

| Project Component | Component of the environment | Description of the environmental impact | Evaluation of the effect | Mitigation Measures | Significance of the residual effect |
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| | | SIT | E PREPARATION | | |
| 1.Site installation and material storage Vegetation removal and tree cutting | Water Quality Soil quality Wildlife - terrestrial environment Flore | Erosion and sedimentation Contaminant input to water and soil Wildlife Mortality Caused by Project Activities Risk of damage to the root system, branches and bark of trees due to machinery movement Tree cutting that could affect migratory bird nesting Introduction or dispersal of invasive alien species (IAS) | NS | General planning 1.1. Ensure that all workers review mitigation measures and all site-specific considerations prior to commencing work. 1.2. Submit a development plan that delineates, on a previously disturbed parcel of land (e.g. road, gravel surface), access roads to the site, as well as the various areas required for the project such as work area, staging area, storage area for materials and hazardous materials (including hydrocarbons), machinery cleaning area, hydrocarbon refuelling area, parking lots and specify the duration of use. These areas must be approved by the CPA Representative. 1.3. Avoid sensitive elements (wildlife, flora, cultural resources) and any related restricted activity zones designated by the PCA. If other sensitive elements are found, stop all work immediately and notify the PCA Representative to determine next steps. Wildlife 1.4. If animals are observed in or near the work site, ensure proper and safe exit from the site to keep them away from potential conflict/accident areas and report any sightings to the CPA Representative to ensure, among other things, compliance with legislative requirements related to species at risk. 1.5. Do not trap, harass, feed, bait, lure, poison or kill animals on the job site. 1.6. Select erosion and sedimentation control products that reduce the risk of attracting or entangling wildlife, prevent the introduction of invasive alien species, and are made from 100% biodegradable materials (e.g., just, sisal or coconut fibre). Ensure that support materials are also biodegradable. 1.7. Carry out tree cutting outside of the bird nesting period, from the beginning of April to the end of August, or carry out a nest inventory within 7 days prior to the work to ensure that no nests are affected during the nesting period. If nests are fledged. | NI |

Table 09 Identification and assessment of project effects and identification of mitigation measures





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| | | | | 1.16. No snow removed during snow removal shall be placed in a canal in accordance with the Historic Canal By-law. 1.17. Use retention bins (110% capacity) or impermeable fuel mats with a berm for all stationary equipment and machinery (generators, compressors, etc.) located on the shoreline and inspect the facilities during rainy periods to prevent overflow. 1.18. Mobile toilets should be installed away from storm sewer systems, environmentally sensitive areas (trees, canal, etc.) and paved roads. Ensure that they are well anchored to the ground. 1.19. Following the work, clean all equipment or boats used in the water and inspect them to ensure that no aquatic invasive species are present. | |
| | | | | Terrestrial flora 1.20. Recommend mobilization/circulation of vehicles on durable or already disturbed surfaces (e.g. paved road, gravel surface, etc.). 1.21. Identify with forest tape the oval hickory (<i>Carya ovata</i>) near the work area, as well as the mature pine grove west of the Superintendent's house to ensure their protection. 1.22. If ash trees are to be cut, the felling must be done between September 15 and April 15. The ash residue must be disposed of at a processing site, or be processed on site by a compliant process (small chips). | |
| | | | | For vegetation cleaning, relling and tree pruning : 1.23. Clearly delineate the area where vegetation will be removed and mark the trees to be retained. The plan of the trees to be felled must be submitted for prior approval by Parks Canada. 1.24. Tree trunks should be cut as close to the ground as possible. 1.25. Recovered trunks and other materials must be transported to a storage site authorized by the MELCC, without spreading debris and without damaging standing trees or landscape elements outside the limits indicated for clearing or storage. They must not be dragged into the watercourse. 1.26. Vegetation debris must be removed from the RoW as quickly as possible and transported off-site for disposal. In the case of temporary storage, store removed vegetation in areas already subject to disturbance to minimize the area of disturbance. | |





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| | | | | 1.27.If pruning work is required to perform the work, use recognized | |
| | | | | techniques and comply with the requirements of standard NQ 0605-200. | |
| | | | | Examples of good techniques include : | |
| | | | | • Cut the branches above the collar, at the point where the branch is | |
| | | | | anchored to the trunk, avoiding leaving snags on the tree. | |
| | | | | Prune branches larger than 3 cm in diameter in three steps: | |
| | | | | • Make an incision about 30-40 cm from the trunk, the depth of | |
| | | | | which should be equivalent to one third of the diameter of the | |
| | | | | branch; | |
| | | | | • Saw the entire branch a few centimeters higher than the incision; | |
| | | | | Saw the stump taking care to always protect the edge and the | |
| | | | | neck of the branch. | |
| | | | | 1.28. For branches more than 10 cm in diameter, cut progressively (in logs) from | |
| | | | | the top to the trunk in order to reduce the weight of the fall and avoid | |
| | | | | injury to the tree. | |
| | | | | 1.29. Make sure that the cuts are clean (no tearing) and minimize the cutting | |
| | | | | surface (straight vs. oblique). | |
| | | | | 1.30. For small branches, prune at a bevel 0.5 cm above a bud at an angle of | |
| | | | | about 30 degrees in the same direction as the bud. | |
| | | | | 1.31. The pruning of branches should avoid as much as possible the | |
| | | | | accumulation of water on the wound, which favours the establishment of | |
| | | | | mould, parasites and fungi. | |
| | | | | 1.32.Establish and delimit a protective area around the trees and shrubs to be | |
| | | | | protected (e.g. fences, ribbons, barriers, etc.) so as not to damage them or | |
| | | | | affect the root system. If this is not possible, install a protection system for | |
| | | | | the trunks and root system (wood planks, non-compacted material with | |
| | | | | geotextile, etc.). Under no circumstances may a tree be used as a support. | |
| | | | | 1.33.Branches that may be damaged should be protected or pruned. | |
| | | | | 1.34.Do not paint, damage or mark natural elements (e.g. rocks, trees) present | |
| | | | | on the site and in the surrounding area for surveying or other purposes | |
| | | | | before obtaining prior authorization from APC. | |
| | | | | 1.35.In the event that trees are damaged during the work, provide a report | |
| | | | | from a forestry engineer including an assessment of the survival potential | |
| | | | | of the affected trees. If the survival of the trees is affected by the damage, | |
| | | | | they must be replaced as directed by the Parks Canada Representative. | |





| Project Component | Component of the environment | Description of the environmental impact | Evaluation of the effect | Mitigation Measures | Significance of the residual effect |
|----------------------|------------------------------|--|-----------------------------|---|-------------------------------------|
| | | | | 1.36.Replace trees cut/removed (including compensation for those removed on | |
| | | | | private land). | |
| | | | | Invasive alien species | |
| | | | | 1.37. Monitor the presence of invasive alien species on the site and prepare a | |
| | | | | management plan if necessary. Ensure that machinery is clean and free of | |
| | | | | invasive species and noxious weeds upon arrival at the site and maintain it | |
| | | | | in this condition thereafter. | |
| | Visitor Experience | Increase in ambient noise level and noise nuisance | NS | 1.38.Identify key contacts and their respective roles and responsibilities prior to | NI |
| | | | | commencing work and communicate this information to all workers on | |
| | | | | site. | |
| | | | | 1.39.Plan noisy activities to minimize impacts on visitors. | |
| | | | | 1.40.Comply with laws, regulations, standards, codes and good practices | |
| | | | | relating to public health and safety, noise, work schedules and nuisances, | |
| | | | | as well as any other risk related to the components of the work. | |
| | | | | 1.41. Manage the work site in order to minimize work that generates significant noise activity. | |
| | | | | 1.42.Shut down noisy machinery engines, tools and equipment during work stoppages or breaks. | |
| | | | | 1.43. Inform the public in advance of the possible inconveniences caused by the | |
| | | | | work and its location via the Parks Canada website and the local media. | |





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|---|--|--|-----------------------------|--|-------------------------------------|
| | | C | ONSTRUCTION | | |
| 2.Operation, circulation, refueling and cleaning of machinery | Air Quality Soil quality Flore | Emission of greenhouse gases (CO, co2, NOx) and O3 and fine particles into the air Soil erosion, loss of topsoil and basement exposure Sedimentation causing turbidity Soil compaction and rutting Risk of damage to the root system, branches and bark of trees due to machinery movement | NS | Air Quality 2.1. Ensures that exhaust and emission control systems on machinery, equipment and other construction equipment are maintained in good condition. 2.2. Comply with current municipal regulations regarding dust emissions into the air. 2.3. Implement appropriate measures to reduce dust emissions to the air (e.g., sprinkling dry materials, sweeping, using tarpaulins on bare surfaces or stacked materials, ensuring that equipment is equipped with a vacuum system at the source, etc.). 2.4. Avoid handling and transporting materials that can be easily eroded or when a dust plume is visible. 2.5. Dump trucks transporting materials (soil, concrete, granular materials and any other type of material) must be equipped with waterproof tarps. Circulation of machinery 2.6. Recommend mobilization/circulation of vehicles on durable or already disturbed surfaces (e.g. paved road, gravel surface, disturbed area with high resilience) and avoid the area of the tree root system (minimally the area of the ground projection of the antler). 2.7. Spread a dust suppressant in unpaved areas if there is a significant presence of dust. Water must be used at a distance of less than 60 m from the aquatic environment. Do not use chemicals as a dust suppressant for this work. 2.8. Clean access roads and traffic lanes regularly during the work. 2.9. Limit the speed of vehicles on the construction site to 15 km/h. 2.10. Visually monitor dust emission and take action to control it if necessary. 2.11. Machinery circulating on the shore (less than 15 m from the canal) must run on biodegradable vegetable oil. Proof of the application of this mitigation measure may be required. Hydrocarbons | NI |





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|----------------------|------------------------------|---|-----------------------------|--|-------------------------------------|
| | | | | 2.12. Maintain and regularly service vehicles and equipment. Immediately repair or remove leaking vehicles or equipment from the job site. 2.13. Do not leave any vehicle, machinery and/or gas-powered equipment within 10 m of the canal or 30 m of the Richelieu River outside working hours or during extended work site closures, unless confined in a watertight enclosure. If this is not possible, soil protection measures must be installed under the equipment or machinery throughout the abovementioned period (e.g. containment tank with a volume equivalent to at least 110% of the volume of the fuel tank of the equipment or machinery). 2.14. Lock up hazardous materials that will be left on site outside of construction hours. 2.15. Provide sufficient hydrocarbon recovery kits (containment bundles, absorbent rolls, watertight containers, etc.) and a fire extinguisher that meets current standards in order to manage any spill, environmental incident or fire. Ensure that workers are trained to respond quickly in the event of a leak or spill and that they are informed of the location of the kits. 2.16. Prepare an emergency procedure and communication plan in the event of a spill, environmental incident or fire. This procedure shall include, but not be limited to, measures to stop leaks, contain spills to limit their extent and prevent them from reaching sensitive areas, recover contaminants at the source, decontaminate affected areas and dispose of contaminated material in accordance with applicable laws, policies and regulations. The remediation of affected areas must be undertaken without delay. | |
| | | | | 2.17. In the event of an environmental incident, notify PCA, National Environmental Emergencies Centre Environment and Climate Change Canada (1-866-283-2333) and Urgence-Environnement du Québec (1-866- 694-5454). Notify the Canadian Coast Guard for any spill from a marine source: 1-800-363-4735 2.18. Refuel on an impermeable surface and in a confined area. 2.19. Clean up leaks and spills that occur during refueling and properly dispose of contaminated materials. 2.20. Never dispose of or deposit fuel in the environment or in any body of water. | |





| Project Component | Component of the environment | Description of the environmental impact | Evaluation of the effect | Mitigation Measures | Significance of the residual effect |
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| | | | | 2.21. Clean tools and equipment off-site. If it is necessary to do so on site, the | |
| | | | | cleaning must be done in a location at least 30 m from any body of water. | |
| | Visitor Experience | Increase in ambient noise level Increased risk of accidents for the public and | NS | Measures 1.35 to 1.40 | NI |
| | | users caused by the circulation of heavy | | 2.22. Make sure the mufflers or noise suppression device on noisy equipment | |
| | | machinery and construction equipment. | | are working properly. | |
| | | | | 2.23. Avoid folding the rear panels of dump trucks. | |
| | | | | 2.24. Favour a circuit for the transportation of materials avoiding the residential | |
| | | | | and recreational sectors. | |
| 2.1.1 | | | N | 2.25.Provide adequate signage indicating the presence of machinery. | NU |
| scuba diving | Water Quality | Input of contaminants into the water | N | 3.1. All debris created by the sheet pile wall will be removed from the water | NI |
| | | | | 3.2. Present a general plan of diving operations that includes the steps of the | |
| | | | | work to be performed and emergency measures in case of failure of a | |
| | | | | device or system. | |
| 4.Soil excavation | Soil and sediment quality Water Quality | Input of contaminated substances into the environment | NS | Measures 1.6, 1.12 to 1.16 | NI |
| of new | • Flore | Cross-contamination | | 4.1. All soils excavated in the leaching bed must be characterized in order to | |
| infrastructures | • Cultural resources (archaeological | Erosion and sedimentation | | determine their off-site disposal in accordance with the MELCC's Guide | |
| (treatment | resources) | Sedimentation causing turbidityTemporary loss of vegetation | | d'intervention - Protection des sols et réhabilitation des terrains contaminés. | |
| and manholes) | | | | 4.2. If they are to be stored, excavated soil from the leaching bed must be | |
| and relocation | | | | stored on a waterproof membrane. Refer to APC's Best Management | |
| of the | | | | Practices for Excavated Material and Contaminated Soil (Appendix 2). | |
| aqueduct. | | | | 4.3. Avoid excavating during periods when the ground is saturated, rain is | |
| | | | | heavy and there is runoff, strong winds or wet snow. | |
| | | | | 4.4. Limit in-situ storage time of excavated material. Favour direct loading into | |
| | | | | dump trucks, especially in the presence of contaminated materials. | |
| | | | | 4.5. Manage excavated material (storage and disposal) according to its nature | |
| | | | | (e.g. topsoil, fill), its volume and the extent of its contamination (e.g. | |
| | | | | generic criteria, recommendations) in accordance with applicable federal, | |
| | | | | provincial and municipal laws and regulations. | |
| | | | | 4.6. Take the necessary precautions when temporarily storing cuttings to | |
| | | | | control the dispersion of fine elements and to avoid contamination of | |
| | | | | underlying and adjacent soils. As a minimum, provide for : | |
| | | | | Segregate spoil according to its nature and level from contamination ; | |





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|--|--|---|-----------------------------|---|-------------------------------------|
| | | | | Store the excavated material on a waterproof tarp and cover it with securely fastened tarp to prevent it from being lifted by the vent ; Install sediment barriers to enclose the various storage areas of déblais ; At all times, ensure that soils do not migrate to other environments, either by air, runoff or transit from véhicule ; Do not store excavated contaminated materials near water. 4.7. All machinery that has come in contact with contaminated waste material must be properly cleaned before being used in other areas. 4.8. When disposing of contaminated excavated material, keep any document or slip attesting to its disposal in sites authorized by the MELCC according to their degree of contamination. 4.9. Use clean fill material, free of contaminants and undesirable species. 4.10. Do not store excavated contaminated materials near water. 4.11. Machinery that comes into contact with contaminated soil must be properly cleaned before being used in other areas. 4.12. Where there are surface soils to be remediated, a geotextile membrane must be installed between the contaminated soils already in place and the new material. 4.13. New material (e.g. topsoil, controlled backfill) must be properly compacted to prevent subsidence and minimize erosion. 4.14. Archaeological monitoring of the interventions is required. 4.15. If changes are made to the plans, any additional sources of information will be submitted to the Parks Canada Terrestrial Archaeology team for review. 4.16. In the event of incidental discoveries of cultural resources made in the absence of an archaeologist, the contractor must suspend work in the immediate area of the discovery and notify the Parks Canada Project Authority who will then take the necessary measures to protect and | |
| | Built environment | Modification of the land and infrastructures near the Superintendent's house | NS | 4.17. Restore affected properties to original conditions | NI |
| 5. Demolition of concrete structures | Soil and sediment quality Water Quality | GHG, O3 and fine particulate emissions Input of debris and contaminants into the environment | NS | Measures 1.8 to 1.17 5.1 Provide measures to contain and recover debris, residues, particles and dust (e.g. tarpaulins, geotextiles, ballasted sediment barriers or barriers fixed parallel to the shoreline, dust screens, equipment equipped with a vacuum system at the source). | NI |





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| | | | | 5.2Clean up demolition debris immediately and dispose of it in sites authorized by the MELCC. 5. 3Prevent debris and dust from coming into contact with water bodies. Any debris accidentally introduced must be removed as soon as possible. | |
| 6.Residual materials management, including contaminated soils, and storage of hazardous materials | Soil quality Water Quality Air Quality Flore Wildlife - terrestrial and aquatic environments | Input of contaminated substances into the environment Cross-contamination Contamination of water and soil by hazardous materials Wildlife Habitat Modification Modification of the floristic habitat | NS | Any debris accidentally introduced must be removed as soon as possible. Contaminated soil management Measures 4.1 to 4.13 Water management Measures 1.6, 1.9 to 1.12 6.1. Ensure that wastewater and waste water generated by site facilities and operations (e.g., equipment washing water, surface cleaning water, concrete sawing waste water) is contained and recovered. Prior to discharge to the environment, these waters must be sampled and treated (where applicable) to meet applicable discharge standards, i.e. CCME Water Quality Guidelines for the Protection of Aquatic Life , MELCC Surface Water Quality Criteria (Protection of Aquatic Life - Acute Effect) and MMC Regulation 2008-47 for Suspended Solids, pH and C10-C50. It will be the responsibility of the contractor to demonstrate compliance with these standards. 6.2. If the water does not comply with the applicable standards and cannot be treated on site, it must be recovered in watertight containers and transported to a location authorized by the MELCC. Hazardous and non-hazardous residual materials Measures 1.2, 1.13 to 1.15 6.3. Regularly clean the work areas to ensure that they are free of waste at all times. It is forbidden to discharge residual materials into the environment. | NI |
| | | | | 6.4. Hazardous residual materials must be collected by companies with the appropriate permits for the transportation, storage, treatment or disposal of such materials. 6.5. Lock up hazardous materials that are left on site outside of construction hours. | |
| | | | | 6.6. Identify and sort all hazardous or toxic substances (concrete debris, creosote-treated wood, mould, animal excrement, paint, automotive products, electrical equipment) as well as all pollutants such as gasoline and solvents on the work site. Handle, store and dispose of them in | |





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|----------------------|------------------------------|---|-----------------------------|--|-------------------------------------|
| | | | | accordance with CEPA, the Transportation of Dangerous Goods Act, 1992, | |
| | | | | WHMIS and all other applicable laws, regulations and standards. | |
| | | | | 6.7. Establish an adequate management program to ensure the containment | |
| | | | | and disposal of waste such as scrap metal, used asphalt pavement and | |
| | | | | concrete debris. Such waste should be isolated at source and recycled | |
| | | | | wherever possible. | |
| | | | | 6.8. Contain and stabilize non-hazardous residual materials at a minimum | |
| | | | | distance of 30 metres from the canal and the designated and authorized | |
| | | | | storage area. | |
| | | | | 6.9. Dispose of all non-hazardous residual materials off-site and provide | |
| | | | | sufficient containers to store household waste on a daily basis. | |
| | | | | 6.10. Recover solid residues from the washing of construction equipment and | |
| | | | | dispose of them in an appropriate manner. Containers must be leak-proof | |
| | | | | and materials must be transported to a location authorized by the | |
| | | | | MELCC. | |
| | | | | 6.11. Maintain portable sanitation facilities on a regular basis and dispose of | |
| | | | | accumulated waste in an appropriate disposal facility. Portable facilities | |
| | | | | must have sufficient capacity and be managed to prevent waste from | |
| | | | | being released into the receiving environment. | |
| | | | | 6.12. Do not make fires or burn or bury construction waste, hazardous | |
| | | | | substances or any material (e.g. plastic). | |
| | | | | 6.13. Keep all products that may attract animals (e.g. petroleum products, | |
| | | | | food, recyclable beverage containers and garbage) in a vehicle, secure | |
| | | | | building or wildlife proof containers. If possible, keep food waste separate | |
| | | | | from construction debris and dispose of it on a daily basis. | |
| 7. Site | Soil quality | Erosion and sedimentation | NS | Measure 1.33 | NI |
| rehabilitation | • Flore | • Introduction and spread of invasive alien species | | 7.4 Calle disturbed and an active set to describe the set of a set | |
| and | | | | 7.1. Solis disturbed, exposed, vegetated surfaces and any plant elements | |
| demobilization | | | | disturbed during the work must be restored, revegetated or replaced at | |
| | | | | the end of the work by methods approved by the CPA representative so | |
| | | | | that the site is left in its original state. | |
| | | | | 7.2. Plant trees to compensate for tree loss in a 1:1 ratio. | |
| | | | | 7.5. Native species must be used for seeding or planting in the event of | |
| | | | | alsurbance of a natural environment. | |
| | | | | 7.4. Renabilitation work for damage to vegetation, natural elements and | |
| | | | | what when the carried out under the supervision of a qualified specialist. | |

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| Project Component | Component of the environment | Description of the environmental impact | Evaluation of the effect | Mitigation Measures re | gnificance of the residual effect |
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| | | | | 7.5. Monitor disturbed and revegetated plots until the Parks Canada | |
| | | | | Representative determines that native vegetation is growing well and | |
| | | | | that the spread of invasive alien species has been prevented. | |
| | | | | 7.6. The rehabilitated surfaces must have a degree of compaction and | |
| | | | | aeration corresponding to the initial state (pre-work). | |
| | | | | 7.7. Ensure good drainage of runoff, which may include restoring or improving | |
| | | | | original drainage conditions. | |
| | | | OPERATION | | |
| 8. System | Water Quality | Bringing contaminated substances into | NS | 8.1. Ensures that the system is functioning properly every two weeks when | NI |
| operation and | Aquatic fauna and habitat | the Richelieu River | | operations start, and monthly thereafter. | |
| maintenance | | Alteration of aquatic wildlife habitat | | 8.2. Maintain the system twice a year, in the spring and fall. | |
| | | | | 8.3. Ensure that tank lids remain accessible at all times. | |
| 9.Chemical | Soil quality | Input of contaminated substances into the | NS | 9.1. Ensure that aluminum sulphate dephosphorization products are stored | NI |
| storage | Water Quality | environment | | safely, i.e. in leak-proof drums on a containment pallet with a volume | |
| | | | | equivalent to at least 110% of the volume of the drums. | |
| | | | | 9.2. Contact a Parks Canada representative immediately if a spill or breakage | |
| 10 Discharge of | Water Quality | Bringing contaminated substances into the | NS | 10.1 Conduct effluent quality monitoring according to current requirements | NI |
| treated | Aquatic fauna and habitat | Richelieu River | | (use provincial requirements in the absence of federal requirements). | |
| wastewater | | Alteration of aquatic wildlife habitat | | 10.2. Identify and implement corrective actions to the treatment system | |
| | | · | | following an exceedance of discharge requirements | |

