MITIGATION MEASURES

TRANSPORTATION

1. Transport hazardous materials and hazardous waste in compliance with the *Transportation of Dangerous Goods Act*.
2. All [vessels], [floating plant equipment], [barges] and [scows] used in the work must comply with all *Canada Shipping Act* requirements for inspection, which includes certification of the vessel and adequate training and appropriate certificate of competency for the operators and codes and standards of practice for shipping.
3. All materials and equipment used in the work must be marked in accordance with the *Collision Regulations* of the *Canada Shipping Act* when located in a waterway.
4. All vessels using the harbour are to be permitted safe access through the work site at all times and assisted as necessary.
5. Work must comply with all conditions of the *Canadian Navigable Waters Act* (*CNWA*) approval issued by Transport Canada or applicable standard general conditions.
6. Maintain trucks clean and free of excessive mud, dirt, dredged material and other foreign matter.
7. All trucks to be equipped with watertight seals in their boxes to prevent leakage during the loading and transporting of dredge material.
8. Secure contents against free board spillage when excavating, loading and hauling material [including dredged material]. Do not overload trucks when hauling material and avoid potential release of contents, and of any foreign matter onto highways, roads and access routes used for the work. Immediately clean any ground spills and soils to extent as directed by authority having jurisdiction.

WORK SITE ACCESS

1. It will be the Contractor's responsibility to gain access to all areas of the work site, including dredge areas.
2. Use public roadways and established access routes whenever possible and provide appropriate signage and traffic control personnel as required.
3. Prior to commencement of work, submit a site plan for any new terrestrial access roads on the site to the *Departmental Representative* for approval. Construction of new access roads will only commence after approval is received from the *Departmental Representative*.
4. Limit impacts on riparian vegetation to those approved for the work:
    1. Limit access to banks or areas adjacent to waterbodies.
    2. Avoid tree removal/grubbing/uprooting and instream prune or top the vegetation.
    3. Limit grubbing on watercourse banks to the area required for the footprint of work.
    4. Construct access points and approaches perpendicular to the watercourse or waterbody.
    5. Use methods to prevent soil compaction and/or rutting, such as swamp mats or pads.
    6. Remove vegetation or species selectively and in phases.
    7. If required, re-vegetate the disturbed areas with native species suitable for the site.

.5 Vegetation clearing required for access roads should be scheduled to avoid the regional migratory bird nesting period.

OPERATION OF MACHINERY

1. Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
2. Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of a water body.
3. Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
4. No storage of vehicles or equipment/material is permitted on any beach, dune, wetland or other environmentally sensitive areas.
5. Do not perform cleaning, wash down or fueling within a 30-metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.

CONTAINMENT AND SPILL MANAGEMENT

1. Comply with federal (*Canadian Environmental Protection Act* (CEPA) - *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations*) and provincial regulations, codes, standards and guidelines for the storage of fuel and allied petroleum products on the site.
2. In the event of a petroleum spill and release into the environment, stop work and immediately notify the *Departmental Representative* and the Canadian Coast Guard 24-Hour Environment Emergencies Report System (1-800-565-1633). Contain spill and perform clean-up in accordance with all regulations and procedures stipulated by authority having jurisdiction.
3. Do not dump petroleum products or any other deleterious substances on ground or in the water.
4. Be diligent and take all necessary precautions to avoid spills and contamination of the soil and water (both surface and subsurface) when handling petroleum products on the site and during fuelling and servicing of vehicles and equipment.
5. Maintain on site appropriate emergency spill response equipment consisting of at least one 250-litre overpack spill kit for containment and clean-up of spills.
6. Maintain vehicles and equipment in good working order to prevent leaks on site. Hoses, couplings and tanks are to be inspected on a regular basis to prevent fractures and breaks.
7. All equipment to be used in or over the marine environment is to be free from leaks or coatings of hydrocarbon-based fluids and/or lubricants harmful to the environment.
8. Materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals are not to enter the watercourse.
9. Develop and submit to the *Departmental Representative* an **Emergency Response Plan** that is to be implemented immediately in the event of a sediment or spill release of a deleterious substance.

10. Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

11. If an oiled seabird is encountered, methodology for the handling and release of marine and migratory birds outlined in Environment and Climate Change Canada (ECCC) – Canada Wildlife Service (CWS)'s National Wildlife Emergency Response Framework will be implemented. A permit application must be obtained from ECCC-CWS prior to implementation of this protocol.

HAZARDOUS MATERIAL MANAGEMENT

1. Store and handle hazardous materials in accordance with applicable federal and provincial regulations, codes, standards and guidelines. Store in location that will prevent spillage into the environment.
2. Label containers to Workplace Hazardous Materials Information System (WHMIS) requirements and keep Material Safety Data Sheets (MSDS) on site for all hazardous materials.
3. Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when stored.
4. Store and handle flammable and combustible materials in accordance with National Fire Code of Canada.
5. Workers in contact with hazardous materials must be provided with, and use regulated Personal Protective Equipment (PPE) and must have the necessary training to know how to handle the different hazardous materials in accordance with applicable health and safety and environmental regulations.

DISPOSAL OF WASTES

1. Dispose and recycle construction and demolition-related debris and waste materials in accordance with provincial, territorial and municipal waste management regulations and the project waste management requirements.
2. Do not bury construction and demolition-related debris (e.g., concrete, creosote timbers, steel, impacted soil, etc.) or other waste materials on site.
3. Do not dispose of hazardous wastes (e.g., paints, batteries, cleaners, acids, etc.) including volatile materials (e.g., solvents, mineral spirits, aerosol cans, etc.) and petroleum products on the ground, near or into watercourses, storm or sanitary sewers or in waste landfill sites. Dispose of hazardous wastes in accordance with applicable federal and provincial, regulations, codes, standards and guidelines.
4. Chipped vegetation may be used as mulch but must not be spread into a water body or wetland.
5. Handle creosote-treated timber (including removal, temporary storage/containment and disposal)in a manner so as to minimize the potential for release of contaminants to the aquatic environment.
6. All salvageable stockpiles of creosote timbers must be situated a minimum of [500] meters from any dwelling or potable water well and a minimum of [100] meters from any watercourse/wetland or other environmentally sensitive area. All stockpiles must be contained on federal land, unless approved by *Departmental Representative*. Prior to completion of the work, all salvageable/disposal material must be removed from the site as directed by the *Departmental Representative.*
7. Construction material and debris is not to become waterborne. Retrieve any debris entering the marine environment without delay, when it is safe to do so.

WATER QUALITY

1. Contractor is responsible to develop and implement an **Erosion and Sediment Control Plan** for the work site that will minimize the risk of entry or re-suspension of sediment in a water body during all phases of the work. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the water body or settling basin and runoff water is clear.
2. The Plan is to be submitted for review by the *Departmental Representative* and should, where applicable, include:
   - .1 Effective sediment control measures (e.g., silt fencing, settling ponds, diversion ditches, site grading, check dams, etc.) as an initial step in the construction sequence.
   - .2 Measures for managing water flowing onto the site, as well as water being pumped / diverted from the site such that sediment is filtered out prior to entering a water body (e.g., pumping / diversion of water to a vegetated area, construction of a settling pond or other filtration system). The water can be pumped into a settling pond or filter bag to ensure that the concentration of sediment is below regulated discharged criteria before it reaches a water body.
   - .3 Measures for containing and stabilizing waste material (e.g., dredged material, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris, Regular inspection and reporting details for sediment control measures to ensure they are functioning properly.
   - .5 Repair methodology for erosion and sediment control measures and structures if damage occurs.
   - .6 Removal methodology of non-biodegradable erosion and sediment control materials once site has been stabilized. Upon completion of use, these control measures must be removed in a way so as to prevent the escape of settled sediments.
   - .7 Methodology for monitoring weather, specifically rainfall and storms and altering work plans and contingency measures as a result of inclement weather.

AIR QUALITY

1. Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
2. Dust suppression by the application of water must be employed, when required. Apply dust control measures to roads, parking lots and work areas. The *Departmental Representative* shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil or any other petroleum products must not to be used for dust control under any circumstances.
3. Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
4. Fires and burning of rubbish on site is not permitted.
5. To reduce emissions of air contaminants and greenhouse gas, implement an idling policy that includes:

1. Diesel construction equipment will be turned off when not in active use.
2. Vehicles idling more than 5 minutes will be turned off.
3. Morning vehicle warm-ups will be restricted to 3-5 minutes.
4. A staging zone will be established for trucks that are waiting to load/unload to minimize public exposure to emissions.

BIRD AND BIRD HABITAT

1. Become knowledgeable with and abide by the *Migratory Birds Convention Act* regarding the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
2. Minimize disturbance to all birds on site and adjacent areas during the entire course of the work.
3. During nighttime work, position flood lights in opposite direction of nearby bird nesting habitat, and lights are to be shielded or pointed downwards where possible.
4. Ensure that no litter (including food wastes) is left in and around the site.
5. Do not approach concentrations of seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.
6. Do not use beaches, dunes, coastal wetlands and other natural previously undisturbed areas of the site to conduct work unless specifically approved by the *Departmental Representative*.
7. All machinery must be well muffled. If necessary, trucks may be required to avoid the use of engine brakes along specific sections of the route.
8. To avoid the risk of nest destruction, the proponent shall avoid vegetation clearing during the most critical period of the migratory bird breeding season, which is April 1st through August 31st.
9. Maintain a minimum distance of 300 m from all areas occupied by concentration of seabirds and waterbirds. Travel at steady speeds when close to seabird and waterbird colonies, moving parallel to the shore, rather than approaching the colony directly. Avoid any sharp or loud noises, do not blow horns or whistles, and maintain constant engine noise levels. Do not pursue seabirds or waterbirds swimming on the water surface and avoid concentration of these birds on the water.

FISH AND FISH HABITAT PROTECTION

1. Monitor and assess weather forecast on a daily basis to determine the risk of extreme weather. Avoid work during periods for which Environment and Climate Change Canada had issued rainfall, storm surge or other weather warnings for the work area.
2. For water-based operations, avoid placing vertical spuds or other anchors into sensitive fish habitat areas outside the footprint of the dredge area (e.g., eelgrass or kelp beds, saltmarshes, shellfish harvesting areas and known spawning areas.
3. Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
4. Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
5. The release of deleterious substances into the watercourse is strictly prohibited. In the event of a release of a deleterious substance, stop work, contain sediment-laden water or other deleterious substances and prevent their further migration into the watercourse. Immediately report any spills or releases of sewage, oil, fuel or other deleterious material, whether near or directly into a water body.
6. Work must comply with all conditions of the *Fisheries Act* authorization or Letter of Advice issued by Fisheries and Oceans Canada.

AQUATIC INVASIVE SPECIES

1. Be aware of the risk for contamination of the fish habitat at the site as a result of aquatic invasive species being introduced into the marine environment.
2. To minimize the possibility of fish habitat contamination and the spread of aquatic invasive species, all construction equipment that will be immersed into the water of a watercourse, or has the possibility of coming into contact with such water during the course of the work, must be cleaned and washed to ensure that they are free of marine growth and invasive species prior to mobilization to the site.
    1. Equipment shall include boats, barges, scows, cranes, excavators, haul trucks, pumps, pipelines and other all miscellaneous tools and equipment previously used in a marine environment.
3. Cleaning and washing of equipment shall be performed immediately upon their arrival at the site and before use in or over the water body.
4. Conduct cleaning and washing operations as follows:
    1. Scrape and remove heavy accumulation of mud and dispose appropriately.
    2. Wash all surfaces of equipment by use of a pressurized fresh water supply.
    3. Immediately follow with application of a heavy sprayed coating of undiluted vinegar or other environmentally approved cleaning agent to thoroughly remove all plant matter, animals and sediments.
    4. Check and remove all plant, animal and sediment matter from all bilges and filters.
    5. Drain standing water from equipment and let fully dry before use.
    6. Upon removal from the water, drain standing water from equipment and let fully dry before removal off the site.
5. Clean, drain, decontaminate and fully dry all gear and equipment (including waders, nets, buckets, tools, boats, and trailers) before transferring from one body of water to another to prevent the transfer of disease and non-native organisms.

SPECIES AT RISK AND MARINE MAMMALS

1. A safety zone for cetaceans and/or species listed under Schedule 1 of the *Species at Risk Act* (e.g. North Atlantic Right Whale, White Sharks or Leatherback Turtles) must be established at the work site. The safety zone shall consist of a circle with a radius of at least 500 meters as measured from the center of the work site.
2. Maintain periodic visual surveys if cetaceans and/or species listed under Schedule 1 of the *Species at Risk Act* (e.g. North Atlantic Right Whale, White Sharks or Leatherback Turtles) within the safety zone.

3. If cetaceans and/or species listed under Schedule 1 of the *Species at Risk Act* (e.g. North Atlantic Right Whale, White Sharks or Leatherback Turtles) are observed within the safety zone while in-water activities are underway, all in-water activities must cease until the animals leave the safety zone and are not observed within the safety zone for a minimum period of 30 minutes.
4. Work may start or restart if cetaceans and/or species listed under Schedule 1 of the *Species at Risk Act* (e.g. North Atlantic Right Whale, White Sharks or Leatherback Turtles) are not observed within the safety zone within the 30-minute period.

SOCIOECONOMIC

1. Abide by provincial and municipal regulations for any restrictions on work performed during the night time and on flood lighting of the site. Obtain applicable permits.
2. Work equipment and machinery must be equipped with adequate muffling capacity to reduce noise on site to lowest possible level. Maintain mufflers in good operating condition at all times.
3. Place flood lights in opposite direction of adjacent residential and business areas. Use LED lights instead of other types of lights, where possible. LED light fixtures are less prone to light trespass (i.e., are better at directing light where it needs to be, and do not bleed light into the surrounding area).
4. Sounds such as whistle blasts and horns will be limited or replaced, to the extent possible, with radio communications.
5. Contractor to coordinate with the local Harbour Authority prior to commencement of the work such that the schedule with the least possible conflicts will be implemented.
6. Construction activities must be carried our during hours agreed upon with the Departmental Representative and in compliance with applicable local municipal noise by-laws, to mitigate disturbance to local residents.

ARCHAELOGICAL

1. All construction personnel are responsible for reporting and cultural materials, which may be archaeological resources, unearthed during construction to the Construction Supervisor. If the find is believed to be an archaeological resource, the Construction Supervisor will immediately stop work in the vicinity of the find and notify the *Departmental Representative*.
2. If an archaeological and/or historically significant item (an archaeological resource) is discovered, work in the area will be stopped immediately and the *Departmental Representative* will be contacted as well as the provincial Archaeological Services unit.

.3 Work can only resume in the vicinity of the archaeological find when authorized by the *Departmental Representative*, after approval has been granted by the [provincial authority].

.4 In the event of the discovery of possible human remains or possible evidence of human burials, the work will immediately cease. If the discovery is potential, but not positively human remains, contact the *Departmental Representative* as well as the provincial Archaeological Services Unit. If the materials discovered are undoubtedly human remains, the nearest law enforcement agency will be contacted immediately by the *Departmental Representative* and/or the Construction Supervisor. Until determined otherwise, the possible human remains should be treated as evidence in a criminal investigation. If the possible human remains are found in the bucket of heavy equipment, the bucket should not be emptied as physical evidence may be destroyed by that action. The area should immediately be designated as “Out of Bounds” to all personnel and the public. Depending on the weather and other conditions, the potential human remains should be provided with non-intrusive protection, such as covering with a cloth or canvas tarp (non-plastic preferred). Curiosity seekers should be kept off the site.