

- | |
|--|
| <input checked="" type="checkbox"/> Fish |
| <input type="checkbox"/> Species at Risk |
| <input checked="" type="checkbox"/> Important/Exceptional
Habitat |

LIKE-FOR-LIKE CULVERT REPLACEMENT BEST MANAGEMENT PRACTICE

1 SCOPE

This MTO Best Management Practice (BMP) applies to the like-for-like replacement of a culvert in a watercourse identified as being or as supporting a commercial, recreational or Aboriginal fishery. Culvert replacements using this BMP shall be installed in accordance with the *MTO Highway Drainage Design Standards* with respect to culvert sizing, embedment with appropriate streambed material, and safe fish passage as outlined in the Operational Constraints and Protection Measures.

This BMP for Like-for-Like Culvert Replacement **may** be used for the following:

- Replacement of an existing culvert with a new culvert of equal or lesser length;
- An increase in culvert width that does not negatively impact fish passage;
- The replacement of a perched or undersized culvert as long as the fish passage provided by the new culvert does not have a negative effect on fish management objectives, federally listed Aquatic Species at Risk (SAR), or expand the range of aquatic invasive species.
 - If the project is located within the Great Lakes Basin, and involves the replacement of a perched culvert, consult with MNRF regarding protections for Asian Carp and with the Sea Lamprey Control Centre for the presence of downstream barriers to passage of sea lamprey at 1-800-553-9091 prior to commencing work.

This BMP for Like-for-Like Culvert Replacement **may not** be used for the following:

- An increase in total culvert length;
- Installation of culvert liners;
- Reduction in culvert width;
- Channel “tie-ins” of the watercourse; or
- Additional fill (i.e. increased footprint) placed below the high water level.

Activities undertaken in relation to your project shall be in compliance with the federal *Species at Risk Act* and the provincial *Endangered Species Act* as outlined in Step 2 of the Fisheries Protocol. It is up to the user of this BMP to obtain all necessary permits to proceed with the work.

To screen project sites for aquatic SAR and /or critical habitat, refer to the current Species At Risk Mapping: [Link to current Species at Risk Mapping \(http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm\)](http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm)

2 ADDITIONAL REFERENCES

DFO Freshwater Intake End-of-Pipe Fish Screen Guideline available at: [Link to DFO Freshwater Intake End-of-Pipe Fish Screen Guideline \(http://www.dfo-mpo.gc.ca/Library/223669.pdf\)](http://www.dfo-mpo.gc.ca/Library/223669.pdf).

MTO Highway Drainage Design Standards available at: [Link to MTO Highway Drainage Design Standards \(http://www.mto.gov.on.ca/english/publications/drainage/index.shtml\)](http://www.mto.gov.on.ca/english/publications/drainage/index.shtml)

Great Lakes Fisheries Commission Sea Lamprey Control Map available at: [Link to Great Lakes Fisheries Commission Sea Lamprey Control Map \(http://data.glfc.org/\)](http://data.glfc.org/)

Great Lakes Information Network Great Lakes Basin Map
[Link to Great Lakes Information Network Great Lakes Basin Map \(http://maps.glin.net/data/04e9a13d-22cd-4295-a7f2-f3b300f80b0b\)](http://maps.glin.net/data/04e9a13d-22cd-4295-a7f2-f3b300f80b0b)

3 LIKE-FOR-LIKE CULVERT REPLACEMENT PROCEDURES

Potential Impacts to Fish and Fish Habitat

- Infilling floodplain fish habitat with temporary construction access ramps and/or permanent road approaches or abutments (some fish species such as pike rely on the floodplain during high flows for fish passage and/or spawning)
- Removal of riparian vegetation and cover along the banks or shoreline of a waterbody
- Removal of edge habitat (e.g. undercut bank, shallower areas with lower velocity, aquatic vegetation)
- Creation of barriers to fish movement (e.g. perched crossings, velocity barriers, alteration of the natural stream gradient, restrictive causeways resulting in the loss of floodplain which is used by fish for passage during high flows)
- Introduction of sediments, concrete and other deleterious substances (e.g., salt, paint, solvents, oil and grease) into watercourses.
- Operation of machinery may impact habitat on the waterbody banks and bed, and result in erosion and sedimentation.
- Death of fish.

Operational Conditions

Like-for-like culvert replacement activities that meet the conditions outlined in the Scope of Work and are carried out in accordance with all of the following operational conditions, constraints, protection measures and submission requirements should be considered to be in compliance with the *Fisheries Act* and of the *MTO/DFO/MNRF Fisheries Protocol*. As such the works may proceed without further review.

If any of the conditions, operational constraints or protection measures cannot be met, this BMP **CANNOT** be used and MTO staff and service providers shall proceed to a fisheries assessment as outlined in the Fisheries Protocol process.

Operational Constraints and Protection Measures

General

- Culvert replacement shall be scheduled to avoid wet and rainy periods.
- Travel paths, stockpile areas and staging areas, within the vicinity of the crossing, should be pre-planned and followed.
- An Erosion and Sediment Control Plan shall be developed and implemented for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. A response plan shall also be developed that is to be implemented immediately in the event of a sediment release.
- In-water works shall be conducted in the dry season when waterbody flows are at a minimum or nonexistent. Where works are required to take place outside of the dry season, all works shall be conducted in an isolated area "in-the-dry".
- All works shall be conducted in an isolated area "in-the-dry" while maintaining the current waterbody flows on the downstream end by installing a plug (e.g. cofferdam) upstream and downstream of the site while conveying all of the upstream flow into a flume, diversion channel or pumping it around the isolated area.
- Before dewatering, all fish shall be salvaged from within the isolated area and immediately be released as directed in the Licence to Collect Fish for Scientific Purposes obtained from MNRF.
- The pumping system shall be sized to accommodate any high flows of the waterbody during the construction period. Pumps shall be monitored at all times, and back-up pumps shall be readily available on-site in the event of pump failure.
- Sediment laden dewatering discharge shall be pumped into a vegetated area or settling basin, to prevent sediment and other deleterious substances from entering any waterbody.
- Accumulated sediment and excess material shall be removed from the isolated area before removing the plugs.
- The waterbody bed shall be stabilized and restored to the original watercourse shape, bottom gradient and substrate to pre-construction conditions before removing the plugs.
- During the final removal of the plugs, the original watercourse shape, bottom gradient and substrate at these locations shall be restored to pre-construction condition.

Channel Integrity

- The waterbody bed shall be stabilized and restored to the original watercourse shape, bottom gradient and substrate to pre-construction conditions before removing worksite isolation measures.
- The waterbody banks shall be stabilized, restored to their original shape, adequately protected from erosion and re-vegetated with native species.
- If rock is used to stabilize waterbody banks, it shall be clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. The rock shall be placed at the original waterbody bank grade to ensure there is no infilling or narrowing of the waterbody.

Temporary Flow Diversions

Temporary flow diversions shall be conducted in accordance with **OPSS 182 and OPSS 185**.

Dewatering and the Use of Pumps

Dewatering activities and the use of pumps shall be conducted in accordance with **OPSS 518 and OPSS 182**.

Fish Protection

Fish protection shall be conducted in accordance with **OPSS182**

Equipment Use

Use of equipment shall be in accordance with **OPSS182**.

Preservation of Riparian Vegetation

Removal of riparian vegetation shall be in accordance with **OPSS182**.

Erosion and Sediment Control

The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to **OPSS 182 and OPSS 805**.

Restoration of Disturbed Areas

Vegetation protection and rehabilitation shall be in accordance with **OPSS 182 and OPSS 804**.

Management of Excess Materials

All excess material shall be managed in accordance with **OPSS 180**.

4 SUBMISSION REQUIREMENTS

A MTO Project Notification Form* shall be completed prior to the commencement of work, indicating that the BMP will be followed during the like-for-like culvert replacement activities. It shall be signed by the appropriate individual and retained by the MTO

Regional Environmental Section, or, for forms completed by Area Maintenance Contractor (AMC) Service Providers, by the Regional Operations Office.

* An electronic version of MTO Project Notification Form is available online at the following link:

[Link to MTO Project Notification Form](#)

<http://www.raqsb.mto.gov.on.ca/techpubs/eps.nsf/9ea013f0de8096ba8525729700557ad1/4afcf3d89e3c8e4785257b44004b5f05?OpenDocument>

Like-for-Like Culvert Replacement Quick Reference Guide

Disclaimer: This table has been provided as a quick reference guide. Compliance with this guide does not relieve the Contractor of other obligations imposed by statute or by the requirements and conditions specified under contract with the Owner.

Elements of the Like-for-Like Culvert Replacement	MTO Reference
Timing	
Like-for-like culvert replacement activities shall be scheduled to prevent disruption to sensitive fish life stages by adhering to appropriate in-water work timing windows.	182.07.01
Like-for-like culvert replacement activities shall be scheduled to avoid wet and rainy periods.	SSP 101F23
Like-for-like culvert replacement activities shall occur in the dry season when waterbody flows are at a minimum or nonexistent. Where works are required to take place outside of the dry season, all works shall be conducted in an isolated area "in-the-dry".	SSP 101F23
Site Isolation	
All works shall be conducted in an isolated area "in-the-dry" while maintaining the current waterbody flows on the downstream end by installing a plug (e.g. cofferdam) upstream and downstream of the site while conveying all of the upstream flow into a flume, diversion channel or pumping it around the isolated area.	SSP 101F23
Before dewatering, all fish shall be salvaged from within the isolated area and immediately be released as directed in the Licence to Collect Fish for Scientific Purposes obtained from MNRF.	182.07.06.01
Sediment laden dewatering discharge shall be pumped into a vegetated area or settling basin, to prevent sediment and other deleterious substances from entering any waterbody.	SSP 101F23
Accumulated sediment and excess material shall be removed from the isolated area before removing the plugs.	SSP 101F23
The waterbody bed shall be stabilized and restored to the original watercourse shape, bottom gradient and substrate to pre-construction conditions before removing the plugs.	SSP 101F23
During the final removal of the plugs, the original watercourse shape, bottom gradient and substrate at these locations shall be restored to pre-construction condition.	SSP 101F23
Dewatering	
Dewatering operations shall be directed to a sediment control device or natural attenuation area prior to discharge to watercourses. If a natural attenuation area is used, a minimum 15 m setback shall be maintained from the receiving watercourse. When water is discharged to a watercourse, the	518.07.01

Elements of the Like-for-Like Culvert Replacement	MTO Reference
water discharged shall be done in a manner that does not cause erosion or other damage to adjacent lands - i.e. energy dissipation is required.	
The pumping system shall be sized to accommodate any high flows of the waterbody during the construction period. Pumps shall be monitored at all times, and back-up pumps shall be readily available on-site in the event of pump failure.	SSP 101F23
Fish Impingement and Entrainment	
Any water intakes or outlet pipes in fish bearing waters shall have screens to prevent entrainment or impingement of fish and follow the measures as outlined in Fisheries and Oceans Freshwater Intake End-of-Pipe Fish Screen Guideline.	182.07.06.03
Fish Passage	
Safe fish passage shall be maintained through the new culvert, except when replacing a perched culvert and there are threats of aquatic invasive species downstream.	SSP 101F23
Land-based Impacts Through Use of Industrial Equipment	
Travel paths, stockpile areas and staging areas, within the vicinity of the crossing, should be pre-planned and followed.	SSP 101F23
Existing trails, roads or cut lines shall be used wherever possible as access routes to avoid disturbance to waterbody banks and riparian vegetation areas.	182.07.03
Equipment shall arrive on site in clean condition. It shall be operated on dry land in a manner that minimizes disturbance to waterbody banks and riparian vegetation areas.	182.07.02
Unless specified in the Contract Documents, equipment shall not enter or be operated in waterbodies or on waterbody banks but shall be operated on land above the high water level, on ice, or from a floating barge in a manner that minimizes disturbance to the waterbody banks of the watercourse.	182.07.02
Removal of riparian vegetation shall be kept to a minimum to help maintain the stability of waterbody banks. The area over which vegetation in riparian vegetation areas is removed shall affect no more than one third (1/3) of the total woody vegetation in the right-of-way within 30 metres of the ordinary high water level of a waterbody. Vegetative root masses found within the waterbody banks shall remain undisturbed unless specified in the Contract Documents.	182.07.03
Deposit of Deleterious Substances	
All Equipment used for the work in waterbodies or on waterbody banks at all times shall be free of excess or leaking fuel, lubricants, coolant and any other	182.06

Elements of the Like-for-Like Culvert Replacement	MTO Reference
deleterious substances that could enter the waterbody.	
Equipment refueling and maintenance shall take place at locations as far away as practical from a waterbody and in a manner that prevents sediment and other deleterious substances from entering into a waterbody.	182.07.02
Ensure Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) on-site at all times for implementation in event of accidental spill during construction. An emergency spill kit shall be kept on site.	OPSS 100 7.13.02
Erosion and Sediment Control	
An Erosion and Sediment Control Plan shall be developed and implemented for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. A response plan shall also be developed that is to be implemented immediately in the event of a sediment release.	SSP 101F23
Effective erosion and sediment control measures shall be installed before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.	182.07.04 805.07.11
All disturbed areas shall be stabilized with effective temporary erosion and sediment control measures that shall be maintained until vegetation is established.	182.07.05
All stockpiled and waste materials (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) shall be contained and stabilized above the high water level of nearby waterbodies to prevent re-entry.	182.07.01
Restoration of Disturbed Sites	
Immediately after disturbance or upon completion of the work in or around waterbodies, waterbody banks, and riparian vegetation areas, the disturbed areas shall be restored to the original contour and gradient and cover treatment applied.	182.07.05
If an area cannot be restored to the original contour and gradient due to instability or other reasons, a stable gradient shall be constructed and cover treatment applied according to the above requirements.	182.07.05
Materials for the restoration of disturbed areas shall not be obtained from below the high water level of any waterbody unless specified in the Contract Documents.	182.07.05