

# Coats Marsh Weir Removal Construction Environmental Management Plan



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**Down to Earth Biology**

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## 1 INTRODUCTION

Coats Marsh Regional Park is a protected wetland on Gabriola Island that is managed by the Regional District of Nanaimo (RDN) (RDN n.d.). This regional park is in the traditional territory of the Snuneymuxw First Nation. As identified in the *Coats Marsh Regional Park Management Plan: 2011-2021*, the primary management objective for the park is environmental conservation (RDN 2011). The water levels within the wetland are controlled by a concrete outlet weir and an upstream beaver dam. The Regional District of Nanaimo (RDN) and The Nature Trust of BC (TNT) co-own (the Owners) the Coats Marsh Weir within the park. The weir is currently unlicensed, though classified as a dam under the BC Dam Safety Regulation (DSR) because of its reservoir storage volume. In 2020, it was determined that the weir had deteriorated and there is a risk of private property flooding downstream if the weir fails. A subsequent study (NHC 2023a, 2023b) evaluated weir replacement and decommissioning options, after which the RDN elected to pursue a weir decommissioning plan that retains the upstream beaver dam as the preferred option.

This CEMP forms the basis of environmental permitting for the project and is provided as part of the Section 11 *Water Sustainability Act* (SBC 2014) Change Approval application, the Fisheries and Oceans Canada (DFO) Request for Review under the *Fisheries Act* (RSC 1985) or any other relevant permitting. The focus of this document is to specify standards and best practices to be implemented during works within and near the stream. The goals of this CEMP are to:

- Support environmental permitting.
- Define the environmental management responsibilities of the project team.
- Identify environmental risks and prescribe measures to avoid or minimize environmental impacts.
- Provide environmental protection procedures for routine activities and unplanned events.
- Provide communications procedures and contact numbers.
- Confirm the commitment of this project to sound environmental management.

The Construction Environmental Management Plan (CEMP) focuses on the construction activities proposed at the much smaller “weir pool area”, which is defined as the wetted area immediately upstream of the outlet weir but below the beaver dam. As per NHC (2023b), the objective of decommissioning is to remove the concrete weir such that there is no man-made reservoir impoundment above the existing marsh grade in the weir pool. The preliminary plan assumes that the upstream beaver dam will be left in place during and after the decommissioning process. Additionally, a 1.2 m high concrete grade control structure is proposed at the current weir location to reduce erosion and sediment mobilization from upstream, and to partially restore the controlling bed level that existed prior to historical blasting of the marsh outlet channel. The BC Dam Safety Regulation (BC Reg 40/2016) requires that decommissioning be carried out in a way that mitigates adverse impacts to public safety, the environment, and infrastructure and property. A project overview and summary of key mitigation measures is provided on the next two pages, followed by the detailed description of the site, proposed works, and environmental mitigation measures.



Project Overview	
<b>Project Description</b>	<p>Removal of the concrete weir such that there is no man-made reservoir impoundment above the existing marsh grade in the weir pool. The preliminary plan assumes that the upstream beaver dam will be left in place during and after the decommissioning process.</p> <p>A 1.2 m high concrete grade control structure is proposed at the current weir location to reduce erosion and sediment mobilization from upstream, and to partially restore the controlling bed level that existed prior to historical blasting of the marsh outlet channel.</p> <p>Fill placement and grading on the landward side of an existing flood control berm on the left side of the weir pool and construction of a drainage channel on the neighbouring property</p> <p>Construction of an overflow channel adjacent to the main outlet to enhance water level management and reduce risks near private property to the west.</p> <p>Sediment removal near the marsh outlet and dewatering of the weir pool.</p> <p>Reclamation works -soil placement, removal of invasive species, and planting of native species.</p>
<b>Location</b>	Coats Marsh is located on Gabriola Island. The proposed construction will occur within the weir pool, which is located between the existing beaver dam (upstream end) and the concrete weir (downstream) and partially on the neighbouring property to the west.
<b>Weir description</b>	The weir is a concrete outlet weir that is approximately 3.3 m high (downstream side), 6 m wide and 0.6 m thick with a wooden bridge built to cross the water outlet. The weir, bridge and berm are located on Coats Marsh Creek at the west end of Coats Marsh. The water storage capacity at the weir crest elevation for the full marsh area is approximately 38,950 cubic meters (NHC 2023b). The weir pool area is estimated to have a capacity of between 5% to 7% of the full marsh area, with the weir pool volume ranging between 2,000 and 2,700 cubic meters.
<b>Sensitive Features</b>	<p>A critical transitional zone exists within Coats Marsh. Water levels in the weir pool area are largely dictated by the weir elevation although the beaver dam also regulates water levels by retaining water upstream. Water levels in the weir pool, in turn, influence the composition of wetland habitat and vegetation communities.</p> <p>An open water channel runs through the center of the weir pool from the beaver dam to the concrete weir, indicating a deeper, consistently wetted depression.</p>
<b>Watershed Context</b>	Coats Marsh, part of the Hoggan Lake Watershed (925-380000-26400) and Coats Marsh Regional Park (Regional District of Nanaimo 2011).
<b>Fisheries Resources</b>	No fish presence could be detected in Coats Marsh. The presence of northern red-legged frog, Pacific chorus frogs, and rough-skinned newt was confirmed through trapping efforts.
<b>Timing Windows</b>	<p>Instream works to be carried out during the least risk timing window for cutthroat trout and rainbow trout for the region – August 15 to September 15. This timing is outside the migratory birds breeding window and is also just after the potential dispersal of the young red-legged frogs, typically ending by mid-August.</p> <p>The window also coincides with typical low water elevation period in Coats Marsh, which could disconnect it from the Coats Marsh Creek.</p> <p>Vegetation clearing from March 1 to August 31 shall be preceded by bird nest surveys.</p>
<b>Environmental Risks</b>	<p>Excess sediment entering the Coats Marsh Creek causing harm to fish and fish habitat.</p> <p>Reduction in downstream flow – potential stranding of fish.</p> <p>Harm to nesting birds during vegetation clearing.</p> <p>Harm to amphibians or other wildlife living within the weir pool limits.</p> <p>Spills of fuel, oil, or chemicals.</p>
<b>Environmental Permitting</b>	<p>Section 11 <i>Water Sustainability Act</i> Change Approval</p> <p>Request for Review with Fisheries and Oceans Canada (DFO)</p>





Key Mitigation Measures	
<b>General</b>	A qualified Environmental Monitor (EM) shall be on site periodically throughout construction.
<b>Vegetation Management</b>	<p>Minimize impact to riparian vegetation within 30 m of Coats Marsh.</p> <p>Clearing vegetation from March 1 to August 31 shall be preceded by bird nest surveys, and active bird nests will be flagged by the EM and left undisturbed until the young have fledged and left the nest.</p> <p>Revegetation and enhancement will be required at the dewatered areas of the weir pond, the excavation areas at the berm location, and any selected soil spoil sites.</p> <p>Control of reed canarygrass in the dewatered wetland section and adjacent riparian areas will be implemented.</p>
<b>Instream Works</b>	<p>Work will be carried out within permit obligations and project commitments.</p> <p>Works to be carried out during the least risk timing window for cutthroat trout and rainbow trout for the region – August 15 to September 15.</p> <p>If flow is present, redirect the water around the construction area, such that clear water flow is maintained downstream throughout the construction period.</p> <p>Dewater the weir pool first, before any construction begins.</p> <p>Water quality will be monitored within the wetland and downstream of the weir if flow is present. Water quality will remain within the BC Approved Water Quality Guidelines for turbidity (BC MOECCS 2025).</p> <p>Concrete contact water will be discharged to ground away from the stream and wetland. Mitigation measures to be available onsite to respond to an unintended discharge into the stream.</p> <p>Riprap used on site will be non-acid generating.</p>
<b>Amphibian management</b>	<p>Construction activities and potential amphibian salvages are to be conducted as per the conditions of the wildlife/amphibian salvage permit (BC Wildlife Act - RSBC 1996).</p> <p>Weir removal should be timed to coincide after young red-legged frog dispersal, typically ending by mid-August.</p> <p>Adult and juvenile northern red-legged frogs (and all other amphibian and reptile specimens encountered) must be salvaged and relocated prior to any ground clearing or earthworks by a QEP based on the appropriate wildlife handling permits.</p> <p>Amphibian Salvage Plan as part of the amphibian salvage permitting process and to be implemented during construction. Instream work isolation to prevent amphibians from entering the work area will be installed as per the Amphibian salvage Plan and permit obligations.</p>
<b>Erosion and Sediment Control</b>	<p>Schedule soil disturbing works during dry weather and stop works during significant rainfall events (&gt;25 mm in 24 hours).</p> <p>Store stockpiled soils and rocks at a location approved by the EM. Cover and contain stockpiles with tarps or polyethylene sheeting and silt fencing as directed by the EM.</p> <p>Apply additional mitigation measures as recommended by the EM to adapt to site-specific conditions.</p> <p>Area disturbed to be revegetated as soon as possible as per the Reclamation Plan.</p>
<b>Fuel and Oil Management</b>	<p>Ensure machinery is clean, free of leaks, and properly maintained prior to arriving on site.</p> <p>Machinery working instream will be equipped with biodegradable hydraulic fluids.</p> <p>Refuel machinery and store fuels and oils at least 30 m away from the marsh.</p> <p>Ensure generators and other small engines have secondary spill containment – e.g., spill trays</p>
<b>Spill Response</b>	<p>All machinery on-site must be equipped with a 30-litre spill kit.</p> <p>If a spill of fuel or hydraulic oil occurs, stop work immediately and shut down machinery when safe.</p> <p>Contain and clean up the spill with spill kit supplies, including contaminated soil.</p> <p>Store used spill supplies and contaminated soil in heavy-duty garbage bags.</p> <p>Dispose of the waste at a licensed facility and provide proof of disposal to the EM.</p> <p>All spills to water, and any spill to ground &gt;100 L must be reported to EMBC.</p>
<b>Fire Response</b>	Construction crew to be fire ready as per the Deputy Fire Chief on Gabriola Isl.'s requirements.
<b>Chance Find Procedure</b>	Stop work! Consult with the Archeology Branch and Snuneymuxw First Nation before continuing.





This CEMP is a pre-construction draft. It will be updated prior to construction to include any additional mitigation measures and criteria resulting from permitting obligations.

## 2 REGULATORY OVERVIEW

Legislation that may be applicable to the project is described in the following sections.

### 2.1 FEDERAL

#### *Fisheries Act*

The Department of Fisheries and Oceans Canada (DFO) is the primary federal agency responsible for administration of the *Fisheries Act* and the policies and programs addressing national interests in marine and fresh waters. The *Fisheries Act* includes the following sections which restrict threats to fish and fish habitat: Section 34 – Fish and fish habitat protection and pollution prevention and Section 35 - Harmful alteration, disruption or destruction of fish habitat. A Request for Review of potential Project impacts and mitigation should be considered given the potential project impacts, albeit low, to downstream fish and fish habitat.

#### *Migratory Bird Convention Act*

Bird species listed under the *Migratory Birds Convention Act* (MBCA) may nest or forage in or near water. The MBCA protects and outlines the management of migratory birds and their habitats across Canada. The MBCA is administered through Environment Canada under the Canadian Wildlife Service (CWS). The MBCA prohibits “the killing, capturing, injuring, taking or disturbing of migratory birds or the damaging, destroying, removing or disturbing of nests.” Under the Migratory Birds Regulations, no person shall “disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird.”

#### *Species at Risk Act (SARA)*

The *Species at Risk Act* (SARA) prohibits the killing, harming, or harassing of listed species, trading in the parts of listed species and damaging or destroying the residence of an individual of a listed species. SARA’s Schedule 1 lists species as Extirpated, Endangered, Threatened or Special Concern. Species included on Schedule 1 are established by the Federal Cabinet and are based on recommendations by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and consultation with government, Indigenous peoples and the public. Section 32 prohibits the killing, harming and capture of individuals of a species that is listed as Extirpated, Endangered or Threatened; and Section 58 prohibits the destruction of critical habitat of a listed Endangered or Threatened species. SARA is applicable to all federal lands and all areas with aquatic species at risk.

#### *Transportation of Dangerous Goods Regulations*

The *Transportation of Dangerous Goods Regulations* (TDG Regulations) in Canada, overseen by Transport Canada, sets out guidelines for the safe handling and transportation of hazardous materials by road, rail, air, or water.



These regulations mandate specific requirements for classifying, packaging, labeling, and documenting dangerous goods to ensure public safety and environmental protection. Adherence to the TDG Regulations is essential for all parties involved in transporting hazardous substances, as it helps minimize risks and promotes safety throughout the Canadian transportation network.

## 2.2 PROVINCIAL

### *Water Sustainability Act*

BC's *Water Sustainability Act* (WSA) is the primary provincial statute regulating water resources and is administered by the Ministry of Water, Land and Resource Stewardship. WSA was implemented to ensure a sustainable supply of fresh, clean water that meets the needs of B.C. residents. The WSA is the main Provincial law for managing the diversion and use of water resources. Applicable regulations include the Water Sustainability Regulation, and Dam Safety Regulation. The Project will be submitting a Section 11 Approval under the *Act*.

### *Wildlife Act*

Section 34(c) of the *Wildlife Act* prohibits the disturbance of a bird, egg or nest while the nest is occupied. Also, capturing, handling and transportation of amphibian and other wildlife species without a permit is prohibited.

### *Heritage Conservation Act*

The purpose of the *Heritage Conservation Act* (1996) is to encourage and facilitate the protection and conservation of heritage property in British Columbia. The Act protects archaeological sites predating 1846, whether they are located on either public or private land. Section 13(2) of the Act states that archaeological sites may not be destroyed, excavated, or altered without a permit. It also states that anyone conducting ground disturbing activities is required to avoid impacting protected archaeological sites, regardless of whether or not these sites have been previously identified or disturbed. The Act is administered by the Archaeology Branch in the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

### *Environmental Management Act*

The *Environmental Management Act* protects human health and the quality of water, land and air throughout the province. Waste discharges can adversely affect the water quality of a given stream and are therefore a key focus of the *Environmental Management Act*. As water quality directly impacts fish species and habitat, the key component of concern for fish under the Act pertains to managing and issuing authorizations for discharging waste into the environment.

### *Weed Control Act*

The *Weed Control Act* identifies the duty of landowners within British Columbia to control noxious weeds. In accordance with regulations, an occupier must control noxious weeds growing or located on land and premises



occupied by that person. The Project will employ best practices to manage the existing invasive species on site.

### 3 PROPOSED CONSTRUCTION

The proposed works designed by Northwest Hydraulic Consultants Ltd (NHC; the Project Engineer) include construction within and adjacent to the weir pool. As per the design drawings, the works include:

- Dewatering;
- Excavation and soil stockpiling;
- Disposal of soil onsite;
- Removal of old concrete and casting new concrete in place;
- Infilling behind an existing flood control berm – placement of granular base and topsoil;
- Planting vegetation; and
- Construction of aquatic habitat.

Detailed Issued for Construction (IFC) drawings are being prepared by NHC; however, the nature and extent of the planned works are not expected to change substantially from the current draft drawings. The proposed constructions are planned during August-September 2025.

### 4 ENVIRONMENTAL FEATURES

Several environmental and hydrological assessments have been conducted within the Coats Marsh and downstream watersheds including:

- Coats Marsh Weir Replacement Elevation Study – Final Report (NHC 2023a)
- Coats Marsh Dam Preliminary Decommissioning Plan Report (NHC 2023b)
- A Proposed Strategy for Water Level Management – Coats Marsh, Gabriola Island, BC (Madrone Environmental Services, 2021)
- Coats Marsh Weir Assessment (SRM Projects 2020)
- Coats Marsh Regional Park – 2011-2021 Management Plan (RDN 2011)
- Citizen-science studies from local Gabriola Island resident N. Doe and Gabriola Streamkeepers (2019, 2020, 2021, 2023)

EDI Environmental Dynamics Inc has prepared a habitat assessment of the wetland (EDI 2023) and weir decommissioning plan (EDI 2023a). A public engagement open house was held in January 2024 to present the preliminary decommissioning plan and solicit feedback from community members. Following this process, RDN requested that EDI prepare an additional environmental assessment focusing on project effects and mitigation options for the weir pool area. The following environmental descriptions are based on EDI's assessments.



## 4.1 GENERAL

Gabriola Island is within the Coastal Douglas-fir (CDF) biogeoclimatic zone, characterized by low elevations in the rain shadow of Vancouver Island. Coats Marsh, part of the Hoggan Lake Watershed (925-380000-26400) and Coats Marsh Regional Park (Regional District of Nanaimo 2011), is a diverse wetland ecosystem influenced by the concrete weir and upstream beaver dam. The marsh spans approximately 200 meters in width and 425 meters in length, with habitats including shallow water, marsh, and shrubby swamp areas. The wetland comprises about 65% shallow water, 25% marsh, and 10% shrubby swamp.

## 4.2 VEGETATION AND ECOSYSTEMS

Vegetation in Coats Marsh varies with hydrological conditions. Shallow water areas are dominated by water smartweed (*Persicaria amphibia*), yellow pond lily (*Nuphar variegata*), and other aquatic species. Transition zones feature emergent plants like sedges (*Carex* sp.), pondweed (*Potamogeton* sp.), and marsh horsetail (*Equisetum palustre*). Margins of the wetland, influenced by periodic flooding, support shrubby vegetation like pink spirea (*Spirea douglasii*) but are extensively dominated by invasive reed canarygrass (*Phalaris arundinacea*). Reed canarygrass thrives in habitats characterized by fluctuating water levels, and frequently out-competes native wetland vegetation. In areas less prone to inundation, such as the margins of the wetland, shrubby vegetation like pink spirea (*Spirea douglasii*) and other shrub species provide additional habitat diversity. These areas, influenced by periodic flooding and seasonal changes in water levels, contribute to the mosaic of habitats that define Coats Marsh.

In the weir pool, aquatic vegetation thrives in the shallow waters adjacent to the open water channel, including hydrophytic species such as water smartweed, yellow pond lily (*Nuphar variegata*), and bladderwort (*Utricularia* sp.). These plants adapt to fluctuating water levels and contribute to the area's ecological richness. Further from the central channel, the wetland complex transitions towards a marsh zone, including emergent and other hydrophytic native plants such as pondweed (*Potamogeton* sp.), sedges (*Carex* sp.), and marsh horsetail (*Equisetum palustre*), although these areas are largely dominated by a thick cover of invasive reed canarygrass.

## 4.3 WILDLIFE

The marsh provides habitat for a variety of wildlife species, including birds, amphibians, reptiles and mammals. Bird occurrence includes several species of wading birds, swans, geese, and waterfowl. Reports from local naturalists provide records of local wildlife observations at the site (Doe 2019). As noted, the marsh provides year-round habitat for Common Ravens (*Corvus corax*) and Northwestern Crows (*Corvus caurinus*) and also sees occasional visits from Steller's Jays (*Cyanocitta stelleri*) and Bald Eagles (*Haliaeetus leucocephalus*). Forested areas harbor Spotted Towhees (*Pipilo maculatus*) and Pacific Wrens (*Troglodytes pacificus*), while clearings attract American Robins (*Turdus migratorius*) and Violet-green Swallows (*Tachycineta thalassina*).



Shallow open water areas of the marsh host a variety of waterfowl, including year-round residents like Mallards (*Anas platyrhynchos*) and occasional visitors like Yellowleg Waders (*Tringa sp.*). Annual migrations bring Trumpeter Swans (*Cygnus buccinator*) and Canada Geese (*Branta canadensis*) to the area.

The Coats Marsh area hosts a thriving amphibian community, including Pacific tree frogs (*Pseudacris regilla*) and the provincially blue-listed northern red-legged frogs (*Rana aurora*). Additionally, the presence of the western long-toed salamander (*Ambystoma macrodactylum*) and rough-skinned newt (*Taricha granulosa*) adds to the region's amphibian diversity. Coats Marsh is not identified as critical habitat under the Species at Risk Act (SARA) or an Approved Wildlife Habitat Area (WHA) provincially for northern red-legged frogs. Reptiles, with garter snakes (*Thamnophis ordinoides*) as the primary representative, are relatively rare.

The Coats Marsh area hosts a varied population of mammals - black-tailed deer (*Odocoileus hemionus ssp. columbianus*) are noted as commonplace, even in winter. Other documented mammals include raccoons (*Procyon lotor*), red squirrels (*Tamiasciurus hudsonicus*), and beavers (*Castor canadensis*). Additionally, the presence of rodents such as deer mice (*Peromyscus maniculatus*) and Townsend's voles (*Microtus townsendii*) is highlighted, alongside the seasonal activity of bats (*Myotis sp.*).

#### 4.4 FISH AND FISH HABITAT

The weir pool area, located between the concrete outlet weir and the upstream beaver dam, is a critical transitional zone within Coats Marsh. Water levels in the weir pool area are largely dictated by the weir elevation although the beaver dam also regulates water levels by retaining water upstream. Water levels in the weir pool, in turn, influence the composition of wetland habitat and vegetation communities. An open water channel runs through the center of the weir pool from the beaver dam to the concrete weir, indicating a deeper, consistently wetted depression. Although dimensions will depend on vegetation growth and water levels, the open water drainage channel is approximately 2 m wide and approximately 50 m long in the weir pool. This submerged channel through the weir pool is described as an anthropogenic feature that was constructed around the same time as the weir by excavating and/or blasting a ditch along the base of the wetland (NHC 2023a).

Based on drawings provided by NHC, the estimated area within the annual high-water mark (HWM) between the weir and beaver dam is approximately 2,393 m<sup>2</sup>. The wetted area of the weir pool has historically been smaller but beaver activity around the weir over the past decade has resulted in higher waters in the weir pool area, as evident from the standing dead trees on the wetland periphery. Area within the annual high-water mark represents a mix of open water and marsh habitat.

Fish presence in the Coats Marsh area has been investigated to some extent in the past, with findings suggesting that the marsh does not sustain a salmonid fish population (Doe 2019, EDI 2023, EDI 2024). Records indicate that fish sampling occurred in 2010, but no fish were caught (Foul Bay Ecological Research 2010). Additionally, EDI used fish roe baited minnow traps on April 4, 2024, to investigate potential fish in the weir pool, resulting in no catches. The presence of northern red-legged frog, Pacific chorus frogs, and rough-skinned newt was confirmed through trapping efforts. Historically used for agriculture, Coats Marsh has documented barriers to fish passage, making it unlikely to support a natural population of salmonid fish.



While the marsh could provide suitable habitat for three-spined stickleback (Madrone Environmental Services Ltd. 2012), sampling and observations did not provide evidence of its presence in the marsh.

Fish habitat between the concrete weir and the beaver dam is limited, particularly for salmonid species. The weir pool offers no fish spawning gravels, having a substrate dominated by organics. The weir pool presents some opportunities for rearing and overwintering, but the pond remains inaccessible to fish due to various barriers to fish passage, including the syphon installed at the concrete weir and the height of the concrete weir during low to average water elevation. At high water elevation, the concrete weir is overtopped due to limited flow through the existing pipe outlet of 0.2 m diameter, although the lack of a plunge pool at the bottom of the weir prevents fish from being able to jump over the weir.

## 5 POTENTIAL ENVIRONMENTAL IMPACTS AND CONCERNS

The key potential impacts to be avoided during project construction are related to water quality, fish, and wildlife habitat. Concerns of note are:

- Harm to fish or fish habitat.
- Alterations of fish habitat outside of the approved Project area.
- Harm to/Disturbance of wildlife – bird/bird nests and amphibians.
- Water quality exceedances within aquatic receiving environments that negatively affect aquatic life.
- Unnecessary disturbance of the riparian vegetation and soils.
- Accidental release of fuel, oil or chemicals to the environment.
- Accidental release of suspended sediments to watercourses.
- Some Project activities could cause a fire.

## 6 ENVIRONMENTAL RESPONSIBILITIES OF THE PROJECT TEAM

All members of the construction team will play a role in ensuring that environmental protection requirements and objectives are met. This will involve:

- Understanding and adhering to all Project requirements including this CEMP and the plans and measures contained herein.
- Understanding environmental sensitivities and managing project construction to reduce potential negative environmental impacts.

All members of the construction team are encouraged to communicate concerns and suggestions regarding environmental impacts and impact mitigation measures to the Site Superintendent and the Environmental Monitor and/or other relevant members of the Project team.





The primary objectives of this CEMP are to ensure that construction activities are carried out in a manner that is (i) compliant with environmental legislation, (ii) compliant with the Project's environmental specifications, and (iii) does not result in avoidable adverse effects to the environment, including water quality, riparian and aquatic habitats, and fish and wildlife species.

## **6.1 AUTHORITY OF THE ENVIRONMENTAL MONITOR**

The Environmental Monitor (EM) for the Project must be a Qualified Environmental Professional (QEP). The EM will conduct periodic site visits throughout construction. The EM will have the authority to recommend modifications or to halt construction and direct construction personnel and equipment to implement mitigation measures as necessary to preserve and protect environmental values.

## **6.2 RESPONSIBILITY OF THE ENVIRONMENTAL MONITOR**

The EM shall be responsible for verifying that the construction contractor and their subcontractors are aware of their respective roles and responsibilities as they relate to the requirements of this CEMP. The EM will document compliance with the requirements of this CEMP and will provide advice as needed to maintain compliance with its objectives. If compliance issues are identified, the EM will be responsible for communicating any environmental deficiencies to the appropriate personnel. The EM will strive to ensure that environmental protection objectives of regulatory agencies are met. In addition, the EM will:

- Review this CEMP with the Construction Superintendent (CS) prior to construction commencement during a pre-work meeting.
- Be responsible for documenting any required environmental permits/approvals that have been issued and shall review all such documents to verify the Project team is aware of any terms and conditions therein that may not be specifically addressed by this CEMP.
- Ensure that construction contractors understand the key environmental aspects of the project and required mitigation measures.
- Participate in tailgate meetings with construction contractors to review environmental aspects and requirements.
- Verify that adequate and appropriate materials and supplies are maintained on site and in good condition for erosion and sediment control, spill prevention and recovery, and fire prevention and suppression.
- If adverse environmental conditions or incidences occur, provide advice to the Construction Superintendent about altering or ceasing certain construction activities and/or implementing remedial / mitigative measures.
- Notify the CS and appropriate regulatory agency in the event of a reportable spill or significant environmental incident.





- Implement corrective action as required in the event of an environmental incident, and direct construction personnel and equipment accordingly.
- Assist with developing the communications plan during the pre-work meeting.
- Maintain a log of readings and measurements, construction activities, communications, and environmental conditions. Notes should focus on the need for, use and success of environmental impact mitigation measures.
- Document the construction activities and environmental mitigation measures implemented.

### 6.3 RESPONSIBILITY OF THE CONSTRUCTION SUPERINTENDANT

The Construction Superintendent (CS) will provide overall construction management for the project. All site activity will be coordinated through the CS. The CS will:

- Have a thorough knowledge of the environmental aspects of the project as detailed in this CEMP.
- Ensure implementation of the Contractor's works meet the environmental protection requirements outlined in this CEMP and as provided in any permit conditions.
- Maintain regular communication with the EM and involve the EM and NHC in all aspects of the planning process for on-site works to ensure that environmental risks are mitigated.
- Defer to the EM in areas of environmental control and risk management.

## 7 MEASURES TO MITIGATE/AVOID ENVIRONMENTAL IMPACTS

General measures to minimize or avoid negative environmental impacts during construction are described below. Measures appropriate for this project were determined based on the assessment of site conditions, review of engineered design drawings (Appendix A), and discussions regarding the anticipated construction process with the Project Engineer. Specific measures will be developed in accordance with this document based on specific construction activities, timing and logistics. The EM will periodically inspect measures and conditions and will work with the CS to verify that appropriate regulatory compliance and impact mitigation measures are implemented, with a focus on works in and near the stream.

### 7.1 MACHINERY AND EQUIPMENT

All vehicles, machinery, and equipment used on the construction site must comply with the following requirements:

- All machinery will be maintained in good working order and free of fluid leaks throughout construction. All hydraulic lines must be checked and confirmed to be in good shape prior to machinery arriving on site.



- Heavy working near and instream will be equipped with biodegradable hydraulic fluids.
- All machinery, equipment and supplies brought to the site shall be clean and free of soil or plant material (to prevent the inadvertent introduction of invasive plant material to the site).
- All construction machinery must be equipped with a 30-litre spill kit.
- All gas and diesel-powered equipment (such as generators and pumps) in use or temporarily stored on the ground shall have secondary containment.
- All vehicles and construction machinery will carry appropriate firefighting equipment during the summer months (June to September) and during any other periods in which the local fire danger rating is moderate or higher.
- Machinery shall be parked overnight at least 30 m from Coats Marsh or as specifically designated by the EM.
- Refueling and equipment servicing must occur at least 30 metres away from any stream or surface water drainage.
- Pumps must be set in spill trays while working within 30 m of the water.

## 7.2 REFUELING

- Nozzles that are kept open by continuous application of manual pressure must be used while refueling equipment from large tanks such as Tidy Tanks.
- All hand-held equipment and small portable containers shall be refueled a minimum of 15 m from Coats Marsh and the creek.
- All other equipment shall be fuelled at least 30 m from any watercourses, or at an area designated by the EM.
- Portable fire extinguishers shall be at hand during fueling.
- No smoking will be permitted during refueling.
- Any vehicle fitted with a portable fuel tank is required to ensure at least one 20-B:C rated portable fire extinguisher or two 10-B:C rated portable fire extinguishers are within 9 m of the truck-box fuel tank.

## 7.3 WASTE MANAGEMENT

The Contractor's waste management activities shall be consistent with all regulatory requirements for the safe storage, transport and disposal of construction waste materials. Waste management will include domestic garbage (i.e., food waste), construction waste (e.g., empty containers, flagging tape, lumber etc.), and natural vegetation and wood waste. Any food waste may be temporarily stored inside the cabins of vehicles or other machinery and removed from site at the end of each day. If food waste or any other attractive waste -. e.g.,



grease and glues, is stored onsite overnight, it must be placed inside a metal bin with a secured lid to avoid wildlife interactions/conflicts.

Domestic and construction waste will be hauled off site for disposal. All workers on site will be reminded at tail-gate meetings to properly dispose of personal garbage.

Hazardous waste is unlikely to be produced by construction activities. However, if a spill of hydrocarbons occurs, contaminated soil, water, and any cleaning materials will be temporarily stored in labeled containers on site or placed on an impermeable tarp and covered until they can be discarded at a facility approved for accepting and processing hazardous waste.

If portable toilets are to be brought to the construction site, they shall be pumped out regularly and shall be located away from sensitive areas and at least 30 m from Coats Marsh.

## 7.4 NOISE

Construction activities shall adhere to RDN's Bylaw No. 1082 – A Bylaw to Regulate or Prohibit Objectionable Noise Within Electoral Area B, unless specified otherwise by the RDN staff. All construction activities shall be carried on between 8:00 a.m. and 8:00 p.m. as per Schedule C of the bylaw.

## 7.5 CLEARING AND GRUBBING

As much as possible, removal of vegetation in riparian areas should be avoided, or the amount of riparian vegetation clearing required for the project will be maintained at a minimum; except for the removal of invasive species.

The following criteria apply to clearing and grubbing during both the initial tree removal phase and other phases of the work that may require vegetation removal:

- The Contractor shall review the necessary clearing limits with the EM once they have been established.
- A bird nest survey conducted by the EM must precede all planned clearing or grubbing of trees or shrubs between March 1 and August 31 (see Section 7.8).
- Areas of work and access routes must be clearly marked prior to starting work and the route taken must minimize disturbance to naturally vegetated areas.
- Vegetation clearing for site and work area access must be limited by using access routes and previously disturbed areas as much as possible.



### 7.5.1 INVASIVE PLANT SPECIES

Control of reed canarygrass in the dewatered wetland section and adjacent riparian areas should be implemented, reflecting the prescriptions outlined in the *Coats Marsh Dam Decommissioning: Environmental Assessment for Preliminary Decommissioning Plan* (EDI 2023). It is important to note that reed canarygrass is extremely persistent and aggressive, and that full removal and/or eradication is unlikely from the marsh area.

- Invasive species will be controlled manually until other planted native species can become established and free growing.
- Soils excavated at site may be considered for use to cap and temporarily smother areas with invasive species, which will then be planted as per revegetation prescriptions.
- Controls during revegetation and ongoing maintenance may include trampling/stomping, cutting/mowing, and smothering with cardboard and/or mulch.
- Any cutting of reed canarygrass should be implemented prior to seed maturity (May to June) (Metro Vancouver and the Invasive Species Council of Metro Vancouver, 2021).
- Assuming a five-year maintenance and inspection period, each spring, and as needed through the year, reed canarygrass shall be mechanically brushed by the owner using manual methods. To improve native plant growth and establishment within the treatment units, reed canarygrass and other non-native species will be mechanically managed to limit the height and reduce competition. This may include brushing and physical stomping down of the grass cover. Mulching may be utilized where required to help prevent establishment and control invasive species regrowth.
- All machinery, equipment and supplies brought to the site shall be clean and free of soil or plant material (to prevent the inadvertent introduction of invasive plant material to the site).

### 7.6 EROSION AND SEDIMENT CONTROL

Construction activities will be managed to minimize erosion and the release of sediment to Coats Marsh and the downstream creek. Sediment and drainage control measures are to be the responsibility of the Construction Superintendent with advice provided by the EM, if and when required. Construction activities in a given area will not commence until proper sediment and drainage control measures/plans are in place. Regular inspection of sediment and drainage control measures during construction will ensure these are functioning and maintained as required. Section 7.6 describes the water quality requirements of the Project.

Risk of sediment generation may result from numerous activities throughout the project site. These risks are influenced by weather conditions and increase during wet periods. Where there is a potential for sediment laden runoff or if sediment laden runoff develops, control devices will be installed on a site-specific basis. Sediment and drainage control measures during construction will include:

- Cleared and grubbed areas will be kept to the minimum required for construction.
- Excess soil from excavation will remain on site as much as possible while avoiding the spread of invasive species. Any suitable topsoil will be spread over the reed canarygrass areas, and any excess



subsoils will be stockpiled in areas on site that are away from Coats Marsh such that the natural drainage pattern is not impacted.

- Soil excavated from the Project footprint that is intended for reuse/reclamation on site should be managed to prevent impacting the existing habitat and to preserve its properties. To maintain the soil productivity, the topsoil and subsoil will be salvaged in separate lifts and stockpiles will be protected from rainfall and runoff to prevent sediment mobilization into the nearby aquatic and riparian habitat.
- Where there is a potential for sediment laden runoff in the proximity of watercourses, control devices will be installed prior to construction activities commencing.
- French drains, energy dissipaters, straw mats, geotextiles, filter fabric, check dams, and interception ditches will be used as needed on a site-specific basis for sediment and drainage control.
- An inventory of appropriate filter fence, geotextile and locally sourced straw/hay bales will be maintained and made available on site by the construction contractor.
- Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting a watercourse.
- Sediment laden waters that may enter the creek will be diverted to the forest ground or dispersed through well vegetated areas to allow sediment to settle out. Pumping may be necessary to achieve this requirement.
- Clean/non-contact water that may be discharging into the creek will be diverted around the Project and back into the creek, downstream of the Project footprint.
- Exposed soil areas and erosion-prone slopes that could erode into watercourses will be protected using poly sheeting or silt fencing (temporarily) and restored as per the Restoration Plan for the Project (Appendix B).
- The timing of clearing and grubbing will be as close to excavation and earthworks as possible to minimize the length of time that soils are exposed. Vegetation outside of approved work areas shall not be disturbed.
- Vehicles and equipment will be restricted to the work site and right-of-way boundaries.
- The outlet of any hose outlet or other water diversion must include energy dissipation measures to protect against erosion where the water rejoins the stream. This can include energy dissipaters such as diffusers, sandbags, plastic, and riprap.

## 7.7 INSTREAM WORKS

All planned works are within or adjacent to the Coats Marsh must be completed during the reduced risk timing window (August 15 to September 15). During this time, Coats Marsh Creek is expected to be dry. Upon



completion of construction, the area will be recontoured as per the construction drawings (Appendix A), and all exposed soil area shall be restored as per the Reclamation Plan.

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### 7.7.1 TURBIDITY

Project works and sediment control practices shall be implemented to ensure that any project-induced changes in water quality meet the turbidity criteria for aquatic life in freshwater (MoECCS 2025). In general, these guidelines state:

- During Clear Flow Periods – Induced turbidity/total suspended sediment should not exceed background levels by more than 8 NTU (25 mg/L) during any 24-hour period.
- During Turbid Flow Periods – Induced turbidity/total suspended sediment should not exceed background levels by more than 5 NTU (10 mg/L) at any time when background turbidity is between 8 and 50 NTU (25 – 100 mg/L). When background exceeds 50 NTU (100 mg/L), turbidity/total suspended sediments should not be increased by more than 10% of the measured background level at any one time.

During any pumping of excavation water, the EM shall regularly obtain turbidity measurements to verify if water quality guidelines for turbidity are being achieved. The impact area will be the aquatic habitat downstream of the Project footprint. Provided that water from the wetland is being discharged into the creek during construction, downstream/impact turbidity will be measured approximately 25 m downstream of the concrete weir.

To reduce the potential effects of excavation in an aquatic environment, the weir pool will be drained first and the work area isolated from the upstream marsh using a cofferdam. This would allow excavation of soil materials from the weir pool area with little/no sediment mobilization into the adjacent habitat and reduce the amount of potentially contaminated water that needs to be managed during construction. The cofferdam is to be installed and removed in a manner that does not affect the existing environmental values beyond the Project timeline – i.e., the cofferdam structure will be completely removed upon completion of construction activities. Alternatively, a safety cofferdam could be installed to reduce the effects of a potential beaver dam failure during construction while isolating the site; however, such a cofferdam must be designed and installed as per an engineer's specifications.

All clean water entering the site will be diverted around construction and disturbed areas. If needed, a sump will be dug into the submerged drainage channel upstream of construction to facilitate an adequate depth for a pump to collect the discharge water from Coats Marsh and pump it into the creek. All sediment laden water from the excavation site will be pumped into the forest, away from the aquatic habitat and its riparian zone.

Machinery will access the excavation site on swamp mats or similar to reduce tracking of the water saturated soils, prevent machinery from sinking into fine sediments, and improve the excavation site safety. The mats will be removed at the end of construction.



### 7.7.2 PH

Cementitious products could alter (increase) the water pH, which could affect the fish habitat downstream. As per the approved provincial guidelines for aquatic life in freshwater habitats (MoECCS 2025):

- Freshwater < 6.5 - no statistically significant decrease in pH from background. No restriction on the increase in pH except in boggy areas that have a unique fauna or flora. Site-specific ambient water quality objectives to restrict the pH increase in areas with a unique fauna and flora are recommended.
- Freshwater 6.5-9.0 - unrestricted change permitted within this pH range. This component of the freshwater WQGs should be used cautiously if the pH changes cause the carbon dioxide concentrations to exceed a 10 µmol/L minimum or a 1360 µmol/L short-term. Carbon dioxide concentrations below 10 µmol/L can cause a shift in the phytoplankton community to cyanobacteria, while CO<sub>2</sub> concentrations above 1360 µmol/L can be toxic to fish.

As works are expected to occur during dry site conditions, the risk of concrete products entering the water is very low; however, pH monitoring will be conducted as a precautionary measure to confirm that water quality remains within acceptable limits. The following BMPs (BC Government 2022) shall apply:

- b) All works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials (concrete) must not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any stream. Concrete materials cast-in-place must remain inside formed structures.*
- c) A carbon dioxide (CO<sub>2</sub>) tank with regulator, hose and gas diffuser must be readily available during any work involving the mixing or pouring of concrete. Operators must have appropriate training to operate such equipment and to release carbon dioxide gas and neutralize pH levels should a concrete (and/or derivative) spill occur.*
- d) Wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment must be contained in a manner that prevents wash-down water from entering a stream, stormwater runoff or aquifer.*
- e) Concrete work must be isolated from any water within any watercourse or stormwater system and/or be prevented from entering into any watercourse or stormwater system.*
- f) Where concrete work occurs within the stream or stream channel, a location immediately downstream of the work must be monitored regularly for pH.*
- g) Concrete work must stop if downstream pH:*
  - i. has changed by more than 1.0 pH unit, measured to an accuracy of +/- 0.2 pH units from the background level; or,*





- ii. where applicable, is recorded to be below 6.0 or above 9.0 pH units and may only resume when pH levels have returned to levels within this range.*
- h) Water that contacts uncured or partly cured concrete during activities, such as exposed aggregate wash-off, wet curing, or equipment washing, must be prevented from directly or indirectly entering any stream, stormwater system, or aquifer if it will adversely alter the water quality as compared to the pre-disturbed state.*

### 7.7.3 FISH

If flow is present in Coats Marsh Creek, the Project will ensure that the flow is not discontinued by the construction activities. As such, active – e.g., pumps and hoses, or passive – e.g., pipes or culverts, will be used to maintain the connection between the beaver dam and downstream flow.

Although no fish have been captured in the weir pool to date, a precautionary fish salvage plan will be implemented due to the potential presence of fish downstream. Dewatering will occur slowly to avoid mobilization of sediments into downstream fish habitat and stranding of potential fish or amphibian larvae. The EM and/or QEP will conduct visual searches for stranded fish as the pool level decreases and relocate it/them outside of the Project footprint, downstream of the beaver dam. Additionally, the EM and QEP will conduct visual searches for fish in potentially isolated pools. Fish salvage activities will be conducted in all areas that pose a risk to fish such as dewatering pools or habitats, or isolated pools with poor water quality.

Fish capture, holding and release methodologies will be implemented as per the fish salvage permit for the project and will involve multiple methods including pole seining, beach seining, and electrofishing. Construction activities in any given area of the weir pool will not commence until the QEP can conclude that all fish have been removed.

Any dewatering pump used in potential fish habitat will have an appropriate fish screen as per DFO's interim code of practice for end-of-pipe fish protection screen <sup>1</sup>. This will also reduce the risk for amphibians from being entrained into the pumps.

## 7.8 WILDLIFE

Any clearing of trees and shrubs that occurs within the period of March 1 to August 31 shall be preceded by a bird nest site survey. Section 34(c) of the Wildlife Act (RSBC 1996) prohibits the disturbance of a bird, egg or nest while the nest is occupied. The destruction of eggs and active nests of migratory birds is also prohibited by the Migratory Birds Convention Act. Nesting bird surveys will be conducted in accordance with the level of effort warranted to confirm the absence of nests in consideration of factors such as season, time of day, habitat potential, vegetation type(s) and size of area to be cleared. During each survey at least two thorough passes of the entire area shall be made. Provided that no active nests are present in the area to be cleared, the area will be approved by the EM for vegetation removal for a 3- to 5-day period. Once the specified 3 to 5

<sup>1</sup> <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>



day clearing window has passed, any areas that have not yet been cleared will need to be resurveyed. Any active nest sites shall be identified and flagged with a 10 to 25 m buffer to be left undisturbed until the young birds have fledged and left the nest. To confirm nests are no longer active, they must be monitored for at least 1 hour on two consecutive days unless they can be viewed from above to confirm absence of eggs or chicks. The EM may approve adjustments to these criteria to be more or less restrictive depending on site specific circumstances, timing and observations. For example, nest surveys completed in August (late in the nesting season) may not require an expiry date as there is little to no chance of any new nests to be created that late in the season. The EM or QEP completing bird nest surveys shall be appropriately qualified and experienced with nest surveys.

The EM shall conduct a pre-construction survey of the Project area prior to mobilizing equipment to determine if bird nest or other wildlife habitat features of concern are present within or adjacent to the Project area.

Wildlife shall be excluded (such as through fencing) from the project's disturbance area where activities or works could adversely impact wildlife habitat. As required amphibian salvages will be conducted prior to ground disturbances within the project footprint at/near the wetland. The salvage activities will be led by a QEP and implemented as per the amphibian salvage permit and other environmental permit for the Project. Amphibians within the Project footprint will be relocated to Coats Marsh, upstream of the existing beaver dam.

Pumps placed in the aquatic habitat will be fitted with a fish screen to reduce the risk to entrain amphibians during operations/dewatering.

## 7.9 SITE RECLAMATION

The site reclamation will be completed as per the Weir Pond Restoration Plan and any other regulatory requirements. The CEMP will be updated upon permit approvals to reflect any changes or additions to the restoration plan. The intent of the restoration plan is to:

- Restoring the site to a safe and stable condition following the weir removal.
- Re-establishing natural hydrological processes to support wetland and riparian ecosystem function.
- Enhancing disturbed areas with native vegetation to support wildlife habitat, particularly for northern red-legged frogs (*Rana aurora*).

While detailed prescriptions can be found in the Restoration Plan, general prescriptions for restorations include:

- Native vegetation will be prioritized for all revegetation efforts, with species selection based on site-specific conditions, anticipated hydrology, flooding frequency, and documented occurrence in local wetland and riparian ecosystems on the South Coast of BC (MOE 2008; Cox and Cullington 2009).



- Tree and shrub species will be guaranteed nursery stock, tagged clearly with botanical names, and sourced from local suppliers whenever possible.
- Plant stock will be installed at densities specified by the QEP and the restoration plan. The recommended container sizes are 5-gallon for potted trees and 3-gallon for shrubs.
- Planting should be conducted during optimal growth periods, either fall (September–October) or early spring (March–April), to maximize establishment success.
- Regular watering may be required during initial establishment, particularly in the restoration sections farther upland.
- A native coastal BC riparian restoration seed mix will be applied wherever soil disturbance has occurred to provide rapid vegetative cover, prevent erosion, and reduce the establishment of invasive species. Seeding will be conducted immediately following final grading or soil placement to optimize establishment success.

## 8 PROJECT PERMITTING

All required project permitting shall be in place prior to commencing the activity for which permitting is required. The EM shall document any environmental permits/approvals that have been obtained by the RDN or NHC and shall review all such documents to verify the project team is aware of any terms and conditions therein that may not be specifically addressed by this CEMP.

The Environmental Monitor (EM) and the contractor’s Construction Superintendent (CS) will coordinate to identify any additional permitting requirements arising from unforeseen site conditions. The contractor is responsible for obtaining any additional required permits in a timely manner before proceeding with work. Other permits may pertain to the construction hauling of materials and equipment on public roads, and other activities as required.

## 9 EMERGENCY RESPONSE AND COMMUNICATIONS PLAN

### 9.1 KEY PROJECT PERSONNEL/ EMERGENCY CONTACT INFORMATION

A key component of the Emergency Response and Communications Plan is the development of a detailed contact list for all core members of the project team. Below is a list of emergency contacts with several rows left blank. This list shall be updated during the pre-work meeting with contact information of key members of the project team including the CS (primary contact), RDN, EM, and project engineer. A copy of this list shall be distributed to all core members of the project team.

**Table 1. Key project personnel and emergency contact information.**

Contact Name	Role	Location	Numbers
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Regional District of Nanaimo	Project Owner	Nanaimo	Office: Direct:
<b>Northwest Hydraulic Consultants Ltd.</b>	Project Engineer	Nanaimo	250-754-6425
Leo Chira, RPBio. <b>EDI Environmental Dynamics Inc.</b>	Environmental Monitor	Nanaimo	Leo: 780-239-1264
	Construction Superintendent		
	First Aid Attendant		
Snuneymuxw First Nation		Nanaimo	250-740-2300 (Admin)
BC Archeology Branch		Victoria	250-953-3334
Gabriola RCMP		Gabriola	250-247-8333
Gabriola Island Fire Department	Local Fire Department	Gabriola	911 (emergency) 250-247-9677 (non-emergency)
Nanaimo General Hospital	Local Medical Emergency	Nanaimo	911 (emergency) 250-755-7691 (non-emergency)
Emergency Management BC	Report a Spill		1-800-663-3456
BC Wildfire Service	Report a Wildfire		1-800-663-5555 or *5555 (cell phone)

## 9.2 GENERAL ENVIRONMENTAL EMERGENCY RESPONSE PLAN

- Environmental emergencies encountered by any member of the construction team must be reported immediately to the CS and/or EM. If the emergency is reported to the Construction Superintendent but not to the EM, the CS will then relay the information to the EM.
- The EM will assess and record all concerns observed and/or documented and shall notify the CS.
- The appropriate action plan will be determined by the CS with advice provided by the EM.
- All significant environmental emergencies are to be reported first to the CS who will determine the appropriate course of action. If the CS is not immediately available, a message should be left and the emergency should then be reported to the RDN, then the Emergency Management BC (EMBC) at 1-800-663-3456. Fuel or oil spills of 100 L or more and any spill into water are to be immediately reported to the EMBC at 1-800-663-3456.

The following list indicates examples of potential environmental emergencies:

- Reportable spills (Spill Reporting Regulation)
- Excessive sediment release into watercourses
- Machinery accidents
- Wildfires
- Observation of a previously unknown environmental feature (nest, den etc.)



### 9.3 SPILL RESPONSE PLAN

- All fuel or other hydrocarbon spills will be immediately reported to the CS and RDN.
- The CS will be required to make all resources available as necessary to contain and clean up the spill.
- When notified of a spill, the CS will immediately ensure the following:
  - Action is taken to control danger to human life and wildfire.
  - Necessary equipment is mobilised, and measures are implemented to control and contain the spill.
  - If the spill is >100 L, the CS will determine the appropriate course of action. If the CS is not available, a message should be left and the spill should then be reported to the RDN, then Emergency Management BC (EMBC) at 1-800-663-3456.
  - Document the spill and measures taken to respond to the spill and provide this information to the EM.
  - Properly dispose of all waste material.
- The following guidelines will be followed for containment of most hazardous materials (fuels, oils, industrial chemicals and concrete entering water):
  - The worker on-site who discovers the leak or spill shall immediately call for or seek help if needed and then attempt to stop or contain the leak or spill;
  - All spills will be immediately reported verbally to the CS and/or EM, if present;
  - Unless it is necessary to control a fire or prevent an explosion, water or fire extinguishing chemicals will not be used on non-petroleum product spills;
  - Natural depressions of the land or berms constructed with materials and equipment in proximity to the site will be used to physically isolate the spill;
  - In case of a reportable spill (>100 L or any spill to water), the CS in consultation with the EM shall ensure compliance with the reporting and response requirements of the BC Spill Reporting Regulation (B.C. Reg. 187/2017).
- All reportable spills shall be reported immediately to Emergency Management BC (EMBC) at 1-800-663-3456.
- The site of any reported spill will be monitored for additional clean up as required through to job completion.

### 9.4 SPILL SUBSTANCE AND REPORTABLE QUANTITIES

The following table is from the *Spill Reporting Regulation of the Environmental Management Act*. If the spill enters, or it is likely to enter, a body of water, it is reportable regardless of the quantity.

**Table 2 Spill Reporting Regulation - Reportable Quantities**



Substance spilled	Specified amount
<b>Class 1, Explosives</b> as defined in section 2.9 of the Federal Regulations	Any quantity that could pose a danger to public safety or 50 kg
Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a) of the Federal Regulations	10 kg
Class 2.2 Non-Flammable and Non-Toxic Gases as defined in section 2.14 (b) of the Federal Regulations	10 kg
Class 2.3, Toxic Gases as defined in section 2.14 (c) of the Federal Regulations	5 kg
Class 3, Flammable Liquids as defined in section 2.18 of the Federal Regulations	100 L
Class 4, Flammable Solids as defined in section 2.20 of the Federal Regulations	25 kg
Class 5.1, Oxidizing Substances as defined in section 2.24 (a) of the Federal Regulations	50 kg or 50 L
Class 5.2, Organic Peroxides as defined in section 2.24 (b) of the Federal Regulations	1 kg or 1 L
Class 6.1, Toxic Substances as defined in section 2.27 (a) of the Federal Regulations	5 kg or 5 L
Class 6.2, Infectious Substances as defined in section 2.27 (b) of the Federal Regulations	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
Class 7, Radioactive Materials as defined in section 2.37 of the Federal Regulations	Any quantity that could pose a danger to public safety and an emission level greater than the emission level established in section 20 of the "Packaging and Transport of Nuclear Substances Regulations"
<b>Class 8, Corrosives</b> as defined in section 2.40 of the Federal Regulations	5 kg or 5 L
Class 9, Miscellaneous Products, Substances or Organisms as defined in section 2.43 of the Federal Regulations	25 kg or 25 L
Waste containing dioxin as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
Leachable toxic waste as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
Waste containing polycyclic aromatic hydrocarbons as defined in section 1 of the hazardous Waste Regulation	5 kg or 5 L
Waste asbestos as defined in section 1 of the Hazardous Waste Regulation	50 kg
<b>Waste oil</b> as defined in section 1 of the Hazardous Waste Regulation	100 L
Waste containing a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
PCB Wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
Waste containing tetra-chloro-ethylene as defined in section 1 of the Hazardous Waste Regulation	50 kg or 50 L
Substance spilled	Specified amount



Biomedical waste as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
A hazardous waste as defined in section 1 of the Hazardous Waste Regulation and not covered under items 1 – 22	25 kg or 25 L
A substance, not covered by items 1 to 23, that can cause pollution	200 kg or 200 L
Natural gas	10 kg, if there is a breakage in a pipeline or fitting operated above 100 psi that results in a sudden and uncontrolled release of natural gas

## 9.5 FIRE ACTION PLAN

Some of the construction activities have the potential to cause wildfire, which, if not controlled, could spread to surrounding forests and residential areas. It is the responsibility of all construction contractors, crews, and equipment to have adequate fire prevention and suppression equipment on hand. Any wildfires shall be reported to the local fire department (via 911).

Fire season on Gabriola Island extends from April 1 to October 15, and the Project timeline is likely to overlap with periods of High to Extreme Fire Danger. Under Gabriola Fire Protection District - Fire Regulation Bylaw No. 102 (2023), early shift schedules may be needed, restricting high-risk activities to the cooler morning hours. If the Extreme Fire Danger level persists for multiple days, further restrictions or temporary work stoppages may be necessary. The Regional District of Nanaimo (RDN) and the Construction Superintendent (CS) should discuss potential fire-fighting requirements with the Deputy Fire Chief of the Gabriola Volunteer Fire Department before construction activities commence to ensure compliance with local fire restrictions (Gabriola FPD 2023).

## 10 CHANCE FIND PROCEDURE

The remnants of British Columbia's earliest cultures are represented in today's landscape by a wide variety of site types, most of which are related to art, habitations, resource gathering and production, tool making, and traditional ceremonial or ritual activities. Some sites that may be immediately visible to a non-archaeologist include:

- Rock art, including pictographs and petroglyphs.
- Tree art and Culturally Modified Trees (CMT'S) such as bark stripping and planks.
- Surface features such as depressions created by former habitations, earthen fortifications, rock cairns, fish traps, clam gardens, burned rock and middens.
- Artifacts that have become visible on the land surface owing to erosion or recent land altering activity. These may be produced in a variety of materials such as stone, bone, antler, wood, or shell.





- Buried cultural remains that may be sighted in a cut-bank, excavation, eroded shoreline, or other exposed deposit.

Snuneymuxw First Nation (SFN) has been present on Gabriola Island for thousands of years. As such, the discovery of artefacts during excavations works will trigger the following procedure:

- Immediately stop all work in the area to avoid damaging the site.
- Do not disturb any archaeological remains that you may encounter.
- The find location will be recorded, and all archeological remains will be left in place.
- Immediately report your discovery to the CS. Contact the Archeology Branch, and the SFN. A qualified archeologist will be retained by the Project who will coordinate with the Archeology Branch and SFN to determine an appropriate course of action.
- Potential significance of the archeological remains will be assessed and mitigative options will be identified by the Archeology Branch and SFN.
- Contact numbers are provided in the Project Contact List.

In the event of discovery of human remains the Coroner's Office and local policing authority are notified, and the Coroner's Office determines whether the matter is of contemporary forensic concern.

Construction activities may only resume after allowance from the Archaeology Branch and SFN community. Supervision by a professional archaeologist may be required to monitor subsequent earthworks.



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# APPENDICES



## APPENDIX A CONSTRUCTION DRAWINGS



## **APPENDIX B    RECLAMATION PLAN**