.

4.7 Cumulative Environmental Effects

The Act requires that the assessment of potential environmental effects also consider the potential for cumulative environmental effects. Cumulative environmental effects can occur when environmental effects take place so frequently in time or so densely in space that the effects of individual impacts cannot be assimilated. They can also occur when the effects of one activity combine with those of a past, current or foreseeable project or activity in a cumulative or synergistic manner.

The environmental effects of the construction, operation, maintenance, and decommissioning of embedded culvert projects alone are expected to be limited and predictable over the long-term. The number of culvert projects estimated to occur is between 5 and 100 annually.

The effects of these projects in combination with others must be considered on a site-specific basis. Potential cumulative environmental effects will be addressed in the CSPR form by identifying other projects and/ or activities that have, are or will occur within the geographic area of predicted environmental effects for a given embedded culvert project. Additional mitigation will be recommended as required. Evaluation of the significance of potential cumulative environmental effects is facilitated through the CSPR form on a project-specific basis.

4

Follow-Up and Monitoring

During the construction and operational phases of a project, an environmental monitor may be required to provide guidance to those undertaking culvert installation projects, when deemed appropriate by the RA. In addition to ensuring that contract specifications are adhered to, the project is monitored in order to respond immediately to environmental effects that were not anticipated during the planning phase.

Although a follow-up program is discretionary under CEAA, an assessment of the success of current projects is critical to the planning and design of future projects. For this reason follow-up and monitoring is an ongoing activity to:

- determine the effectiveness of the required mitigation measures in avoiding or minimising adverse environmental effects;
- evaluate the success of the project in achieving its goal of 'no net loss' to fish habitat, particularly when a new technique or tool is utilised;
- recommend new techniques to improve project design and construction techniques; and,
- verify the accuracy of the environmental assessment of a project.

DFO will evaluate the application of the MCSR 2 years after implementation.

5 ROLES AND RESPONSIBILITIES

The following section outlines, in general terms, the role of the responsible authority, the proponent, and other federal and provincial authorities in the environmental assessment process for embedded culvert projects.

5.1 The Responsible Authority (RA)

The Department of Fisheries and Oceans (DFO) is responsible for the application of the *Fisheries Act*, which applies to any body of water that may contain fish or may be considered as fish habitat. Any project with the potential to result in the harmful alternation, disruption or destruction of fish habitat requires an authorization under subsection 35(2) of the *Fisheries Act*. DFO Habitat Management Program has the authority to determine if an authorization is required for any proposed embedded culvert project.

DFO is the RA for the construction, maintenance, and decommissioning of embedded culvert projects and DFO's role is to:

- Provide clear guidelines for meeting the class screening criteria (as provided in the MCSR).
- Provide appropriate documentation, information and advice to the proponent as needed (CSPR form).
- Make a decision regarding the significance of environmental effects according to subsection 20(1) of the Act and issue a subsection 35(2) authorization under the *Fisheries Act* or reject the proposed project based on the information provided.
- Reclassify the project to an individual screening if necessary.
- Provide feedback in a reasonable timeframe.

5.2 The Proponent

The proponent is responsible for:

- Preparing and submitting a proponent application plan, which includes a fish habitat evaluation at the crossing site, for a *Fisheries Act* authorization under subsection 35(2).
- Filling out the project specific information in a Class Screening Project Report (CSPR form).
- Providing a timetable for regular monitoring/ maintenance for the life of the installation.

5.3 Transport Canada

Transport Canada has the responsibility to protect the right of public navigation under the *federal Navigable Waters Protection Act* (NWPA). The NWPA defines a navigable water as a "canal or any other body of water created or altered as a result of the construction of any works", but in practice includes "any body of water capable of being navigated by a floating vessel of any description, for the purposes of transportation, recreation or commerce". Construction or placement of a work in, on, over, under, through or across any navigable water may require approval from Transport Canada (paragraph 5(1)(a)). Formal approval is mandatory for a new bridge, dam, boom or causeway over navigable waters. Any other works that may cause changes to flow, water level or clearances in a navigable water body may also be of regulatory interest. For example, this may include the construction of "… any structure, device or thing… similar in character… that may interfere with navigation".

This MCSR does not exempt a proponent from the requirement to obtain approval in accordance with Federal laws such as the *Navigable Waters Protection Act*. The *Navigable Water Protection Act* 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 Responsible Authority in accordance with the Law List Regulations of the CEAA. In such cases where Fisheries and Oceans Canada and Transport Canada are both Responsible Authorities for a project, Fisheries and Oceans Canada will coordinate completion of the CSPR.

5.4 Environment Canada

Environment Canada is responsible for the application of several federal acts. The *Migratory Birds Convention Act*, the Migratory Bird Sanctuary Regulations and Migratory Bird Regulations ensure the preservation of migratory birds and their habitat.

Under the *Canada Wildlife Act* (CWA), the Wildlife Area Regulations enables the federal government to undertake various conservation and interpretation activities for wildlife and its habitat, including the protection of endangered species.

Environment Canada has the authority to control toxic substances under the *Canadian Environmental Protection Act*, 1999, (CEPA) and under Section 36(3) of the *Fisheries Act*, to prohibit the deposition of deleterious substances into waters frequented by fish.

Environment Canada is also responsible for the overall administration of the *Species at Risk Act* (SARA) and is responsible for the protection and recovery of non-aquatic wildlife species at risk.

Any projects requiring specific additional mitigation measures or permits from Environment Canada will not be subject to the MCSR. An individual assessment under CEAA will be required.

5.5 Provincial Co-ordination

Some embedded culvert projects may require approval from both the federal and provincial government. Typically the circumstances that would result in a provincial referral are those when a project involves:

- Wildlife species
- Resident fish population
- Species on the Red or Blue list of the BC Conservation Data Centre
- heritage, cultural or archaeological resources

The MCSR and the CSPR form are not designed to compensate for provincial requirements nor do they eliminate the need for project specific provincial approvals where required.

6 PREPARATION OF INDIVIDUAL CLASS SCREENING PROJECT REPORTS (CSPR FORM)

Section 6 outlines the procedure for applying the MCSR to an individual project proposal. The assessment of an individual project is carried out through the completion of a CSPR form, as outlined in sections 6.1. The CSPR form determines the applicability of the projects to the MCSR, identifies whether other Federal Authorities may have an interest in the project or have a "trigger", under the Act, for the project. It also specifies the mitigation measures and follow-up requirements to be applied to the implementation of the project. Roles and responsibilities of Federal Authorities are outlined in section 6.2. Management of the Federal Environmental Assessment Index is discussed in section 6.3.

6.1 Class Screening Project Report (CSPR Form)

The CSPR form outlines the procedure through which class screenings of embedded culvert projects are completed. The CSPR form is divided into seven parts:

Part 1: Provides project description information.
Part 2: Assists in determining whether a project fits within the class of projects as defined in the MCSR. Projects that are not subject to the MCSR are reclassified to an individual assessment under CEAA.
Part 3: Determines the need for project referrals to other federal government authorities. It allows for DFO to reclassify a project to an individual assessment under CEAA.
Part 4: Assesses the potential for cumulative environmental effects that have not been identified in the MCSR.
Part 5: Summarizes the standard mitigation measures to be applied to a project. It also outlines the significance of residual environmental and cumulative environmental effects.
Part 6: Specifies all follow-up and monitoring requirements that must be included in the contract specifications for a project.
Part 7: Documents the screening decision, under the CEAA, for a project.

6.2 Federal Coordination

DFO has identified two additional Federal Authorities as having potential interest in embedded culvert projects, Transport Canada and Environment Canada. As lead RA, DFO will be responsible for the review of completed CSPR forms. Based on information contained in the CSPR form, DFO will refer projects to other federal or provincial authorities. DFO will be responsible for managing communications between itself and other government authorities. It will also incorporate the comments and requirements of federal and provincial authorities into the CSPR form.

The FAs will be responsible for responding to DFO referrals. FAs will provide information to DFO relevant to the assessment including the need and requirements for additional recommended mitigation, or other expert advice. FAs will not be required to review or approve the completed CSPR.

6.3 Canadian Environmental Assessment Registry

The Canadian Environmental Assessment Registry was established in 2003 to facilitate convenient public access to records relating to any environmental assessment conducted in accordance with the Act. The public can, on their own initiative, seek information on what environmental assessments are being undertaken and can request access to environmental assessment information through the Registry. The Registry consists of two components - an Internet site and a project file.

The Internet site is an electronic registry administered by the Agency. The responsible authority and the Agency are required to contribute specific records to the Internet site relating to a model class screening report and any CSPRs completed in relation to it. The Agency will post records required during preparation of a model class screening report (e.g. public notices regarding public participation, draft model class screening reports for public review). Upon declaration of the model class screening report, the Act requires responsible authorities to post a statement of projects for which a class screening was used, every three months, on the Canadian Environmental Assessment Registry. The statement should be in the form of a list of projects, and will include:

- the title of each project for which the model class screening report was used;
- the location of each project; and
- the date of the decision for each project.

The project file component is a file maintained by the responsible authority during an environmental assessment. The project file must include all records produced, collected or submitted with respect to the environmental assessment of the project, including all records included on the Internet site. The responsible authority must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

7 PROCEDURES FOR AMENDING THE MODEL CLASS SCREENING REPORT

The purpose of an amending procedure is to allow the modification of the MCSR after experience has been gained with its operation and effectiveness. The reasons for such modification may include:

- clarification of ambiguous areas of document and procedures;
- streamlining or modifying the planning process in areas where problems may have arisen;
- minor modifications and revisions to the scope of assessment to reflect new or changed regulatory requirements, policies or standards; and
- new procedures and environmental mitigation practices that have been developed over time.

The responsible authority will notify the Agency in writing of its interest to amend the MCSR. It will discuss the proposed amendments with the Agency and affected federal government departments and may invite comment from stakeholders and the public on the proposed changes. The responsible authority will then submit the amended MCSR to the Agency, along with a request that the Agency amend the MCSR and a statement providing a rationale for the amendment.

The Agency may amend the MCSR without changing the declaration period if the changes:

- are minor;
- represent editorial changes intended to clarify or improve the screening process;
- do not materially alter either the scope of the projects subject to the MCSR or the scope of the assessment required for these projects; and
- do not reflect new or changed regulatory requirements, policies or standards.

The Agency may initiate a new declaration for the MCSR for the remaining balance of the original declaration period or for a new declaration period if the changes:

- are considered to be substantial; or
- represent modifications to the scope of the projects subject to the class or the scope of the assessment required for these projects.

8 CLASS SCREENING PROJECT REPORT FORM

Part 1: Project Information Summary

Proponent to complete

Proponent Name:

Address:

Telephone:

Project Description:

Project Location (include stream name or number, latitude and longitude, etc.):

Watershed Name/Number:

Other Contacts (consultants, contractors etc.):

Has a fish habitat evaluation been conducted by a qualified professional or technologist with adequate training and knowledge of fish habitat? If so, provide reference information (title, date, author etc.):

Does a proponent application form accompany this document? If so, provide reference information (title, date, author etc.):

DFO contact (name and telephone number):

Part 2: Does the MCSR Apply?

Proponent to complete

Part A: Stream channel description, habitat evaluation and project design

Enter Yes or No to statements 1-7:	**Yes**	**No**
1. The embedded culvert project is located in a fish-bearing stream that is less than 2.5m in channel width measured at normal high water.		
2. The embedded culvert project is located in a fish-bearing stream that is less than 6% channel average gradient measured over a minimum of 50m of the channel reach equidistant upstream and downstream of the proposed crossing.		
3. A fish habitat evaluation has been conducted by a qualified fish habitat professional.		
4. The habitat has not been classified as "critical" fish habitat.		
5. The design of the embedded culvert project indicates: A round culvert will be embedded 40% into the natural streambed. or A pipe arch will be embedded 20% into the natural streambed.		
6. The width of the embedded culvert at embedment depth is greater than the stream channel width. a. The width of the embedded culvert at embedment depth is _____ m b. The width of stream channel at high water is _____ m		
7. The installation of the culvert is proposed within the instream work window for the fish species inhabiting the channel. a. The instream work window for the fish species using the stream is _____ (date) b. The installation is proposed for _____ (date)		

If **YES** to statements 1-7, proceed to Part 3:

If **NO** to any statement, do not proceed with the CSPR.
The MCSR does not apply.
An individual assessment under the CEAA is required.

Part 3: Federal Issues

Proponent to complete

The following questions will help to assess whether the proposed project is likely to require a referral to another federal department. Referral to Transport Canada is required for approval under the *Navigable Waters Protection Act* for any project that has the potential to interfere with the navigation and any named works (Paragraph 5(1)(a) of the *Navigable Waters Protection Act*)in, on, over, under, through or across navigable waters.

	Yes	No
Is a referral to Transport Canada to determine the applicability of the *Navigable Waters Protection Act* required?		
If the project was referred to Transport Canada, identify the parties involved, and identify issues raised and how they were addressed. Records of all consultations should be retained. Please indicate if an exemption under subsection 5(2) of the *Navigable Waters Protection Act* has been received and provide details.		
Is the project located in a National Park?		
Is the project located in a Migratory Bird Sanctuary/National Wildlife Area?		
Is the project located on reserve lands?		
Will the project adversely affect species at risk[4] , either directly or indirectly, such as by adversely affecting their habitat?		

If **NO** to all, the project fits the class of project described in the Model Class Screening Report (MCSR). Proceed to Part 4.

If **YES** to any, do not proceed with the CSPR. The project must be referred to another federal agency. The MCSR does not apply. An individual assessment under the CEAA is required

[4] *a. species identified on the List of Wildlife Species at Risk set out in Schedule 1 of the Species at Risk Act (SARA), and including the 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. species that have been recognized as "at risk" by COSEWIC or by provincial or territorial authorities.

To obtain information on species at risk, consult the following:
•Provincial conservation data centre (contact by email to receive map showing location of known species at risk)
e.g. British Columbia Conservation Data Centre http://srmwww.gov.bc.ca/cdc/
•Environment Canada: Species at Risk www.speciesatrisk.gc.ca; COSEWIC www.cosewic.gc.ca; SARA Registry www.sararegistry.gc.ca

Part 4: Additional Environmental Effects

Proponent to complete

Table 1 summarizes the potential environmental effects of culvert projects subject to this MCSR. Review these effects and confirm whether these are to be implemented. If any additional environmental effects are likely to occur, complete Table 2.

Table 1: Potential environmental effects of culvert projects

VECs	Environmental Effects	Mitigation	Will these mitigation measures be implemented? (Yes/No) PROPONENT TO COMPLETE
Vegetation	Loss of vegetation	Only the vegetation required to meet operational and safety concerns should be removed. No vegetation clearing outside the proposed work area. Restore site to pre-crossing conditions after decommissioning.	
	Contamination	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.	
Soil	Erosion	Stabilize all soils after construction, maintenance or decommissioning works to prevent erosion and transport.	
	Contamination	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.	
Water quality	Sedimentation	Sediment should be controlled at source. Sediment traps and barriers should be used to capture sediment in transport to waterbodies.	
	Contamination	Ensure hazardous substances are stored, handled and applied in a manner to prevent release to the environment. Ensure contingency plan is developed and implemented in the event of an accidental spill.	

VECs	Environmental Effects	Mitigation	Will these mitigation measures be implemented? (Yes/No) PROPONENT TO COMPLETE
Wildlife and wildlife habitat	Habitat alteration (vegetation loss/alteration)	Only the vegetation required to meet operational and safety concerns should be removed. No vegetation clearing outside the proposed work area. Restore site to pre-crossing conditions after decommissioning.	
	Disturbance due to noise and human presence	Identify any wildlife and habitat that may be impacted by activities. Schedule activities to avoid critical life stages for identified wildlife (breeding, nesting, and rearing).	
Cultural resources	Disturbance	Ensure activity is suspended until permission to proceed is granted by Provincial authorities. Some information may be recorded and this may mitigate the loss of cultural information.	
Recreation	Interference with boat passage	Should it be necessary to ensure navigability of the stream appropriate signage identifying that an obstruction is ahead as well as preparation of a portage route will be required.	
Fish and fish habitat	Habitat alteration	Use of embedded culverts can only occur following the design and installation methods outlined in the Fish Stream Crossing Guidebook. Streambeds are to be replaced in the culvert and continuous bedload recruitment is to be achieved through appropriate design specifications.	
	Interference with fish passage	Instream works only to occur during approved work windows. Work windows are periods of time when work in and about a stream can be conducted with least risk to fish and fish habitat. Fish migration does not occur during these periods. Any fish within the isolated worksite are to be salvaged. Appropriate design specifications are to be followed to ensure flow conditions within the culvert replicate natural streamflow conditions outside the culvert in order to achieve fish passage. Restore site to pre-crossing conditions after decommissioning.	
	Mortality (contamination or stranded fish in isolation channel)	Ensure contingency plan is developed and implemented in the event of an accidental spill.	

Table 2: Additional environmental effects

VECs (Vegetation, soil, water quality, fish and fish habitat, wildlife and wildlife habitat, cultural resources, recreation)	**Environmental Effects**	**Proposed Additional Mitigation** **PROPONENT TO COMPLETE**	**Significance after proposed mitigation applied (significant/not significant)** **DFO TO COMPLETE**

Part 5: Cumulative Environmental Effects

A. Are there any other past, present or proposed activities (e.g. agricultural, forestry, recreational, highway construction, other construction), conducted within the proposed project area, which may act in an additive or synergistic manner with the project to cause cumulative environmental effects? **Yes / No**

If **YES**, briefly describe these activities using the Table 3:

Table 3: Other projects and activities

Category	**Projects or activities** **PROPONENT TO COMPLETE**	**Description** **PROPONENT TO COMPLETE**
Past or existing projects or activities		
Projects or activities that are planned or are likely to occur		

B. As a result of interactions with other projects or activities, are cumulative environmental effects expected to affect any of the following VECs:

Table 4: Cumulative Environmental Effects

Valued ecosystem component	**Cumulative environmental effects** **PROPONENT TO COMPLETE**
Air Quality	
Vegetation	
Soils	
Water Quality and Hydrology	
Wildlife and Wildlife Habitat	
Fish and Fish Habitat	
Cultural resources	
Recreation	
Other, briefly describe	

If cumulative environmental effects are expected to affect any of the VEC's then enter the mitigation proposed to address these effects.

Table 5: Additional Mitigation and significance of cumulative environmental effects

VECs	**Additional mitigation proposed to address cumulative effects** **PROPONENT TO COMPLETE**	**Significance of cumulative environmental effects after proposed mitigation applied (significant / not significant)** **DFO TO COMPLETE**
Vegetation		
Soils		
Water Quality and Hydrology		
Wildlife and Wildlife Habitat		
Fish and Fish Habitat		
Recreation		
Cultural resources		
Other		

DFO will evaluate the significance of any residual environmental effects and/or residual cumulative effects. The following factors will be considered: magnitude, geographic extent, duration, frequency, ecological context and reversibility. For a more detailed discussion on the evaluation of significance, refer to the MCSR.

If there is a potential for a significant residual environmental effect and/or residual cumulative environmental effect proceed to Part 7. Retain information collected in Part 1 - Part 4, as it may be used in a future assessment

Part 6: Follow-Up Program

DFO to complete

Is a follow-up program, beyond what is outlined in the MCSR and in the Proponent Application Plan, required for this project? **Yes / No**

If **YES**, briefly describe project specific follow-up activities and describe who is responsible for conducting these activities?

Part 7: Determination and Sign Off

DFO to complete

On the basis of the CSPR form, DFO has determined, in accordance with subsection 20(1) of the Act, that;

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

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

CSPR Prepared by:

Name | HRTS file number

Signature | Date

CSPR Reviewed and Approved by:

Name | Signature

Title | Date

If Transport Canada is an RA, CSPR Reviewed and Approved by:

Name | Signature

Title | Date

9 INFORMATION CONTACT

For information related to the submission, environmental screening and approval of projects under the MCSR for Embedded Culvert Projects, you may contact your local Department of Fisheries and Oceans, Habitat Management Office.

For office locations and contact information on the Internet go to:

http://www.pac.dfo-mpo.gc.ca/

10 REFERENCES

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