Burleigh Falls Dam Reconstruction

DIA Section 8.0 Mitigation Measures

General

1. Inform the Departmental Representative and the PCA Environmental Authority (Environmental Assessment Officer), regarding any changes to project plans and/or scheduling. Any changes not assessed under this DIA will require approval from PCA and may require further mitigation measures.
2. Contractor is required to submit an Specific Site Environmental Management Plan (SSEMP) to the Department Representative and Parks Canada that outlines all the measures to be implemented by the contractor on the project site to eliminate or reduce environmental effects and address mitigation measures outlined in this DIA. In order to allow for the timely commencement of project activities, the SSEMP can be submitted as separate components as project details become available. The SSEMP, or its components, will be submitted in writing prior to implementation of project activities and must be accepted by Parks Canada and the Departmental Representative.
3. It is recommended that an environmental professional(s) prepare the SSEMP or its component plans incorporating guidance found in PCA's Environmental Standards and Guidelines - Ontario Waterways (2017). The SSEMP will detail frequency of monitoring and list high-risk construction activities where an environmental professional must be onsite. Monitoring and testing should be adaptable to changing site conditions and will capture any event/incident for the length and scope of that event.
4. As per the Historic Canal Regulations applicable to lands administered by the Trent-Severn Waterway National Historic Site of Canada, a permit signed by Parks Canada's Ontario Waterways Director will be required to authorize the project work prior to commencement of the project.
5. Parks Canada's Environmental Authority (EA), Trent-Severn Waterway will outline all the prescribed mitigation measures, including those found in BMPs, in a construction start-up meeting with the project manager and the contractor, to ensure that all on-site personnel are aware of these mitigation measures.
6. The contractor is to ensure that all on-site personnel are aware of, and comply with the prescribed mitigation measures within this DIA.
7. Should conditions at the work site indicate that there are unforeseen negative impacts to fish, wildlife, cultural or visitor experience resources, all works shall cease until the problem has been corrected and/or any required input can be obtained by Parks Canada or other relevant authorities. The Trent-Severn Waterway has the right to require that work be altered or ceased immediately.
8. All materials and equipment used for the purpose of site preparation and project completion shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum productions, debris etc.) from entering the water. Ensure measures are in place to minimize impacts of accidental spills.
9. Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads.
10. All machinery and equipment shall be clean, free of leaks, in optimal working condition.

11. Use well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc.; machines shall not be left to unnecessarily idle in order to avoid emissions.
12. Vehicle and equipment re-fueling and/or maintenance shall be conducted off of slopes and away from the water at a recommended distance of 30m, if possible. If not possible, fuelling sites will be as per Environmental Management Plan and mitigations to prevent substances from entering the water course applied.
13. A designated re-fueling depot will minimize the potential for extensive impacts at the site due to accidental releases of substances; proper spill management equipment shall be in place for fueling.
14. Drip trays shall be placed under fuel-powered equipment.
15. Only the working part of a machine is to enter the water; any part of a machine or equipment entering the water shall be free of fluid leaks and externally degreased to prevent any deleterious substance from entering the water. Complete the in-water activity as quickly as possible to minimize the time equipment is in the water; do not leave equipment in water during breaks in work activity.
16. There shall be no discharge of chemicals and cleaning agents in or near aquatic habitats; all such substances shall be disposed of at a facility licensed to receive them.
17. All land-based grinding and welding activities must be conducted in a manner as to prevent release of weld rods, metal chips, or any other debris into adjacent surface water. When possible, undertake grinding, welding, and similar activities indoors or off Site and comply with health and safety, technical, and waste management specifications.
18. No tools, equipment, temporary structures or parts thereof, used or maintained for the purpose of this project, shall be permitted to remain at the site after completion of the project.
19. Spill control and emergency plans will be in place prior to initiation of construction. A spills kit will be maintained on site and the contractor will ensure that adequate additional resources are available. Spills shall be reported as soon as possible to the Parks Canada Project Manager. The Ontario Ministry of Environment and Climate Change Spills Action Center, (1-800-268-6060) shall be notified, if required.
20. In the event of a spill, remediation will be conducted immediately contain and clean up in accordance with federal regulatory requirements and to the satisfaction of Parks Canada. Documentation of remediation, testing and results will be provided to Parks Canada.

<u>Erosion and sediment control</u>

21. Mandatory submission of an Erosion and Sediment Control Plan, as part of the Environmental Management Plan, must be prepared and submitted to the Departmental Representative and accepted by Parks Canada. The focus of the SSEMP will be to reduce the amount of sediment laden water produced. A focus on separating offsite and infiltrating water into the construction site from construction activities and sediment sources. The document will demonstrate:
    - A focus on erosion control primarily and sediment control secondary;
    - Erosion and sediment controls will be tailored to the type of sediment found onsite (e.g. if clay is present, additional controls are necessary).

- The area to be controlled. In addition to the construction site, it is necessary to identify adjacent areas that could be negatively impacted by construction activities;
- Drainage areas and patterns based on pre-construction topography and construction design;
- How clean storm run-on will be diverted around the site and away from exposed areas;
- Channels that are designed and constructed to the necessary design discharge;
- Temporary and permanent erosion control needs for all drainage channels;
- Consideration of project schedule in selecting, designing and laying out environmental controls;
- Consideration of seasonal requirements; select and design controls and practices for controlling erosion and sedimentation including shutdown periods;
- Consideration for particles size present in the sediment, which is key to selecting the appropriate sediment treatment option(s).

22. The size of particles present in the sediment is a key consideration for selecting the appropriate sediment treatment option(s):
    - If the sediment consists primarily of gravel or sand, which are relatively large particles, a single treatment using a more basic technology, such as a sediment trap or sediment bag, may be adequate.
    - If the sediment consists of silt and/or clay or concrete fines, which are relatively small particles, the effluent will most likely need a more advanced technology, such as a filter press or chemical treatment with anionic flocculent and a filtration method.
    - If the sediment consists of a large spectrum of particle sizes, the water may need primary treatment to remove larger particles, followed by secondary treatment to remove finer particles.
23. Erosion and sediment control measures shall be implemented prior to work and maintained during the work phase, to prevent entry of sediment into the water where site access or other activities cause exposed soil.
24. All erosion and sediment control measures shall be inspected daily to ensure they are functioning properly and are maintained and/or upgraded as required to prevent entry of sediment into the water.
25. Contingency planning is necessary in the event that erosion and sediment control measures are not functioning properly and need to be adjusted, improved or enhanced.
26. Erosion and sediment control measures shall be left in place until all areas of the work site have been stabilized. Erosion and Sediment controls shall not be removed without acceptance from PCA.
27. Sediment control measures and exclusion fencing must be removed in a way that prevents the escape or re-suspension of sediments.
28. Environmental protection measures shall be checked after each extreme weather event.

29. Any stockpiled materials shall be stored and stabilized a safe distance away from any watercourse, drainage course or swales to prevent erosion and subsequent entry into the water body OR removed from the site, in accordance with all federal, municipal and provincial regulations.
30. Upon completion of the work all debris shall be completely removed and the area restored to its original state or better. Repair all damages to property due to project activities.
31. The contractor will maintain a standby supply of pre-fabricated sediment fence barriers, or an equivalent ready-to install sediment control devices.

Fish & Aquatic Habitat

32. Construction works shall comply with any requirements specified by the Department of Fisheries and Oceans Canada *Fisheries Act* Authorization issued for the Project.
33. Adhere to Site-specific scheduling restrictions for the protection of fish and fish habitat. All in-water work should be started after July 1 and be completed before March 15. Should in-water work be required outside of this window, additional mitigation measures may be required based.
34. Work outside of the approved window (i.e., work conducted between March 15 and June 30, inclusive) must be approved by the Departmental Representative and PCA prior to work occurring and may not be granted if conditions do not allow it.
35. Monitor water quality for unacceptable suspended sediment levels during in water activities.
36. Should conditions at the work site indicate that there are negative impacts to fish or their habitat, all work shall cease until the problem has been corrected and Parks Canada EA staff has been consulted.
37. CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life will form the baseline for water and streambed quality monitoring and assessment.
38. Activities causing turbidity or release of sediment will comply with the CCME Guidelines on Total Particulate Matter (see http://ceqg-rcqe.ccme.ca/download/en/217).
39. A TSS > 75 mg/L (25 NTU) is the threshold for reporting of a release of sediment-laden water outside of turbidity controls or at the point of discharge for pumping. The threshold is reduced to TSS > 5 mg/L (2 NTU) during in-water restriction window (March 15 to June 30) and the fall spawning period for Stoney Lake (October 15 to March 15). These thresholds may be adjusted in the event that a site specific total suspended solids (TSS) – turbidity (NTU) relationship is established in the field
40. In the case of in water activity during the fall spawning period for Stony Lake (October 15 to March 15), for any exceedance of 5 mg/L (2 NTU) above background 100m downstream (Highway 28 bridge), work should stop and methods should be reviewed to determine appropriate mitigations to manage TSS. This threshold may be adjusted in the event that a site specific total suspended solids (TSS) – turbidity (NTU) relationship is established in the field
41. The Contractor shall be prepared, where the full implementation of ESG controls for in water work will not allow them to meet discharge criteria to, at the Contractor's own cost, alter construction methodology, slow down, and reduce construction intensity to meet specified discharge criteria through the completion of the work.

42. The contractor will provide a marine grade turbidity curtain - US DOT Type 2 - across all areas where sediments can enter the watercourse. Turbidity curtains are to be anchored or weighted down along its length to form a continuous seal on the river bed with adequate flotation at water surface to prevent over spills of turbid water.
43. Sediment/turbidity curtains shall be deployed in a manner – e.g. moved in a direction from close to shore/structures outward – that prevent entrapment of fish inside the curtain.
44. All work is to be completed in the dry. A de-watering Plan shall be submitted, as part of an SSEMP, to Parks Canada for review and acceptance prior to any dewatering.
45. Cofferdam de-watering systems and sediment treatment areas must be designed to have sufficient capacity to remove fine sediments from water prior to being released; flocculants for settling fines may be necessary due to the nature of particulates.
46. Sediment control measures shall be in place during any in-water work to control turbidity levels. Sediment curtains, or other appropriate measures, shall be implemented prior to any in-water work that may result in sedimentation. These shall remain in place until all suspended sediments have settled.
47. Turbidity curtains should not be used as a settling area for dewatering activities. Clean water must be returned to the system. In the event that turbidity remains high after treatment, alternative measure will be required such as cleaning settling areas within curtains– i.e. sediment removed from the bottom – prior to curtain removal.
48. For cofferdams, an engineered design rather than loose aggregate rock berm-style is preferred, to minimize in-water disturbance while they are placed and particularly, while they are removed.
49. No acid-generating rock (containing sulphides) or limestone based rock shall be used for cofferdams.
50. Flow dissipaters and/or filter bags, or equivalent, shall be placed at water discharge points to prevent erosion and sediment release.
51. For de-watering, fish screens must comply with *DFO Freshwater Intake End-of-Pipe Fish Screen Guidelines* when pumping in fish-bearing water to prevent impingement or entrainment of fish;
52. Any fish found within the dewatered cofferdam areas will be removed and placed downstream if found in the downstream cofferdam area and upstream if found upstream:
    - PCA's EA shall be advised 24 hours prior to fish rescue;
    - A record of all fish removal efforts that are conducted with the numbers and species of fish removed, number of mortalities and relocation location.
    - Minimize the length of time fish are out of the water;
    - Use appropriate equipment to remove any stranded fish in the dewatered area. As water levels drop in the work area monitor the deeper pool areas where fish are congregating. If safe to do so, seine nets or dip nets can be operated by field staff to remove the fish.
    - Contact PCA EA staff should there be any issues with fish removal;
    - Any fish found within the dewatered cofferdam areas will be documented by species, counted and removed and placed downstream if found in the downstream cofferdam and upstream if found upstream;

- Round Gobies or other invasive species found during dewatering activities shall be euthanized humanely and not returned to the water system; this shall be reported to PCA.

53. In-water work shall be performed in a manner that minimizes the disturbance of the watercourse bottom and dispersion of sediment.
54. A geotextile or other material should be placed between in water granular and surface granular required for vehicles, in order to prevent contamination of in water material during removal. Removal should be formed in layers, removing contaminated granular first and in water material secondly.
55. Only clean material free of fine particulate matter shall be placed in or near water where it has been previously planned and authorized.

Aquatic Invasive Species

56. To reduce the risk of introducing invasive species, all equipment must be thoroughly cleaned prior to coming to the site. Any machinery that appears to have not been cleaned will not be permitted on site. For additional information or guidance on how to properly clean equipment, see the Clean Equipment Protocol for Industry developed by the Ontario Invasive Plant Council and found here: http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf.
57. Any equipment or vehicles which are to be used in water, should be thoroughly cleaned before and after use of any visible mud, vegetation, mussels, etc.:
    - Vessels/equipment should be drained of standing water;
    - Vessels/equipment should ideally be cleaned with hot water (>50 °C) at high pressure water (>250 psi);
    - Vessels/equipment should be dried for 2 – 7 days in sunlight before transported between waterbodies;
    - Cleaning of vessels/equipment should be conducted away from waterbodies at a recommended distance of at least 30m from the shoreline.
58. Mud, dirt and vegetation should be cleaned from clothing and footwear prior to entering the work site, and prior to leaving the work site.
59. Move only weed/contaminate-free materials into non-infested areas. Moving materials from one infested location to another within a particular zone may not cause contamination, but moving materials from infested to non-infested areas could lead to the introduction and spread of invasive plants.
60. If removal of invasive species occurs, individuals will be disposed of appropriately, offsite to ensure no further propagation.
61. Should an invasive species be encountered (or at least suspected) not identified in this DIA, a photo and report of the specimen should be sent to Parks Canada's EA staff.

Water Quality

62. Monitoring of the downstream environment shall be conducted after cofferdam installation and should conditions indicate that there are negative impacts to water quality, flows may need to be increased/adjusted accordingly.

63. Monitoring of areas downstream include the body of water contained by the constructed access road. In the period from May to October, temperature and dissolved oxygen levels require monitoring to ensure water quality is not degraded due to lack of flow. Should conditions indicate that there are negative impacts to water quality and fish, further mitigation will be required.
64. Ontario Drinking Water Quality Guidelines cannot be exceeded (beyond parameters that currently exist) due to project activities.
65. In the event that the WQG for drinking water quality has been exceeded downstream of the work area, the work should be stopped and the work site and methods reviewed to determine appropriate mitigation measures to reduces TSS. Once the mitigations are implemented, work can resume.
66. The pumping system to transfer dewatering effluent from the work area to outside will need to be situated in such a way that it does not re-suspend sediment from the bed within the work area or otherwise pump water from which particulates have not been allowed to settle. The pumping system may need a pre-filtration step to further minimize the transfer of suspended sediments.
67. In the event of an unplanned sediment release or other spill, the Water Treatment Plant shall be notified immediately.

<u>Vegetation removal/restoration</u>

68. Identify and keep work activities confined to planned areas and within previously disturbed areas;
69. Where practical, the branches of the large trees should be trimmed back as the first option rather than cutting the entire tree.
70. Disturbance of vegetation along the shoreline must be limited to what is required for allowing reasonable completion of the project with minimal environmental impact; if necessary, riparian vegetation will be removed last and kept to a minimum.
71. Phase vegetation removal to reflect construction activity (i.e. removal for access only for construction of cofferdam).
72. Local soil will be stockpiled and re-used as opposed to bringing in soil from other locales.
73. De-compact subsoil which has been compacted from the movement of construction equipment and project staging.
74. All disturbed areas of the work site shall be stabilized immediately with erosion protection. All exposed areas should be covered with erosion control blankets or other measures such as mulch to keep the soil in place and prevent erosion until vegetated in the spring.
75. Restore the site and to a specific future condition; ensure re-planting success.
76. Native grasses, shrubs, etc. should be planted to match existing species growing on the sites.
77. Seed purchased commercially should have a label that states the following:
    - Species;
    - Purity: Most seed should be no less than 75% pure and preferably over 85% pure. The rest is inert matter, or other seed;
    - Weed seed content: The tag should state NO invasive plants are present. Only certified weed-free seed should be used; and

- Germination of desired seed: Germination generally should not be less than 50% for most species, although some shrubs and forbs will have lower percentages.

Wildlife

78. The SSEMP must demonstrate procedures for avoiding disturbance/harm to wildlife.
79. If additional site clearing is required, it should be conducted after August 31. If this is not feasible, then the site must be inspected by a biologist prior to clearing, to check for the presence of nests.
80. On a daily basis, an inspection or "sweep" of the work area shall be performed prior to commencement of project works and activities to ensure wildlife are not present in the work area (include in site checklist).
81. Field information regarding incidental encounters with wildlife (non-SAR wildlife) shall be compiled and reported.
82. For incidental encounters, the following information should be recorded in the field and reported within 24 hours:
    - Locations, dates and time of day where the species were encountered;
    - Names of species encountered;
    - Photographs of the species, if taken;
    - Condition of animal.
83. If injured/dead wildlife are encountered report to PCA immediately. PCA may require retrieval and storage on ice of carcass for laboratory testing
84. All vehicles and equipment used by project personnel will follow any construction zone speed limits to reduce the risk of hitting wildlife, as enforced by the site supervisor.
85. Work areas will be kept clean and free of potential hazards to wildlife such as wire, cable, tubing, plastic, antifreeze or other materials that wildlife may eat or become entangled in.
86. Waste will be stored, handled, and transported in accordance with the Waste Management Plan, including storage of all solid waste in sealed, bear-proof containers.
87. Feeding of wildlife is prohibited.

Species at Risk

88. Species at risk training shall be provided to all employees before they begin work on site (materials can be part of the Environmental Protection Plan). Employees must be able to identify potential species at risk and know the proper procedures to follow when they encounter a species at risk.
89. The SSEMP must demonstrate procedures for avoiding disturbance/harm to wildlife, including turtle species. As turtles have nested in the area, mitigations either be setting up exclusion fencing to prevent turtles from entering the areas prior to construction, and monitoring and reporting to PCA, any nesting events. And/or having a rescue plan in place in the event nests are uncovered.
90. Sediment/silt fencing employed shall not have a netted backing.
91. Should any suspected species at risk – snakes or turtles and/or eggs be encountered during construction - project staging, implementation or demobilization - work would halt immediately and Parks Environmental Assessment Staff would be notified. Stop work immediately and contact

EA staff on how to proceed. Additional measures to avoid impacts may be required before work can restart. Stand back and allow the animal to leave the site.

92. If a turtle is found within the project limits it should be left alone to leave the area if possible, or the animal should be gently placed outside of the construction site. Typically, animals should be released not more than 250m from the capture site. Release sites should be near water with vegetation cover for shelter.
93. Synthetic plastic Erosion Control Blankets/Mats should not be utilized, particularly during nesting season, as they pose as an entrapment hazard to turtles. Fibre-based bio-degradable Erosion Control Blankets/Mats are only to be utilized.
94. Construction access and work areas are to be confined to the minimum area required for construction activities and such areas are to be defined in the field using appropriately installed protective fencing or other suitable barriers. Minimize the disturbed area; clearly mark the work space.
95. If milkweed has grown by project initiation, then as a precautionary measure, plants should be pulled and moved to non-affected areas where milkweed is growing, if there is the potential for larvae and eggs to be present on the affected plants.
96. The active breeding/nesting season for Barn Swallow is generally considered to begin May 1st. Starting from this date, carry out nest "sweeps" twice daily to observe whether bird nest building activity is occurring in the work area under the dam deck. Any observations of nests or nest building activity must be immediately reported to PCA. Should nesting activity be observed, PCA will relay whether deterrents are needed. Deterrent materials, which could include commercially available "bird scare tape" or "flash tape", should be on hand for May 1st in case quick deployment is required.
97. If Barn Swallow nesting occurs after Project start-up, PCA shall be notified. PCA will assess potential impact to the species. Additional measures to avoid impacts may be required before work can restart.
98. Measures to prevent nesting on the existing dam that is to be demolished during the window may include use of exclusion netting, which will require regular (twice a day) monitoring to ensure the exclusion measures are successful. Any observations of nests or nest building activity must be immediately reported to PCA.
99. Nesting attempts in the portion of the structure to be demolished will be removed. Any nest greater than 50% complete, as determined by a qualified biologist, will be considered a functioning nest and cannot be destroyed.
100. Fuelling areas should be located as far away from identified SAR habitat as reasonably possible.
101. Park on roads or disturbed areas only.

<u>Noise /Air</u>

102. Adhere to local noise by-laws. Notify residents of planned activities that may cause disturbance and schedule them to avoid sensitive time periods.
103. Monitor and mitigate public complaints by keeping a record of complaints and addressing any issues raised by the public.

104. All on-site vehicles are expected to have a Drive Clean Emissions Report in compliance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O. 1990, c. E.19. EA Officers may stop a vehicle if they believe the vehicle is emitting excessive exhaust smoke or suspect that emission control equipment has been tampered with or removed.
105. Fugitive dust levels, measured as total suspended particulate at the property boundary shall not exceed the Ontario Ambient Air Quality Criteria of 120 micrograms per cubic metre (µg/m3) over 24 hours or 60 µg/m3 averaged over a year. For measuring methods, refer to the Canada-wide Standards for Particulate Matter and Ozone Ambient Air Monitoring Protocol.
106. Use well-maintained heavy equipment and machinery, fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc.
107. Machines shall not be left to unnecessarily idle in order to avoid emissions.
108. All construction site entrances from public roads shall be stabilized using temporary tracking pads or mud mats. The location(s) and type(s) of vehicle tracking controls and mud mats shall be identified in the SSEMP. The pad or mud mats should be designed for the full width of the entrance or a minimum width of 3.6 m wide and the minimum pad/mat length of 5m.
109. Tracking controls and mud mats must be regularly maintained, cleaned and/or replaced in order to reduce mud tracking and associated dust.
110. The stabilized site entrance should be designed in combination with other erosion and sediment control measures and in combination with vehicle wash facilities (as required).

<u>Cultural Resources</u>

111. Inform PCA (Ontario Waterways) regarding any changes to project plans and/or scheduling. Any changes not assessed under this Impact Analysis will require approval from PCA and may require further mitigation measures.
112. Main vehicular access routes and staging areas will be restricted to roadways and parking lots. If this is not possible, the use of protective covering such as geotextile protective mats with a wood chip lift or granular "A" gravel is required. All protective covering must be removed following construction and the area restored to pre-construction state. Excavation is not permitted during installation or removal of protective covering.
113. Should construction impacts extend beyond the area assessed in this report, further archaeological assessment of those areas should precede any construction activity.
114. If unrecorded archaeological resources (i.e. structural remains and/or artifact concentrations) or any other cultural resource be encountered, work shall cease until the item can be reviewed by a PCA or PCA appointed archaeologist, the situation reviewed and direction for mitigation measures is provided to the Environmental Assessment Coordinator and Project Manager. Ensure that all exposed underwater cultural materials are kept submerged and/or wet while waiting for direction.

<u>Waste Disposal</u>

115. Recyclable material and waste shall be removed from the site, in accordance with all federal, provincial and municipal regulations, to disposal facilities licensed to receive them;
116. Waste generated will be disposed according to regulations (i.e., O. Reg. 102/94 and O. Reg. 558/00, R.R.O. 1990, 347).

Concrete/Grout

117. Washing of concrete pouring, grouting, and sealing tools and equipment in any body of water is prohibited. All concrete pouring, grouting and sealing equipment must be washed in a wash-down area.

118. Concrete leachate is alkaline and highly toxic to fish and aquatic life. Measures must be taken to prevent any incidence of concrete or concrete leachate from entering the watercourse. Maintain complete isolation of all cast-in-place concrete and grouting from fish-bearing waters for a minimum of 48 hours if ambient air temperature is above 0°C and for a minimum of 72 hours if ambient air temperature is below 0°C or until significantly cured to allow the pH to reach neutral levels.

119. Ensure that all works involving the use of concrete will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any watercourse.

120. Water pH monitoring must be conducted by a Qualified Professional using a digital pH meter with an accuracy of +/- 0.2 pH units.

121. At the discharge point into the watercourse, pH will be maintained between 6.5 and 9.0. Water with pH > 9 cannot be released directly back into the watercourse, but must be treated prior to release. Aqueous substances with a pH ≥ 12.5 are corrosive and a hazardous waste under Ontario Regulation 347 of the Environmental Protection Act and wastewater in this condition must be either removed from site or treated before it is released.

122. Additional Environmental Mitigation Measures for Placement of tremie Concrete or concrete pours when forms are not isolated from moving water:
    - Ensure concrete forms are tight and no flow is occurring;
    - Isolate area with curtain or impermeable material specified for concrete particulates; ensure fish exclusion is followed;
    - Isolated area should be the minimum size required to complete task;
    - For tremie pours, CO_2 system must be installed and operating along the entire length of the isolated area; the tank shall be used to release carbon dioxide gas into an affected area to neutralize pH levels. Ensure sufficiently sized tanks for the concrete volumes used;
    - Workers shall be trained in the use of the system;
    - Use of neutralizing acids in the waterway is not permitted;
    - pH monitoring conducted downstream of the work area and adjacent to the pH treatment area.

123. Corrective measures shall be implemented if downstream pH has changed more than 1.0 pH unit from background, measured to an accuracy of +/- 0.2 pH units, or is below 6.5 or above 9.0 pH units.

124. In the event of a release of concrete or grout, Parks Canada and the Ontario Spill Action Centre (1-800-268-6060) shall be notified; remediation will be conducted immediately contain and clean up in accordance with provincial and federal regulatory requirements AND to the satisfaction of Parks Canada; documentation of remediation, testing and results will be provided to Parks Canada.

125. Wash equipment away from water and provide containment facilities for the wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment.

126. All wash-down water is to be contained and the containment structure should be emptied/ changed once 50% full.
127. Filter fabric material will consider the grain size characteristics of concrete sediment and shall be designed around the principals of maintaining sufficient hydraulic flow and prevention of particle movement through the material.
128. Concrete debris shall be placed into an enclosed container daily, or more frequently if required.
129. The type(s) of grouts and sealants proposed for use shall be identified in the SSEMP.
130. Isolate the work site involving grouting to the extent possible. The isolated work site should be sufficiently large to contain water run-off, residues and any waste material.

Dam/Sluice Commissioning

131. Mandatory submission of a commissioning plan for each phase that is acceptable to Parks Canada. The plan must outline the sequence of steps required to make the sluices operational and in a manner that reduces negative impact on water quality. The plan must outline monitoring measures for commissioning and contingency, in the event that it must occur after March 15.
132. During re-flooding and commissioning of the new sluice, if elevated turbidity beyond 8 NTU from background levels for a short-term exposure (e.g., 24-h period) is observed Parks Canada will assess potential impact to the aquatic environment. A determination will be made by Parks Canada as to whether subsequent flushing is permitted. If not, additional mitigation measures may be required.
133. The area inside of the cofferdams, if necessary, will be cleaned or alternately capped with clean rock, in order to mitigate turbidity from the former construction area as it is re-flooded.
134. Prior to removal of the cofferdam and turbidity curtains the dried work area shall be carefully re-watered with the use of water pumps to minimize turbidity and impacts to any restored substrate (i.e., sedimentation, and substrate alteration and movement).
135. The cofferdam and turbidity curtains shall be carefully removed from the waterbody so as to avoid disturbance of the bed and banks. Removal shall begin at the downstream end of a cofferdam in flowing water and adhere to the Contractor's Approved Cofferdam Removal Plan.
136. The bed of the waterway is to be cleaned of any unused construction materials/debris and restored to an original state and grade upon completion of work within the waterway.
137. Turbidity curtains must remain in place while removing the cofferdam.
138. Allow time for sediment to settle, and when feasible remove sediment, prior to removal of turbidity curtains and ensure target concentrations of suspended solids (as confirmed through consultation with MECP) are met.
139. Silt or debris that has accumulated around the temporary cofferdams and turbidity curtains shall be removed prior to their withdrawal.
140. Commissioning may require partial re-watering and pumping through the treatment system.

Dam Demolition

141. As the dam will be demolished in water after the new dam is constructed, submission of a demolition plan will be required at least two month(s) prior to the planned activity. Following demolition, visual underwater inspection will be necessary to ensure concrete is not causing an obstruction for the new dam and that no undesirable materials or metals are left behind.

142. Restore substrate to pre-existing condition or better with respect to fish habitat. Remove the existing dam structure and associated infrastructure to create 4,279 m² of fish habitat with substrate offering cover and feeding areas for fish, such as interstitial spaces and crevices, upstream of the proposed dam within the existing dam footprint.

143. Dam removal works should adhere to the project timing constraints for the protection of Barn Swallows currently using or potentially wanting to use the dam for nesting, dam removal works should be completed from September 1 to April 30 (avoiding the May 1 to August 31 window).

144. In the case that dam removal activities are to occur during the Barn Swallow nesting window, it is the Contractors responsibility to ensure that nesting does not occur on the dam (see SAR – Barn Swallow above).

145. Prior to the commencement of dam removal activities, the dam shall be thoroughly inspected for bird nests. Photo shall be taken of any nests and/or signs of former nests and findings shall be reported. Findings should be discussed with MNRF / ECCC as applicable to determine the need for compensation.

146. If unanticipated material or construction is discovered during work, the Project Lead should stop the work, take photos, and consult with CRM immediately for advice on how to proceed.

<u>Floods/Extreme or inclement weather/Ice formation</u>

147. A project contingency and emergency response plan shall be developed and include planning for spring freshet, including dam breaches and flooding. The first draft shall be submitted to PCA no later than 15 January 2021. Such a plan will include, but will not be limited to, details such as:
    - Removal of all equipment, fuels, chemicals and materials;
    - Washing down of construction works and treatment through the contact water treatment process; and
    - Removal of cofferdam (or sections) parallel to the existing dam.

148. In the event of a pending cofferdam breach/flood, all vehicles, pumps, generators, fuel tanks, tools, equipment, temporary structures or parts thereof used for the project, shall be removed from within and from on top of, the cofferdams and outside identified potential flood zones at each site.

149. Undertake construction under normal weather conditions, to the extent possible, and design the project worksite to withstand variable weather conditions.

150. Apply wet weather restrictions on construction activities to reduce surface run-off from exposed work areas and to minimize the risk of inundation.

151. The work area shall be stabilized against the impacts of high flow/heavy rainfall events at the end of each workday.

152. Work should be suspended and the work area stabilized when there is a high probability of a heavy rainfall event.