



# Parks Canada Basic Impact Analysis Amendment (Rev – 2)

## Peterborough Canal Earth Dams Rehabilitation, Trent-Severn Waterway City of Peterborough



**September 2019**



## Appendix 3 Mitigation Measures

\*Note: Sept 2019 Rev 2 Amendments to the Peterborough Canada Earth Dam Rehab BIA is highlighted in red font.

To mitigate for the potential harmful effects of the project, the following measures shall be effectively implemented, as applicable to the scope of the present project phase:

### General

1. Inform the Departmental Representative and PCA's Environmental Authority (EA) (Environmental Officer, TSW in Peterborough) regarding any changes to project plans and/or scheduling. Any changes not assessed under this Basic Impact Assessment (BIA) will require approval from PCA and may require further mitigation measures.
2. Contractor is required to submit an Environmental Management Plan (EMP) to the Departmental Representative and Parks Canada which outlines all measures to be implemented by the contractor on the project site to eliminate or reduce environmental effects and address mitigation measures outlined in this BIA. In order to allow for the timely commencement of project activities, the EMP can be submitted as separate components as project details become available. The EMP, 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) (EP) prepare the EMP or its component plans in accordance with PCA's Environmental Standards and Guidelines - Ontario Waterways (2017). The EMP 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. 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.
5. The contractor is to ensure that all on-site personnel are aware of, and comply with the prescribed mitigation measures within this BIA and any measures outlined within subsequent amendments to this BIA.
6. 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.
7. 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.



## **Spills Management**

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 30 m if possible. If not possible this, 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. **Drip trays shall be sized appropriately to encompass the outer perimeter of the equipment/machinery, providing adequate spacing for refueling activities.**
15. **All compressed air/fuel tanks shall be stored off to the side, away from on-going activity, and be adequately protected with an impact-protection barrier.**
16. **Any Above-ground Storage Tanks (ASTs) or other fuel storage tanks on site, are to be stored in compliance with Federal and Provincial storage tank requirements. Specifically, ASTs are to be placed within a secondary containment system of adequate holding capacity, based on the volume of the AST. See:**  
<https://www.canada.ca/en/environment-climatechange/services/canadian-environmental-protection-act-registry/publications/codepractice-storage-tank-systems/part-3.html>
17. 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.
18. **The use of biodegradable hydraulic fluids for machinery that will be working in or around the river is preferred.**
19. **Only washed and clean material free of fine particulate matter shall be placed in or near the water where it has been previously planned and authorized.**



20. 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.
21. 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.
22. 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.
23. **The Material Safety Data Sheet (MSDS) of any unapproved substances to be utilized onsite (particularly that of substances to be in use in/adjacent to water) shall be provided to PCA EA for review and acceptance. MSDS information of known products to be utilized in/adjacent to water throughout the duration of the project should be incorporated as part of the EMP.**

### **Vegetation**

24. Phase vegetation removal to reflect construction activity; grubbing (**if permitted as part of the scope**) should not be conducted too far ahead and too large an area to be properly mitigated with Erosion and Sediment controls.
25. **Where it is necessary to remove mature vegetation at any time of year, an inventory of species to be removed, coupled with a replanting plan using native species shall be submitted to PCA staff for approval.**
26. 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.
27. Trees, shrubs and vegetation which are to remain throughout construction should be properly identified and delineated and protected.
28. Where practical, the branches of the large trees should be trimmed back as the first option rather than cutting the entire tree.
29. Only cut trees using tools designed for tree cutting activities (e.g. chainsaw, brush saw).
30. **Whenever possible, vegetation should be trimmed in early spring, late fall or winter. Trimming when the plant is actively growing (i.e. late spring summer and early fall) can further stimulate growth, weakening the plant and making it susceptible to disease.**
31. Prune limbs close to the tree trunk. For a clean cut, make a shallow undercut first, then follow with the top cut. This prevents the limb from peeling bark off the tree as it falls. Do not use an axe for pruning.



32. In the event that the installation of root-protectant fencing is not possible and/or ideal, alternative measures, as approved by PCA, must then be implemented. Such measures must provide a sufficient amount of soil compaction prevention with regards to the highest level of activity to occur within the immediate area of protection.
33. Alternative methodology for soil-compaction prevention may be utilized (ex. blast mats), as reviewed and approved by PCA.
34. Clear vegetation from unstable or erodible banks by hand, and where possible, avoid the use of heavy machinery. Operate machinery on land and in a manner that minimizes disturbance to the banks of the water body.
35. Should any vegetation require chipping/mulching, the after product will be stored onsite for the duration of the project to supplement erosion and sediment control methods.
36. Native grasses, shrubs, etc. should be planted to match existing species growing on the sites. Common milkweed should be actively restored.
37. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
38. Cleared vegetation will be piled and extracted from a designated area, to be identified by PCA staff. Burning of cleared vegetation is not be permitted on site.
39. Ensure appropriate handling procedures are followed for noxious weeds such as Giant Hogweed (*Heracleum mantegazzianum*), Poison Ivy (*Toxicodendron radicans*) or Wild Parsnip (*Pastinaca sativa*).

### Invasive Species

40. To reduce the risk of introducing invasive species, all equipment, clothing and footwear 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](http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf)
41. 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 30 m from the shoreline.



42. Mud, dirt and vegetation should be cleaned from clothing and footwear prior to entering the work site, and prior to leaving the work site.
43. Use weed-free material (i.e. sand, gravel, etc.) for erosion control and stabilization and weed-free seed and confirm that seed mix to be used for revegetation purposes does not (potentially) contain invasive plants.
44. 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.
45. 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.
46. If removal of invasive species occurs, individuals will be disposed of appropriately, offsite to ensure no further propagation.
47. Should an invasive species be encountered (or at least suspected), a photo and report of the specimen should be sent to Parks Canada's EA staff and the **Invading Species Hotline at 1-800-563-7711 or online at EDDMapS Ontario: <https://www.eddmaps.org/ontario/>**

### **Wildlife**

48. Site clearing/commencement of construction should be planned to occur outside of sensitive nesting times - April 1 to 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.
49. The Site Specific EMP must demonstrate procedures for avoiding disturbance/harm to wildlife.
50. If recommended by a qualified person and approved by PCA, exclusion zones or "no go" areas will be established to protect areas with known residences (e.g., hibernacula, dens, nests).
51. If recommended by a qualified person and approved by PCA, conduct "Pre-stressing" activities within a few days prior to the onset of site preparation (vegetation clearing and grubbing) to encourage wildlife to move away from a site.
52. 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).
53. Field information regarding incidental encounters with wildlife (non-SAR wildlife) shall be compiled and reported on a daily basis.



54. For incidental encounters, the following information should be recorded in the field:
  - a. Locations, dates and time of day where the species were encountered;
  - b. Names of species encountered;
  - c. Photographs of the species, if taken;
  - d. Condition of animal.
55. If injured/dead wildlife are encountered report to PCA immediately. PCA may require retrieval and storage on ice of carcass for laboratory testing
56. 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.
57. 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.
58. 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.
59. **Attractants (i.e. food waste) shall be regularly removed from site to further deter the presence of wildlife in the work area.**

#### **Species at Risk**

60. Feeding of wildlife is prohibited.
61. The EMP must detail procedures (e.g. exclusion fencing) for preventing turtle entry/nesting within disturbed project gravels/soils during all stages of project activity.
62. 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. Special emphasis will be made on Blanding's Turtle sightings.
63. Should any suspected species at risk, turtles and/or eggs be encountered during construction - project staging, implementation or demobilization - work in the immediate vicinity of the specimen shall halt immediately and Parks Environmental Assessment Staff shall be notified. The species must not be harmed or harassed. Stand back and allow the animal to leave the site. If the species does not leave or cannot leave the site, the contractor must immediately stop the works and contact the Departmental Representative and PCA's Environmental Assessment Officer (705-761-2390) immediately. Additional measures to avoid impacts may be required before work can restart.
64. Temporary reptile fencing, such as polythene/ woven geotextile secured with timber stakes, or material of a similar nature/function, should be installed completely around gravel stockpiles to prevent turtle nesting in the project area. For guidance on how to plan and install exclusion fencing, refer to the document titled "*Ontario Ministry of Natural Resources and Forestry. April 2016. Best Management Practices for Mitigating the Effects of Roads on Amphibians and Reptile Species at Risk in Ontario.*"



65. Synthetic plastic Erosion Control Blankets/Mats shall 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.
66. If a turtle is found within the limits of the fencing 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. **Contact PCA for guidance.**
67. **Park on roads or disturbed area only.**

### **Fish /Water Quality**

68. **If required**, all in-water work should be started after June 30th and completed before March 15<sup>th</sup>. Should in-water work be required beyond this date, additional mitigation measures may be required based on site specific characteristics. Work beyond March 15<sup>th</sup> must be approved by the Departmental Representative and PCA prior to work occurring, and may not be granted if conditions do not allow it.
69. Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life will form the baseline for water and streambed quality (see <http://ceqg-rcqe.ccme.ca/en/index.html#void>).
70. Ontario Drinking Water Quality Guidelines cannot be exceeded (beyond parameters that currently exist) due to project activities.
71. 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>).
72. Dewatering, demolition and construction is staged such that clean water is pumped back to the system and turbid water is managed through a waste water system.
73. All work should be completed in the dry or behind turbidity curtain. A De-watering/**Water Management** Plan shall be submitted, as part of an EMP, to Parks Canada for review and acceptance prior to any dewatering.
74. **If utilized**, design and construct coffer dams to minimize sediment inputs to the water course; it is preferred that coffer dams not be composed of loose aggregate/granular material. If proposed must be accepted by PCA. Only clean material free of fine particulate matter shall be placed in or near water where it has been previously planned and authorized.
75. All debris on bed (including unused aggregate/concrete rubble) shall be completely removed and area restored to original state upon completion of work.
76. Sediment/turbidity curtains (**if required**) 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.





77. **If dewatering is required**, ensure that there is a fish screen that complies with DFO Freshwater Intake End-of-Pipe Fish Screen Guideline when pumping in fish-bearing water to prevent impingement or entrainment of fish.
78. **The proponent is advised to abide by those mitigation measures and best management practices outlined within Fisheries and Oceans Canada's (DFO's) online guidance materials: Measures to Avoid Causing Harm to Fish and Fish Habitat (<http://www.dfo-mpo.gc.ca/pnwpppe/measures-mesures/measures-mesures-eng.html>).**
79. **Should dewatering/in water work be required**, fish shall be removed from the work area prior to complete dewatering and released alive downstream into the river.
  - Parks Canada's shall be advised 24 hours prior to fish rescue.
  - 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 coffer dam areas will be documented by species, counted and removed and placed downstream if found in the downstream coffer dam and upstream if found upstream.
  - Round gobies (*Neogobius melanostomus*) or other invasive species found during dewatering activities shall be humanely euthanized and not returned to the water system; this shall be reported to Parks Canada.
80. **Salt and other road chemicals should be properly stored in designated areas only, preferably in dry sheds to prevent infiltration of leachate to the water table and surface runoff.**
81. **Accumulated snow that may be contaminated with salt should be disposed of only at approved dumpsites or designated areas.**
82. **Snow containing salt or sand should never be dumped in, or allowed to melt and run off into watercourses.**
83. **Ensure that all construction debris is removed from the canal prior to rewatering. This may involve sweeping and hosing down the bottom of the lock. All wash water is to be collected and treated.**
84. **Monitor water quality for unacceptable suspended sediment levels during in and nearwater activities. Monitoring shall include the full scope and breadth of any incident.**

### **Concrete**

85. 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.



86. Should dewatering be required, 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. Water with a pH  $\geq$  12.5 is considered toxic and treated as a hazardous waste under Ontario Regulation 347 of the *Environmental Protection Act* and wastewater in this condition must be removed from the site.
87. Ensure that all works involving the use of concrete, **cement, mortars, and other Portland cement or lime-containing construction materials (concrete)** will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any watercourse.
88. 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. **Wash-out locations will be identified within the EMP.**
89. In the event of a release of concrete or grout into a water course, 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 regulatory requirements **AND to the satisfaction** of Parks Canada; documentation of remediation, testing and results will be provided to Parks Canada.
90. **In the event of sedimentation or turbidity caused by construction activity, contractor shall stop all work and install additional sediment barriers as necessary to ensure watercourse is protected.**
91. **Concrete debris and dust generated as a result of various concrete work shall be removed in a way that will ensure material does not enter the waterway. All debris including unused aggregate/concrete rubble shall be completely removed and area restored to original state upon completion of work.**
92. **Concrete debris shall be placed into an enclosed container daily, or more frequently if required, in order to ensure that no debris escape or remain at the site.**
93. **Any concrete wash water shall be directed to an isolated/impermeable containment unit and treated to effectively remove all suspended solids, neutralize pH impacted water, and to prevent deleterious substances from entering the watercourse.**
94. Additional Environmental Mitigation Measures for Placement of Tremie Concrete (if applicable to present project scope):
  - 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 or where water comes into contact with the forms, CO<sub>2</sub> 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 amount of water to be treated.
  - Workers shall be trained in the use of the system.
  - Use of neutralizing acids is not permitted unless the system is designed and implemented by a qualified professional.



- pH monitoring shall be conducted inside and outside the containment area.

### **Erosion and Sediment Control**

95. An Erosion and Sediment Control Plan, as part of the Environmental Management Plan, should be prepared by a qualified professional and submitted to the Departmental Representative and accepted by Parks Canada. The plan should focus on separating offsite and infiltrating water into the construction site from construction activities and sediment sources.

96. The document shall specify:

- 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;
- How sediment-laden run-off will be directed to detention or retention facilities on-site. Large drainage areas can produce a significant amount of run-off, resulting in a need for large detention or retention structures;
- 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 (for longer-term projects); select and design controls and practices for controlling erosion and sedimentation including shutdown periods.
- The EMP shall provide plans and mitigation for the installation and removal of any temporary structures (i.e. cofferdams, temporary bridges, etc.).
- The EMP shall include a Traffic Control Plan which shall include measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. This shall also include measures to minimize the amount of mud transported onto paved public roads by vehicles and/or runoff.
- Trees and vegetation that are required to be removed should be clearly identified within the EMP and justification of removal should be made clear.
- The EMP shall include a replantation plan which shall outline the replacement and compensation of trees and vegetation which have been removed/impacted.
- The EMP shall include a Waste Water Management Plan, identifying methods and procedures for management, treatment and discharge of waste waters.

97. 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. The following principles should be considered:

- Diversions to limit run-on water;
- Reduction of erosional forces by surface water velocity reduction;
- Reduction of sediment development through sediment collection or anchoring;



- Sedimentation of mobilized sediments;
- Filtration of sediment-carrying flows;
- Collection of captured or contained sediments;
- Treatment of pH (hydronium and hydroxide).

98. 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.
99. 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.
100. **Environmental protection measures shall be checked after each extreme weather event.**
101. If erosion and sediment control measures are not functioning properly, no further work shall occur until the sediment and/or erosion problem is addressed to the satisfaction of Parks Canada.
102. All disturbed areas of the work site shall be stabilized immediately and re-vegetated as soon as conditions allow. All exposed areas should be covered with erosion control blankets or other measures to keep the soil in place and prevent erosion until vegetated in the spring. Erosion and sediment control measures shall be left in place until all areas of the work site have been stabilized.
103. Avoid activities that could lead to erosion during excessively wet weather conditions; monitor forecasts for heavy rainfall watches & warnings. Environmental protection measures shall be checked after each extreme weather event.
104. 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.
105. Sediment control measures and exclusion fencing must be removed in a way that prevents the escape or re-suspension of sediments.
106. **If applicable**, a turbidity curtain (US Dot Type II) will be maintained in the water around all working areas during construction to contain and control the suspension of fines. Curtains should be as close to the work area as possible. If water levels/conditions do not permit the flotation of a turbidity curtain, other measures as approved will be implemented.



107. **If in-water works are required**, turbidity curtains should not be used as a settling area for dewatering activities. Supplementary sediment and erosion control measures should be installed prior to construction activities and should be added upon/reinforced as necessary.
108. **If utilized**, turbidity curtains are to be anchored or weighted down across its length to form a continuous seal on the substrate bed, with adequate floatation at the water's surface to prevent over spills of water.
109. Flow dissipaters and/or filter bags, or equivalent, shall be placed at water discharge points to prevent erosion and sediment release.
110. Fine materials such as limestone-based aggregates, unwashed rocks or materials that have the possibility of being suspended or transported downstream should not be used.
111. No acid-generating rock (containing sulphides) will be used.
112. In the event of a significant sedimentation or debris caused by construction activities, the contractor will take appropriate measures to contain and mitigate the problem including the installation of additional downstream turbidity curtains.
113. **Any stockpiled materials, or concrete debris shall be stored and stabilized a safe distance away from any watercourse, drainage course or swales to prevent erosion and subsequent entry into the TSW or removed from the site, in accordance with all federal, municipal and provincial regulations.**
114. **Erosion and Sediment controls shall not be removed without acceptance from PCA.**
115. **The contractor will maintain a standby supply of pre-fabricated sediment fence barriers, or an equivalent ready-to install sediment control devices.**

### **Cultural Resources and Archaeology**

116. Before any on-site mobilisation/construction work commences, PCA staff will clearly delineate any archaeologically sensitive areas and photo-document this activity for PCA records. These areas will be deemed no-go zones for staging, vehicular traffic and machinery
117. Vehicular access routes and staging areas will be restricted to roadways and parking lots, exposed bedrock areas and significantly disturbed areas. 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 outside of cleared/reviewed areas in the AOA during installation or removal of protective covering**
118. If archaeological, cultural resources, or character-defining elements (e.g. structural features or artifact concentrations) are encountered or damaged during construction activities, work will cease in the immediate area, the findings photographed, and the Parks Canada Project Manager informed; contact the TSW, Peterborough Office at 705-750-4900. The Project Manager should then contact Parks Canada's Terrestrial Archaeology section for advice and assessment of significance, which will in turn determine what will be required to mitigate the find. Ensure that



all exposed underwater cultural materials are kept submerged and/or wet while waiting for direction.

119. The contractor is to ensure that all personnel working on site undergo a heritage induction to clearly identify the value of the place and how to avoid inadvertent impacts on cultural and archeological resources (known and unknown).

120. Inform the CRM Advisor, Ontario Waterway regarding any changes to project plans and/or scheduling. Any changes not assessed under this BIA will require approval from PCA and may require further mitigation measures.

### **Air Quality and Noise**

121. Adhere to local noise by-laws. Notify residents of planned activities that may cause disturbance and schedule them to avoid sensitive time periods.

122. Monitor and mitigate public complaints by keeping a record of complaints and addressing any issues raised by the public.

123. 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.

124. Use well-maintained heavy equipment and machinery, fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc. In addition, employ timing and location of construction activities to reduce or minimize the effect of noise on nearby residents, recreational users, and wildlife.

125. Machines shall not be left to unnecessarily idle in order to avoid emissions.

### **Waste Disposal**

126. Recyclable material and waste shall be removed from the site, in accordance with provincial and municipal regulations, to disposal facilities licensed to receive them.

127. Waste containers should be sealed or lined to prevent leakage of liquid wastes.

128. Waste generated will be disposed according to regulations (i.e., O. Reg. 102/94 and O.Reg. 558/00, R.R.O. 1990, 347).

### **Water level Management (where applicable)**

129. A water level management plan for the Hurdons Reach partial dewatering must be submitted to PCA and accepted.

130. Water levels must not be drawn down below approved elevation.



131. Monitoring must be conducted at a frequency to ensure that pumping can return water levels back to specifications and that no impacts to fish and turtles occurs.
132. Report all minimum water level exceedances in daily reporting and report extreme exceedances, either in water level >30cm and in time >8 hours immediately to PCA.
133. Report any fish or turtle kills to PCA immediately. Water levels may need to be increased should unanticipated water quality issues arise due to the drawdown.

**Floods, Extreme or Inclement Weather, and Ice Formation:**

134. Undertake construction under normal weather conditions, to the extent possible, and design the project worksite to withstand variable weather conditions.
135. Apply wet weather restrictions on construction activities to reduce surface run-off from exposed work areas and to minimize the risk of inundation.
136. The work area shall be stabilized against the impacts of high flow/heavy rainfall events at the end of each workday.
137. Work shall be suspended and the work area stabilized when there is a high probability of a rainfall event.