TOWN OF CANMORE

STANDARD OPERATING PROCEDURE

EFFECTIVE DATE:	August 28, 2024
PROCEDURE TITLE:	Watercourse Crossings
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DATE REVISED:	REVISED BY:	APPROVED BY:
August 22, 2024	Jessica Tomashewski	Andreas Comeau

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1.0 Introduction and Background

1.1 Purpose

The purpose of this document is to ensure the execution of work on bridges over watercourses adheres to applicable regulatory requirements. This SOP was written for the specific water body classes within the Town boundaries. It outlines the steps and guidelines for personnel involved in the placement, construction, installation, maintenance, replacement, or removal of all or part of a watercourse crossing (referred to as work or works) to minimize negative environmental impacts.

1.2 Guideline

This guideline follows the provincial requirements outlined in the *Code of Practice for Watercourse Crossings* made under the *Water Act* and the *Water (Ministerial) Regulations*. Note: Approval through the *Water Act* is not required if the activity is compliant with the *Code of Practice for Watercourse Crossings*. Work that falls outside of the *Code of Practice for Watercourse Crossings* may require *Water Act* approval.

Please note that this is not a comprehensive list of tasks and due diligence that may apply to work done on watercourse crossings. The work done in and around a watercourse may have requirements from other provincial and federal acts, regulations, and codes of practices, for example, Fisheries Act, Public Lands Act, et cetera.

1.3 Definitions

For the purpose of this document the words in bold are defined as follows:

Crossing types are defined in the table below:

Crossing Types	Constructed using:
Type 1	• single span bridge, • single pipeline bridge, or • other similar structure that does not have abutments that are placed on or within the bed or active channel of a water body.
Type 2	• open bottom culvert, • single or multi-span bridge with abutments or piers, or • other similar structures that are placed on or within the bed or active channel of a water body.
Type 3	• round, arch, or box culvert, or • other similar structure on or within the bed of a water body.
Type 4	• ford or low-level crossing, or • other similar crossing where the crossing is constructed at or below the level of the bed of the water body.

Table 1: Crossing Type Definitions

The **Director** means the provincial representative under the *Water Act* responsible for reviewing submissions through the Government of Alberta's Digital Regulatory Assurance System (DRAS).

Maintenance is defined as the repair, partial replacement or structural restoration of a watercourse crossing that results, or may result, in the disturbance or alteration of the bed, banks, or the active channel of a water body. The Guide For Complying with the *Code of Practice for Watercourse Crossings*[1] elaborates on the interpretation of maintenance:

- The code does not apply where the maintenance does not disturb or alter the bed or banks of a water body. For example, replacing the deck on a bridge or replacing a guard rail, removing debris from a culvert or a bridge pier.
- Work that results in the disturbance or alteration of the water body are subject to the code. For example, repairing an eroded road grade, pile, or pier, or sanding and staining the bridge crossing.

The **owner** is a person who:

- places, constructs, installs, maintains, replaces, or removes a watercourse crossing,
- a representative of the person above (successor, assignee, executor, administrator, receiver, receiver-manager, liquidator, trustee, or a person acting as the principal or agent of the person above).

A **qualified aquatic environment specialist (QAES)**[2] is a person who:

- has a degree or diploma in biological sciences (or an educational equivalence),
- has detailed knowledge of aquatic environment (including fish and fish habitat, management and assessment), and
- is experienced with fisheries / aquatic environment assessment methods, mitigation measures to maintain the productive capacity of an aquatic environment, and fish habitats in Alberta that may be affected by carrying out the works.

A **uncoded water body** means a mapped water body that does not have a class symbol specified on the management area map (link is provided in Section 1.4).

An **unmapped water body** means a water body that does not appear on the management area map.

A **water body** means a water body with defined bed and banks, whether or not water is continually present, but does not include fish bearing lakes.

A **watercourse crossing** means a crossing, and any associated structures that are, or will be constructed to provide access over or through a water body. Including but not limited to structures and measure to isolate the locations of the works, erosion protection structures, and sedimentation management structures.

[1] The guide referenced is outdated and archived in 2020. The guideline has not been updated since 2001 and does not reflect amendments in the *Code of Practice* or *Water (Ministerial) Regulations*. The guidelines are still published as some of information is still useful if the guidance is compliant with the code and regulation.

[2] The Town of Canmore currently does not have a QAES on staff. It is recommended that work that involves a QAES is contracted out in batches. The Code of Practice does specify requirements of a QAES; these were excluded from this SOP at this time.

1.4 Restricted Activity Period and Water Body Class

The Town of Canmore has four (4) water bodies that are regulated (Canmore Management Area Map[3]). A water body within the Town of Canmore not listed below is considered an unmapped water body. Each watercourse has a restricted activity period (RAP) during which fish and fry activity are likely to occur. Works must not be carried out within any applicable RAP unless authorized by a QAES.

Water Body	**Water Body Class**	**Restricted Activity Period**
Bow River	Class C	September 1 to April 30
Policeman Creek[4]	Class B	September 1 to April 30
Spring Creek	Class B	September 1 to April 30
Canmore Creek	Class B	May 16 to August 15, September 1 to April 30

Table 2: Water Body Class and Restricted Activity Period

As stated in the *Code of Practice* under Section 8 and Section 11, unmapped and uncoded water bodies in the Town of Canmore should adhere to the following.

- An uncoded water body is Class D unless the uncoded water body enters a mapped water body. The section 2 km upstream from the mouth is the same class as the water body that is entered.
- If an unmapped water body enters a Class B water body, the section 2 km upstream from the mouth of the unmapped water body is a Class B (including where it is dry or frozen at the time of the works) and is Class C for any other portion. The unmapped water body entering a mapped water body will have the same RAP as the mapped water body that it is entering.
- If an unmapped waterbody enters a Class C water body, then all portions of the unmapped water body are Class C. The 2 km upstream from the mouth of the unmapped water body will have the same RAP as the Class C, otherwise the portions of the unmapped water body will have the same RAP as the nearest mapped water body that enters the mapped Class C.

1.5 QAES Approval List

The written recommendation and specification from a QAES must be obtained for the following works:

- when constructing a new Type 2 crossing over a Class B or Class C water body,
- when constructing a new Type 3 crossing over a Class C water body,
- when replacing a Type 1 or Type 2 crossing over a Class B water body (except when replacing Type 1 with Type 1),
- when replacing a Type 1, Type 2, Type 3, Type 4 crossing over a Class C water body (except when replacing a Type 1 with a Type 1),

[3] There is no Class A watercourse found within the town limits. There is a discrepancy between the class indicated on the map and the table.

[4] The Class B water body of Policeman Creek starts adjacent to 7th Avenue then continues downstream to the Bow River.

- when doing maintenance (relevant to the COP) or removing any type of existing watercourse crossing,
- when completing work within RAP (Type 2, Type 3, Type 4 crossings are eligible),
- work done on an unmapped water body entering either a Class B or C mapped water body.

2.0 Prior to Work Commencing

2.1 Media

The owner must take photos or videos of the following before work is commenced:

- the water body and its banks upstream from the watercourse crossing,
- the water body and its banks downstream from the watercourse crossing,
- the banks at the watercourse crossing site, one of each bank taken from the opposite bank.

These documents should be stored as records within the project file on TownSquare.

2.2 Notice to the Director

The Director shall be given notice at least fourteen (14) calendar days before any works are commenced, continued, or carried out unless otherwise specified in writing by the Director. This includes any activities that result in the disturbance or alteration of the water body. The Notice must include:

- name, address, and phone number of an owner,
- contact person's name and phone number,
- map, diagram, or air photo with watercourse crossing location, quarter section boundaries, legal description, water body name, and UTM coordinates,
- the type(s) of watercourse crossing structure and conditions that will be used in carrying out the works (for more information reference the Plan),
    - if applicable: rationale for not using the preferred type of watercourse crossing,
    - if applicable: required measures for post-works aquatic environment, including fish habitat, to equal or exceed pre-works conditions, where technically feasible,
- the dimensions of the watercourse crossing in metres and description of any other structure that is part of the watercourse crossing (length, width, diameter (culvert)),
- if applicable: name of the QAES and consulting company involved in incorporating their specifications and recommendations,
- expected start and end dates of the works, with the estimated duration of time in the water body, if applicable.

If the work is not completed within the estimated time period, the Notice is no longer valid and a new Notice must be given that includes:

- new start (or continuation) and end dates of the works, with the estimated duration of time in the water body, if applicable,
- anything that has changed from the information provided in the original Notice.

Notice to the Director is a form submitted through the Government of Alberta's Digital Regulatory Assurance System (DRAS). The Notice to the Director can be compiled and submitted earlier than the fourteen (14) days.

2.3 Plan

At least fourteen (14) days before work is carried out, a Plan must be prepared and completed. The completed Plan must be followed, except in the case of an emergency. See Appendix A for specifics on the Plan. If the watercourse crossing is being removed, the owner may prepare the Plan. Otherwise, the Plan must be completed by a professional engineer or engineering technical specialist[5] (whichever deemed appropriate by the owner).

3.0 Works

3.1 Maintenance and Removals

Maintenance and removals must be carried out by isolating the location of the construction and in accordance with the RAP, standards, written specifications, and conditions listed in the Plan. QAES approval is required for this work.

3.2 Dry or Frozen Water Body

When the water body is dry or frozen to the bottom, the requirement for isolation does not have to be met for the construction, replacement, removal, or maintenance of a watercourse crossing.

3.3 Emergency

In situations where there is imminent risk to the aquatic environment, public health or safety, or structural failure, where it is not possible to provide fourteen (14) day Notice to the Director, appropriate measures should be taken to deal with the emergency. The Director must be notified within twenty-four (24) hours of becoming aware of the emergency. This Notice shall include:

- name, address, and phone number of an owner,
- contact person's name and phone number,
- legal land description of the land the watercourse crossing is on,
- other information on the nature of the emergency.

Within thirty (30) days after the work is done to remedy the emergency, the following information must be provided to the Director:

- map, diagram, or air photo with watercourse crossing location, quarter section boundaries, water body name, and UTM coordinated,
- description of the conditions (if applicable) that were used in carrying out the works,

[5] The engineering technical specialist is specified to have experience and knowledge of hydrology, hydrogeology, and water management assessment and methods, the determinations of expected flows for flood events and designing of watercourse crossings. A professional engineer is specified to have the same definition as APEGA.

- a description of measures taken to meet the applicable requirements of crossing preference, the standards, written specifications, and conditions listed in the Plan,
- include a statement whether the works incorporated the specifications and recommendations of a QAES.

3.4 Contravention

In the event of a contravention, the owner must report to the Director within twenty-four (24) hours that includes the information of the possible environmental impacts and the initial actions taken. Within seven (7) days of reporting the contravention, a written report must be submitted containing the following information:

- a description of the contravention,
- explanation of why it occurred,
- summary of all preventative measures and actions taken prior to,
- summary of all measure that were taken to mitigate initial damage and proposed measures to address any remaining problems related to the contravention,
- names, addresses, phone number, responsibilities of all persons responsible for carrying out the works when the contravention occurred,
- proposed preventative measures designed to prevent future contraventions.

3.5 Temporary Crossings

A temporary crossing is defined as a crossing that will remain in place for a maximum of six (6) months. Temporary crossings have different guidelines than other watercourse crossings. Due to the low likelihood of a temporary crossing being installed, those guidelines have been left out of this SOP; information can be found in Section 10 of the *Code of Practice*.

4.0 After Work is Complete

4.1 Record Keeping

Within three (3) months of completion of the works, the owner must compile and retain the following records, these records should be stored within the project file on TownSquare:

- name, address, and phone number of an owner,
- copy of the Plan prepared,
- any as built plan or as constructed plans,
- the time period that the work was carried out in (start and completion dates),
- all photos and videos taken before and after,
- a copy if all certifications and confirmations (of engineer, environmental specialist, engineer technical specialist, owner).

An owner must retain all records for one (1) year after completion of the removal of the watercourse crossing. The owner must be prepared to provide any of the information listed above or any information provided by the QAES to the Director if requested.

4.2 Monitoring

The owner must monitor the watercourse crossing as specified in the Plan.

5.0 Other References and Resources

When working in and around watercourses, additional regulations may be applicable, which may include but are not limited to:

- *The Water Act (provincial)*
- *Canada Water Act (federal)*
- *Water (Ministerial) Regulations (provincial)*
- *Code of Practice for Watercourse Crossings (provincial)*
- *Public Lands Act (provincial)*
- *Fisheries Act (provincial)*
- *Fisheries Act (federal)*
- *Fisheries (Alberta) Act*
- *Wildlife Act (provincial)*
- *Species at Risk Act (federal)*
- *Environmental Protection and Enhancement Act (provincial)*
- *Canadian Environmental Protection Act (federal)*
- *Navigable Waters Protection Act (federal)*
- *Alberta Lands Stewardship Act (provincial)*
- *Migratory Birds Convention Act (federal)*

Appendix A- Plan Created by Professional Engineer or Engineering Technical Specialist

The Plan and work must meet the following standards.

- The environment and ecosystem at the watercourse crossing and (where technically feasible) adjacent to the watercourse crossing must be equal or exceed what existed prior to the work.
- The selection of the crossing site should avoid or minimize disturbance of bed and banks, realignment of the water body, and high gradient areas, unstable slopes, actively eroding banks, and bank seeps or springs.
- The capacity and freeboard of culverts and bridges ensure that:
  - no damage will occur from back-flooding, debris, or ice,
  - the bed, pier, or abutment score will not negatively impact stability or alter the location of the water body,
  - and that fish migration in maintained (does not create a barrier for more than 3 consecutive days at a 1 in 10 year recurrence interval).
- Culverts should be placed at or below the level of the water body bed.
- Work should happen ensuring that the bed and bank adjacent should be protected from bed scour and erosion.
- The existing slope of the bed or water body should be maintained.
- Minimize affecting water quality.
- Measures to avoid harming, destructing, or disturbing fish, fish eggs, fish habitat (e.g. fish spawning and nursery areas).
- The lifespan of the watercourse crossing should not be affected by the upstream and downstream fish migrations.
- The flow of the water body should be maintained at all times through and around the crossing.
- Measures should be taken to minimize the duration and amount of disturbance to bed and banks of the water body.
- Measures should be taken to prevent contaminating the waters of deleterious or toxic substances to fish and other aquatic organisms.
- Measures should be taken to prevent transferring biota that is not native.
- Measures should be taken to prevent erosion and sedimentation, including temporary erosion control measures.
- Measures should be taken to permanently stabilize all disturbed areas.
- Debris disposal, cleanup, initial stabilization must be part of the works.

The person compiling the Plan must certify in writing that the written specifications meet the standards above. Plans shall be prepared by a professional engineer or an engineering technical specialist and contains the stamp, certification, and signature of the person. The written specifications given by the person must:

- meet the requirements listed above,
- include any specifications and recommendations of a QAES,
- include design specifications:

  - map, diagram, or air photo with watercourse crossing location, quarter section boundaries, legal description, water body name, and UTM coordinates,
  - the dimensions of the watercourse crossing in metres and description of any other structure that is part of the watercourse crossing (length, width, diameter (culvert)),
  - number of spans in the bridge,
  - piers, abutments, other features part of the crossing, shown through the width of the active floodplain of the water body,
  - height of crossing measured from stream bed to top of crossing,
  - all profile and cross-sectional drawings,
- add any hydraulic, hydrologic, hydrogeologic analysis performed, and
- any other descriptions deemed appropriate.

In addition, the Plan contains or incorporates the following.

- Outline of contingency measures to be taken if adverse conditions arise, delays, and that consider any RAP.
- Specification of the monitoring measures that will be needed during the anticipated life of the watercourse crossing.
- The type of crossing chosen (for new or replacement watercourse crossing construction) in accordance with the table below and justification:

Water Body Class	Type of Crossing Preference
Class B	1. Type 1 - single span bridge, single span pipeline bridge, or other similar structure that does not have abutments that are places on or within the bed or active channel of the water body 2. Type 2 by isolating construction (if Type 1 cannot be used and that the Type 2 meets the requirements) - open bottom culvert, single or multi-span bridge with abutments or piers or similar structures that are places on or within the bed or active channel of the water body
Class C	1. Type 1 - single span bridge, single span pipeline bridge, or other similar structure that does not have abutments that are places on or within the bed or active channel of the water body 2. Type 2 by isolating construction (if Type 1 cannot be used and that the Type 2 meets the requirements) - open bottom culvert, single or multi-span bridge with abutments or piers or similar structures that are places on or within the bed or active channel of the water body 3. Type 3 or 4 by isolating construction (if Type 2 can't be used and that the Type 3 or 4 meets the requirements) – round, arch, or box culvert, or similar structure on or within the bed, ford or low-level crossing, or any similar structures at or below the level of the bed

Table 3: Crossing Preference for New Watercourse Crossings or the Replacement of Existing Crossings

- How the Plan meets the following conditions for carrying out works (applies to all crossings, except Type 1):

- if water is flowing work must not restrict by more than 2/3 of width,
- if excavating:
  - backfill must be same quality and graduation that was removed,
  - when width of water body is less than 15 m, excavated material must be removed and stored at a location out of the water body,
  - when width of water body is 15 m or more, excavated material must be stockpiled in a manner that avoids area of highest water velocity, and does not windrow the material across the channel,
- when isolating location of works:
  - isolate location of work from flowing water in the water body, and eliminates the flow of surface water in construction site,
  - berms, coffer dams, or other isolation structures used in a works within a flowing watercourse are to be:
    - constructed of non-erodible material, protected from erosion,
    - removed completely upon completion of works,
  - if entire flow is diverted, it must be returned to water body downstream of site,
  - if ice is present and water is diverted, water must be returned downstream under the ice,
  - silt fences may be used when there is low flow and where appropriate,
  - during works, any fish within isolated portion are to be removed (without harm or destruction) to an area of water body immediately adjacent,
  - during RAP, isolation methods that block entire width must not be in place for longer than three (3) consecutive days, unless fish migration is accommodated,
  - outside of RAP, isolation measures must not be in place for longer than fourteen (14) consecutive days, unless fish migration is accommodated,
  - any water entering an intake of a bypass system must pass through a screen with openings 2.54 mm or smaller and at a velocity that does not result in the entrainment and entrapment of fish or fry,
  - any accumulation of silt and sediment resulting from the works in the isolation area must be removed to an upland site before flow is restored,
  - water removed from isolation area, must be discharged so that no suspended solids are introduced,
- Watercourse crossing conditions:
  - Type 1 crossings:
    - No alteration of the active channel is allowed besides minor disturbances associated with construction,
  - Type 2 crossings:
    - Width of the active channel should not be significantly narrowed,
  - Type 4 crossings:
    - Where granular material or rock is used it must be clean and without silt or fine materials.

The Director must be notified if an aspect of the Plan changes that alters the information submitted in the Notice.