Victoria handyDART Transit Centre

Construction Environmental Management Plan

June 2, 2021

Prepared for:

BC Transit

Prepared by:

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Project Number: 123221593

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

Abbreviations

AIA	Archaeological Impact Assessment
BMP	Best Management Practice
CDC	Conservation Data Centre
CEMP	Construction Environmental Management Plan
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EM	Environmental Monitor
FLNRO	Ministry of Forests, Lands and Natural Resource Operations
FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
HADD	harmful alteration, disruption or destruction
MOE	Ministry of Environment
MWLAP	Ministry of Water, Land and Air Protection
NTU	nephelometric turbidity units
QEP	qualified environmental professional
RAPP	Report All Poachers and Polluters
RAPR	Riparian Areas Protection Regulation
SARA	*Species at Risk Act*
TCOMM	Transit Communication Centre
TSS	Total Suspended Solids
WMU	Wildlife Management Unit
WSA	*Water Sustainability Act*

1.0 INTRODUCTION

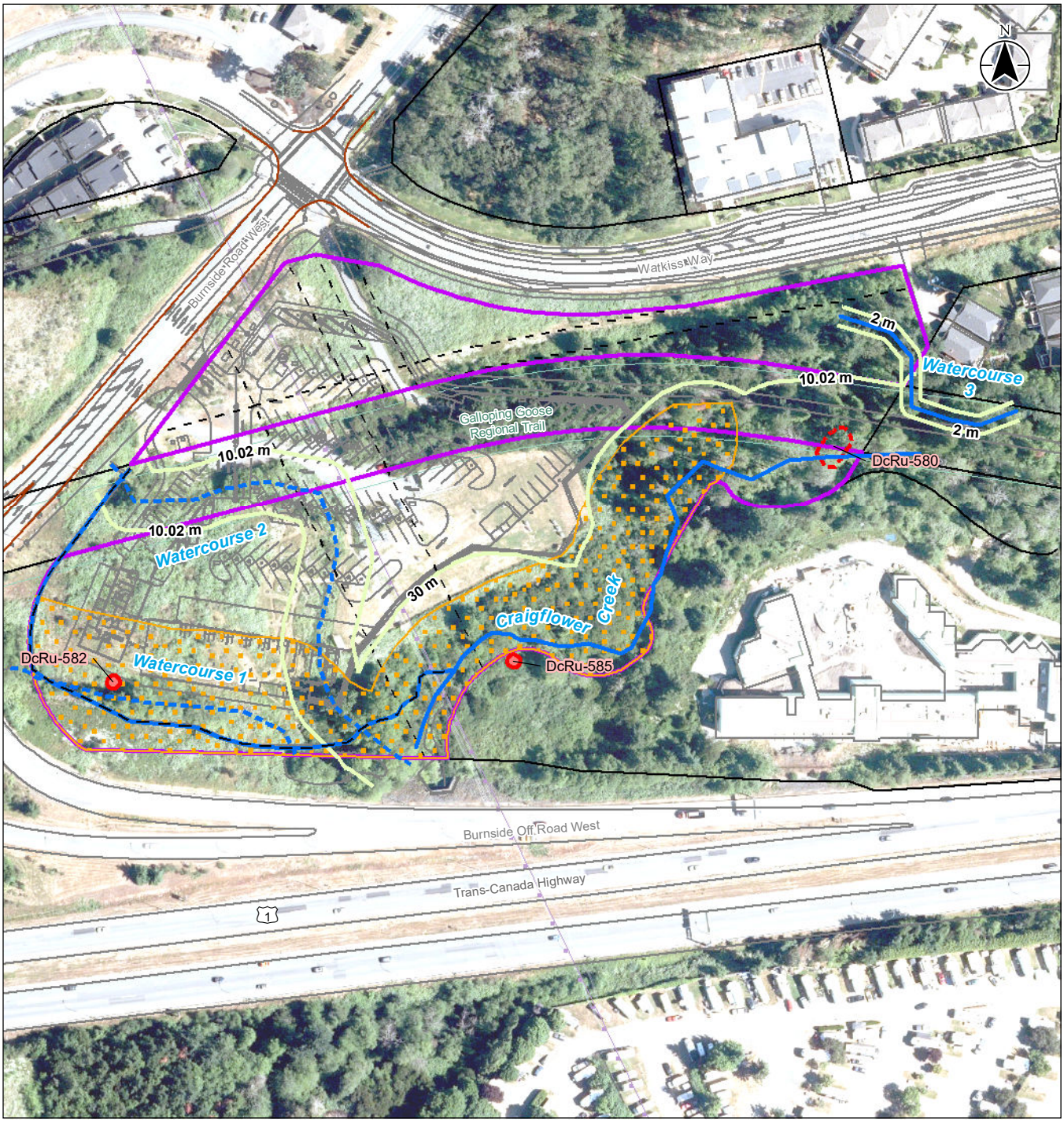
BC Transit is planning to develop a handyDART bus facility at 2401 Burnside Rd W (Figure 1). This facility would include a total building area of approximately 2,380 m^2, divided between Operations (415 m^2), Service/Delivery (482 m^2) and Maintenance (1,483 m^2). A paved area covering 13,605 m^2, with a total of 109 bus parking stalls, 10 employee parking stalls, two visitor parking stalls and driving lanes, will also be included in this development. This is referred to as "the Project" throughout this document.

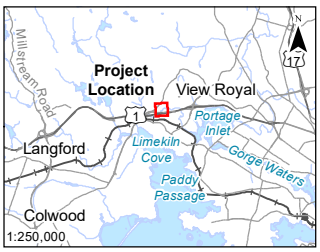
Various environmental features are supported on the property, including the mainstem of Craigflower Creek, a known fish-bearing watercourse, and three constructed watercourses, two of which are confluent with Craigflower Creek. In addition, portions of the property support young forest or low-lying shrubs. Given the diversity of environmental features on the site, Stantec Consulting Ltd. (Stantec) has been retained by BC Transit to prepare this Construction Environmental Management Plan (CEMP). This CEMP describes the Project, outlines the regulatory context, and provides a series of site-specific Best Management Practices (BMPs) applicable to the proposed construction work. These BMPs will be applied by a Contractor as overseen by an Environmental Monitor (EM) assigned to the Project.

1.1 INTENTION OF ENVIRONMENTAL MANAGEMENT PLAN

This CEMP is intended to mitigate environmental impacts and reduce the risk of unforeseen environmental incidents from the Project. The Contractor working on the Project must comply with this CEMP and/or provide suitable alternative approaches, which have been pre-approved by the EM, and complete this Project in accordance with applicable legislation. This document outlines the following:

- Roles and responsibilities for the BC Transit Project Manager, the Contractor, and the EM.
- Regulatory requirements and permits for the Project.
- Key construction activities and schedule.
- Existing environmental conditions and resources.
- Potential Project effects and mitigation measures.
- Management measures to mitigate potential Project effects.
- Environmental monitoring, reporting, and compliance requirements.
- The CEMP is a living document that will be reviewed and updated prior to and during construction activities. The management plans and monitoring protocols outlined in this CEMP may be re-evaluated and updated where deficiencies are identified and to improve overall environmental management and protection. Revisions may also be required should the Project design change significantly prior to the initiation of construction.





Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: DataBC, Government of British Columbia; Natural Resources Canada
3. Imagery: CRD Orthoimagery 2019

- Transmission Line
- Cadastral Parcels
- Edge of Road
- Right-of-Way
- Local Greenspace
- Property Boundary
- Watercourse
- Watercourse - to be removed

SPEA ZOS

- LWD, Bank & Channel Stability
- Development Plan
- Proposed Watercourse
- Archaeological Site - Previously Recorded
- Archaeological Site - New
- Construction Monitoring Recommended if Development Depth Exceeds Fill Depth

0 25 50 75 100 m

1:2,250 (at original document size of 8.5x11)

Stantec BCTransit

Project Location: Victoria, British Columbia

Project Number: 123220971
Prepared by LTRUDELL on 20210408
Requested by SNABESS on 20210408

Client/Project/Report
BC Transit
Greater Victoria HandyDART Facility
Construction Environmental Management Plan

Figure No.
1

Title
Project Area Overview Map

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1.2 PROJECT SCHEDULE AND TIMING

BC Transit is proposing to complete the site development and construction between November 2021 and July 2023. It is anticipated that the following phases will be applicable to construction:

- Mobilization and establishment of environmental controls – November to December 2021
- Construction of new Watercourse 2, grading and installation of wick drains – December 2021 to March 2022
- General Site Construction – April 2022 to July 2023

1.3 ROLES AND RESPONSIBILITIES

Table 1.1 describes the roles and responsibilities of the Project team.

Table 1.1 Roles and Responsibilities of the Project Team

Role	Responsibilities
BC Transit Project Manager	• Project Owner with overall responsibility for delivery of works associated with this Project. • Responsible for overall environmental management and performance of the Project. • Provides the Contractor and EM with Project-specific details, such as background information, municipal permits, and this CEMP. • Authorizes Stop Work authority to Project personnel (e.g., EM) for non-compliance with this CEMP, contravention of regulatory permits and standards, and allows them to suspend Project activities that are at risk of causing or potentially causing serious harm to fish, wildlife or the environment (e.g., water quality, terrestrial habitat, air quality). • Determines monitoring frequency in consultation with the EM. • Advises EM(s) as required. • Reviews and provides comment to the EM reports. • Conducts regular audits during construction, if determined to be required. • Works collaboratively with the EM to resolve differences of perspective regarding compliance with the CEMP and permits. • Times site visits and auditing activities (if required) for when work is occurring during conditions (e.g., heavy rainfall) that could potentially cause adverse environmental effects.

Table 1.1 Roles and Responsibilities of the Project Team

Role	Responsibilities
Environmental Monitor	• Regularly liaises with the BC Transit Project Manager and the Contractor to provide updates and discuss Project deficiencies, if any. • Attends meetings with the BC Transit Project Manager and the Contractor to discuss impact mitigation. • Determines monitoring frequency in consultation with the BC Transit Project Manager. • Confirms frequency of maintenance and revision of mitigation measures based on site conditions. • Monitors construction activity to verify that works are undertaken in compliance with the appropriate sections of this CEMP, permits and regulatory requirements. • Addresses and closely monitors non-compliance issues immediately. • Liaises with regulatory agencies, as necessary. • Notifies regulatory agencies or authorizes notification of environmental non-compliance or environmental incidences, where applicable. • Attends environmental pre-job meeting(s) with the Contractor. • Attends health and safety meetings and Contractor tailgate meetings where appropriate, to communicate potential environmental concerns / requirements. • Maintains a current version of the CEMP and is familiar with all aspects of the document. • Communicates requirements of this CEMP to the BC Transit Project Manager and the Contractor. • Evaluates and reports on the effectiveness of the environmental mitigation measures and on Contractor work procedures through regular site visits. • Advises the Contractor of non-compliance and of any emerging environmental issues and assists in addressing them. • Provides corrective advice to the Contractor, where appropriate, such as when non-compliances are observed or imminent. • Has the authority to issue a Stop Work order where activities are impacting, or will impact the environment (e.g., water quality, terrestrial habitat, air quality), fish and/or wildlife. • Measures and monitors water quality as determined by this CEMP or regulatory requirements. • Maintains records of site visits and regularly updates the BC Transit Project Manager. • Writes environmental monitoring report to be submitted to BC Transit. • Provides guidance and direction as needed during clean-up and restoration activities (e.g., after a spill or hydraulic leak) according to the requirements in this CEMP.

Table 1.1 Roles and Responsibilities of the Project Team

Role	Responsibilities
Contractor	• Understands details of the Project by reviewing relevant documentation supplied by BC Transit and the EM (e.g., CEMP). • Determines the most effective method of installing environmental protection measures including phasing to match the work being undertaken on site. • Installs and maintains the environmental protection and mitigation measures. • Designates a responsible person to oversee the environmental protection and mitigation measures. • Conducts work according to approved designs and standards, regulatory requirements/approvals, and this CEMP. • Verifies that personnel are appropriately trained and competent in the use of environmental protection and mitigation measures, such as sediment, waste, spill and noise control measures. • Is responsible for site safety measures to protect site personnel, including any measures associated with hazardous materials and spill response. • Notifies BC Transit Project Manager and EM(s) of any observed or potential non-compliances with this CEMP. • Immediately reports incidents to the BC Transit Project Manager and EM(s) and initiates an appropriate response. • Corrects deficiencies and any non-compliance upon direction from the BC Transit Project Manager, EM(s), and/or regulators.

1.4 PROJECT COMMUNICATION

Communication between all parties involved during each phase of construction is paramount to the timely and efficient implementation of the CEMP. The following communication measures will be implemented:

- The CEMP will be made available as part of the Tender Package to ensure bidders are familiar with the terms and requirements of the Project prior to commencement of the proposed work and will be available at the work site throughout construction.
- A pre-construction meeting(s) will be convened between BC Transit, the Stantec environmental monitor and those undertaking the construction of the Project to review the CEMP and to outline the roles and responsibilities of each party.
- The Project/Contractor team will confirm that the CEMP is on site and accessible to their employees throughout the construction period.

A construction and environmental monitoring report outlining site activities will be prepared by the environmental monitor at the end of each week during which a monitoring visit was conducted; it will be forwarded to the BC Transit Project Manager. A draft monitoring template is attached as Appendix A.

Environmental incidents will be reported to BC Transit's Project Manager and the EM immediately, so that appropriate notifications can be made, and site management personnel can appropriately handle incidents. Spills will be promptly cleaned up and reported in accordance with regulatory agency requirements. For response to spill emergencies, refer to Section 6.5.

The EM will be responsible for notification of the appropriate agencies in the event of a spill or other environmental incident. Representatives of nearby Indigenous communities and stakeholders will be informed by the BC Transit Project Manager in the event of a spill, accident or malfunction potentially affecting the environment, as required. The BC Transit Project Manager will maintain an internal list of contacts to be informed.

2.0 REGULATORY AND LEGISLATIVE REQUIREMENTS

The environmental legislation applicable to the Project is listed in Table 2.1. Required permits, notifications, and approval requirements are summarized therein.

Table 2.1 Construction Environmental Permits and Notifications

Environmental Permits for Construction	Regulatory Agency	Description	Status*
Federal			
Fisheries Act Authorization	DFO	An Authorization is required when it is determined that construction will result in a harmful alteration, disruption or destruction (HADD) of fish habitat.	An Authorization will be required.
Migratory Birds Convention Act	Environment and Climate Change Canada (ECCC)	Prohibits impacts to migratory birds and their habitats except where permitted under this legislation.	Impact mitigation (e.g., Project timing) likely precludes the requirement for a permit.
Species at Risk Act (SARA)	ECCC	Requires a permit if impacts to rare species (i.e., on Schedule 1 of SARA) may result from development.	A permit will be required if a Schedule 1 species or their critical habitat is identified onsite.
Scientific Fish Collection Permit	DFO	A Scientific Fish Collection Permit is required to salvage and relocate anadromous salmonids if instream work is required.	A Scientific Fish Collection Permit will be required.
Provincial			
Water Sustainability Act (WSA) Section 11 Change Approval	Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD)	Under the WSA, channel relocation requires a Change Approval (i.e., a permit) to relocate a watercourse.	A WSA Section 11 Change Approval will be required.
Riparian Areas Protection Regulation (RAPR)	FLNRORD	Under the RAPR, development triggers the requirement to conduct an assessment if it is proposed within 30 metres of a creek. The assessment of the creek establishes a Streamside Protection and Enhancement Area (setback) within which development is not permitted.	A RAPR was undertaken and used in development of the site design plan.
Wildlife Relocation Permit	FLNRORD	A Wildlife Relocation Permit is required to salvage and relocate wildlife (including amphibians) during the proposed work if wildlife is confirmed to be present.	The requirement for a Wildlife Relocation Permit is anticipated due to likely presence of amphibians.
Scientific Fish Collection Permit	FLNRORD	A Scientific Fish Collection Permit is required to salvage and relocate “coarse” and resident (non-anadromous) fish if instream work is required.	A submission will be required.
Weed Control Act	FLNRORD	Requires property owners or those in control of a property to control the spread of noxious weeds	A permit is not required. Land occupier has a duty to control noxious weeds.

Table 2.1 Construction Environmental Permits and Notifications

Environmental Permits for Construction	Regulatory Agency	Description	Status*
Environmental Management Act	Ministry of Environment and Climate Change Strategy	Regulates contaminated sites remediation and response if contamination is noted at a project site	A permit may be required if contamination is present.
Heritage Conservation Act	FLNRORD	Authorization in the form of an HCA Section 12.4 Alteration Permit and a Section 12.2 Inspection Permit must be obtained prior to commencing ground disturbing activities within an archaeological site.	A permit is required.
Municipal[1]			
Noise Bylaw No. 523	Town of View Royal	Construction will be permitted from 7:00 am to 7:00 pm except on Sundays and statutory holidays.	A permit will be required if a variance to these hours is required.
Tree Bylaw No. 695	Town of View Royal	Permits will be required to remove trees designated as protected under the bylaw.	Permitting requirements will be determined upon completion of final design.
Soil Bylaw No. 869	Town of View Royal	Permits will be required to remove soil from the property unless removal meets one of the exemptions outlined in Section 5.0.	Permitting requirements will be determined upon completion of final design.

NOTES

* Status will be updated in advance of construction if required

1. Additional site specific requirements may be developed by the Town of View Royal during the Environmental Development Permit approval process, currently in progress.

3.0 CONSTRUCTION ACTIVITIES

A preliminary schedule of construction has been developed for the Project (Section 1.2). This schedule will be subject to change based on design revisions, environmental permitting requirements, and other Project-related activities.

After mobilization, the Contractor will establish environmental controls for the site. It is anticipated that this will include the establishment of stockpile and laydown areas situated away from creeks. Silt fences will also be established at select locations where site topography could convey sediment and other deleterious substances to local watercourses.

Given the year-round nature of the work, the Contractor must also ensure an adequate stockpile of materials including silt fence, straw, fully biodegradable erosion control blankets, polyethylene sheeting, sandbags, pea gravel, hand tools etc. is available on site at all times in a secure location.

Subsequently, partial clearing and grubbing of the site in proximity to Watercourses 1 and 2 (see Section 4.1 for additional information) will be initiated. This will preclude the installation of silt fence and, as such, alternative mitigation will be required. This will likely consist of conducting the work at drier periods of the year and downstream isolation to avoid discharges to Craigflower Creek.

Instream work will be initiated after the completion of clearing to access the two watercourses. This will consist of isolation of both watercourses from flow, if present. A new channel will be constructed along the east road shoulder of Burnside Road from the point where Watercourse 2 outlets to the property to the upstream reach of Watercourse 1, along the approximate path of the current Watercourse 1 and then to a connection with Craigflower Creek. The majority of Watercourse 2 within the proposed facility's footprint will be infilled.

After the watercourse improvements and infill are completed, silt fence or other measures (e.g., swales or temporary berms) will be established for any remaining location where flow could be conveyed to aquatic habitat. Clearing and grubbing will be completed, after which the remainder of the facility will be constructed. The site will be stabilized before demobilization from the site.

With respect to environmental mitigation, it is anticipated that the greatest potential for impacts being conveyed offsite is related to high channel flow, spills of deleterious substances, and sediment transport. These are addressed in Sections 6.4 to 6.6, respectively.

4.0 EXISTING ENVIRONMENTAL AND CULTURAL FEATURES

The Project will occur within an area that has been partially cleared for an archery range although extensive habitat remains onsite. This habitat is dominated by low-lying shrubs but also includes a section of young forest as well as several watercourses, including Craigflower Creek. A discussion of the habitat supported onsite is provided in the sections below.

4.1 FISH AND FISH HABITAT

Four watercourses are located onsite. These consist of Craigflower Creek and three unnamed watercourses designated Watercourse 1, Watercourse 2, and Watercourse 3.

4.1.1 Craigflower Creek

Craigflower Creek is the primary watercourse on the property. It will not be directly impacted by construction although site topography could allow for the transport of deleterious substances to it during construction. Craigflower Creek roughly follows the southeast boundary of the property. It is wide (10.4 m on average at the site) and largely in a natural state. It displays high complexity and provides good to excellent rearing and overwintering habitat for salmonids. Fish presence is known to include coho salmon (*Oncorhynchus kisutch*), rainbow trout/steelhead (*Oncorhynchus mykiss*), coastal cutthroat trout (*Oncorhynchus clarkii clarkia*), sculpin (general), and three introduced species – smallmouth bass (*Micropterus dolomieu*), pumpkinseed (*Lepomis gibbosus*), and brown catfish (*Ameiurus nebulosus*).

4.1.2 Watercourse 1

Watercourse 1 is a constructed channel approximately 110 m long that flows west to east on the southwest side of the property, parallel to Highway 1. It terminates near the right bank of Craigflower Creek but does not discharge into the creek as surface flow. It ends in an area of pooling water between Watercourse 2 and Highway 1. The watercourse is heavily overgrown with Himalayan blackberry (*Rubus armeniacus*). A riprap berm surrounds this pool of water and no connectivity, culverts, or water flow was observed that would connect Watercourse 1 to either Craigflower Creek or Watercourse 2. Habitat values are considered to be poor. Fish presence is not anticipated given the lack of connectivity to Craigflower Creek and Watercourse 2.

4.1.3 Watercourse 2

Watercourse 2 is a modified stream that enters the property from a culvert flowing under Burnside Road on the west side of the property. The watercourse flows to the east, south of the access road, and flows south near a transmission line tower. It enters Craigflower Creek north of Watercourse 1. Within the Project area, most of the watercourse is overgrown with reed canary grass while some sections are scoured with constructed gravel and angular shot rock substrates. Flow is seasonal, typically from October to May. The channel is considered a modified stream and not a ditch as defined under the RAPR.

Watercourse 2 is approximately 200 m long and connects to Craigflower Creek. It may therefore contain the same species of fishes as Craigflower Creek although fish presence was not confirmed and has not been observed on any surveys. Spawning values are nil to poor whereas rearing habitat values are considered poor to moderate.

4.1.4 Watercourse 3

Watercourse 3 is a constructed stormwater drainage channel (no natural channel) that is approximately 100 m long and originates at a culvert flowing below Watkiss Way at the north end of the property. Flow is conveyed southeast towards the Galloping Goose Trail and then continues east along the trail until it crosses below the trail via a culvert near Talcott Road and connects to Craigflower Creek. There is no available information indicating fish presence and no fish were observed during the assessment, with barriers to fish passage observed (perched culverts). If fish are present, habitat values are low with the watercourse providing no spawning habitat value and only poor habitat for rearing. However, this watercourse will not be affected by the Project as it is outside of the construction footprint.

4.2 TERRESTRIAL HABITAT AND WILDLIFE

An assessment of the terrestrial habitat and potential wildlife presence was completed for the site in December 2020.

The riparian vegetation adjacent to the Project area is fragmented as a result of the existing infrastructure, local roads and access points to the archery range. Riparian vegetation within and adjacent to the Project area is comprised predominantly of red-osier dogwood (*Cornus stolonifera*), willow (*Salix* sp.) and a mixture of deciduous and coniferous trees. The lower portion of watercourse 2 is dominated by red alder (*Alnus rubra*) with almost no understory shrubs and no coniferous trees. Himalayan blackberry (*Rubus armeniacus*), an invasive species, was widely observed throughout the Project area. Other species of concern include gorse (*Ulex europaeus*), thistle (species to be confirmed), teasel (*Dipsacus* sp.), English ivy (*Hedera helix*) and reed canary grass (*Phalaris arundinacea* – potentially non-native). Gorse is listed as a noxious species per the Weed Control Regulation of the *Weed Control Act*). Teasel has been identified as an "alert" species by the Invasive Species Council of BC.

Typical vegetation included trees such as Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*), grand fir (*Abies grandis*), black cottonwood (*Populus balsamifera*) and big leaf maple (*Acer marcophyllum*) with an understory shrub layer species dominated by dull Oregon grape (*Mahonia aquifolium*), ocean-spray (*Holodiscus discolor*), and Oregon beaked moss (*Kindbergia oregana*). Less prominent species include snowberry (*Symphoricarpos albus*), vanilla-leaf (*Carphephorus odoratissimus*), and big shaggy moss (*Rhytidiadelphus triquetrus*). Drier sites are characterized by the presence of Garry oak (*Quercus garryana*) and arbutus (*Arbutus menziesii*), as well as numerous members of the lily family.

There are 27 wildlife species of management concern that were identified as potentially occurring in the Project area including 18 birds, four mammals, three amphibians, and two reptiles (BC Conservation Data Centre [CDC] 2020). A review of publicly available data from CDC iMap showed no known occurrences of SARA-listed wildlife species that overlap the Project area. Additional discussion of rare species is provided in Section 4.3 below.

The Project area lies within Wildlife Management Unit (WMU) 1-1 and does not coincide with Wildlife Habitat Areas, or Ungulate Winter Ranges (BC CDC 2020). At present, the Project area does not overlap critical habitat for wildlife species at risk, although there is overlap with an area of proposed critical habitat for western painted turtle – Pacific coast population. (BC CDC 2020). Additional discussion of the western painted turtle is provided in Section 4.3. The study area does not intersect other key wildlife ranges or Important Bird Areas (Birdlife International, 2020).

4.3 RARE SPECIES

None of the fish species with confirmed presence in Craigflower Creek are considered at risk under SARA. The coastal cutthroat trout is blue-listed provincially (*i.e.*, it is a species of special concern). Some sculpin species are also blue- or red-listed (endangered or threatened) but given that the specific sculpin species has not been identified, the presence of a rare species cannot be confirmed.

A search of the CDC iMap tool of known rare species occurrences indicated that their presence has not previously been recorded at the Project site. However, a masked occurrence does overlap the Project area although this may not indicate presence onsite. A request will be made to the CDC to determine if this masked occurrence has the potential to be present.

A review of federally and provincially listed plant species at risk showed that there are six listed plant species which have potential to occur in habitats that are generally represented by the Project site and adjacent and surrounding areas (e.g., mixed forest/riparian/anthropogenic) (BC CDC 2020). These consist of green-sheathed sedge (*Carex feta*), green-fruited sedge (*Carex interrupta*), small bedstraw (*Galium trifidum* ssp. *trifidum*), pointed rush (*Juncus oxymeris*), streambank lupine (*Lupinus rivularis*), and water-pepper (*Persicaria hydropiperoides*). A rare plants field survey has not been conducted at the Project location and no confirmed records of these species were found.

As referenced in Section 4.2, none of the 27 species of management concern with the potential to occur have been confirmed as being present in the Project area. However, much of the property intersects proposed critical habitat for western painted turtle (BC CDC 2020). The critical habitat polygon is intersected by the property, centered on Craigflower Creek, and includes a 150 m buffer on either side of the watercourse. Occurrences of western painted turtle in the region are primarily confined to lakes and ponds with the closest recorded occurrence being more than 2 km from the property in a different watershed. The closest occurrence in the same watershed as the property is more than 3 km to the northwest in McKenzie Lake (BC CDC 2020).

Overall, the property provides poor habitat for western painted turtle. The area around the Highway 1 culvert outlet and upstream of a beaver dam potentially provides moderate western painted turtle habitat, as this area has deeper, slower moving water, and is more exposed to sunlight. Most of this area is outside of the property. The remaining ditches within the property have insufficient water depth and flow to provide aquatic habitat for western painted turtle.

Riparian areas surrounding Craigflower Creek have poor nesting habitat for western painted turtles. Outside of the Craigflower Creek riparian area, much of the site is disturbed. Approximately half is covered in invasive species such as Himalayan blackberry, which does not provide good nesting habitat for turtles. The remaining portion of the property includes the gravel access and parking off Burnside Road West and the lawn used for archery, which could provide potential nesting habitat for western painted turtles. However, as no nesting in the area has been recorded and the property is more than 3 km away from the nearest recorded occurrences of western painted turtle (BC CDC 2020), it is unlikely that the property is used for nesting.

Craigflower Creek may provide a dispersal corridor or connectivity between waterbodies for western painted turtle, as the natural riparian habitat provides adequate flow and cover for migration.

This CEMP will be revised to reflect the presence of rare species if confirmed to be present during upcoming site surveys.

4.4 CULTURAL FEATURES

An Archaeological Impact Assessment (AIA) has been conducted for the property and Section 12.4 and 12.2 permits (Alteration and Inspection permits) have been applied for under the *Heritage Conservation Act.* Chance find procedures during construction will be implemented (Section 6.9)

5.0 POTENTIAL PROJECT EFFECTS

Potential Project effects to fish and fish habitat, terrestrial habitat, and wildlife were assessed in support of this CEMP. Table 5.1 and Table 5.2 summarize the identified potential Project effects to fish and fish habitat and to terrestrial habitat and wildlife, respectively.

Table 5.1 Potential Project Effects to Fish and Fish Habitat

Project Component	Pathway of Effect	Potential Effects
Direct impacts to fish	Instream work necessitating channel isolation and dewatering	Fish stress and potential mortality
Loss of riparian vegetation	Clearing required to access a watercourse, or during construction of tie-ins to new Watercourse 2	Loss of riparian function Degraded water quality from increased sun exposure and sedimentation Fish stress and potential mortality
Sedimentation of adjacent watercourses	Local topography could direct sediment overland to Craigflower Creek or Watercourses 1–3; sediment can subsequently be conveyed offsite to downstream fish habitat	Fish stress and potential mortality
Spill of hydrocarbon or other deleterious substance	Discharge of oils due to equipment malfunction or accident could be conveyed overland to watercourses	

Table 5.2 Potential Project Effects to Terrestrial Habitat and Wildlife

Project Component	Pathway of Effect	Potential Effects
Interaction with wildlife	Interaction with Contractor personnel	Wildlife become acclimatized to people
Disturbance of wildlife	Construction noise	Disturbance of birds potentially present in nearby vegetation
Wildlife mortality	Clearing for construction	Vegetation removal during nesting causing nest failure
Impacts to wildlife	Vehicle impact	Death or injury of wildlife
Loss of terrestrial habitat	Clearing for construction	Long-term loss of available habitat

Effects to both aquatic and terrestrial habitat are anticipated for this Project. These effects can be limited through the implementation of the mitigation measures outlined in Section 6.0.

6.0 PROJECT ENVIRONMENTAL PROTECTION MEASURES

Without the implementation of mitigation measures, construction activities associated with the Project have the potential to affect fish, fish habitat, terrestrial habitat, and wildlife (Table 5.1 and Table 5.2). The implementation of the mitigation measures outlined below are designed to reduce the potential effects associated with the Project to the extent possible while still allowing for construction of the facility as it is currently designed.

6.1 GENERAL BEST MANAGEMENT PRACTICES

Mitigation and management measures that avoid and/or mitigate environmental impacts associated with the Project are based on BMPs and standard industry procedures. The mitigation and management measures included in these documents have been created, modified, and enhanced for the purposes of this CEMP. Examples of BMPs used to develop this CEMP include, but are not limited to:

- Field Guide to Fuel Handling, Transportation and Storage (Ministry of Water, Land and Air Protection (MWLAP) 2002)
- Standards and Best Practices for Instream Works (MWLAP 2004)
- Land Development Guidelines for the Protection of Aquatic Habitat (DFO 1993)
- Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia (Ministry of Environment (MOE) 2014)
- Ministry of Forests, Lands and Natural Resource Operations Regional Timing Windows for the West Coast Region (FLNRO 2011)

6.2 GENERAL CONSTRUCTION PRACTICES

Many environmental mitigation measures are common to all construction components and activities. Table 6.1 provides general environmental mitigation measures applicable to all Project activities.

Table 6.1 General Mitigation Measures

Category	Mitigation Measure
CEMP and Permits	1. A copy of the CEMP and applicable permits will be onsite and readily available.
Project Timing	2. The majority of new channel construction will occur in isolation of existing connected watercourses and is scheduled from December 2021 to March 2022. Tie-ins of the new habitat to existing fish accessible habitat will also be conducted at the end of this time frame. Given the time of the year, the work will be completed under the supervision of a qualified environmental professional to confirm that the work can be completed with appropriate mitigation in place.
	3. Instream and/or near-stream work within 30 m of a fish bearing watercourse will be conducted at a time of favourable weather (i.e., avoidance of work during storm events).
	4. Works will be timed to avoid Vancouver Island's Bird Nesting Window (March 28 to August 8). It should be noted that this window is a guideline and nesting can be ongoing before or after this window. A qualified environmental professional (QEP) will determine the requirement for nest sweeps upon receipt of the proposed clearing schedule from the Contractor.
Pre-construction Meeting	5. A pre-construction meeting with the Project team, including onsite supervisors and the EM(s) will be held to promote an understanding of the Project, environmentally sensitive areas, restricted no-go zones, reporting responsibilities, and emergency response plans.
Training	6. Personnel involved with construction activities will be adequately trained and will utilize appropriate personal protective equipment.
Stop Work	7. The Contractor will stop work and contact the EM for assistance prior to commencing or continuing any activities that may pose any environmental risk not addressed in this document.
	8. The EM will have authority to issue a Stop Work order where activities are adversely affecting, or will adversely affect, water/sediment quality and/or habitat. The EM will also make recommendations in the field for avoiding and mitigating impacts where measures in this CEMP are not effective.
Construction Footprint	9. The Construction footprint will be reduced to the extent feasible.
	10. Construction limits will be flagged, and where necessary fenced with temporary fencing and signage, to identify work areas, sensitive habitats, and no-go zones, as required.
Site Cleanliness	11. The site will be kept tidy during activities and left in a good condition at the end of the Project.
	12. Construction equipment arriving onsite will be washed prior to arrival to reduce the potential for the spread of invasive species. Equipment will also be washed prior to leaving the site.
Stockpiles/Laydown Areas	13. Stockpiling of material and laydown areas will be in accordance with BMPs (e.g., erosion and sediment control measures) and limited to approved areas.
Deleterious substances	14. To the extent practical, construction materials will be free of deleterious substances that may be harmful to fish or fish habitat (e.g., fine sediments, hydrocarbons, contaminants).
	15. Machinery will be in good working condition (free of leaks) and cleaned prior to arriving on site; machinery will be inspected/maintained for the duration of the Project to limit leaks/spills. Equipment will not be washed on site.

Table 6.1 General Mitigation Measures

Category	Mitigation Measure
Deleterious substances (cont'd)	16. No washing of equipment used in concrete placement will be allowed on site other than with full containment. All concrete trucks entering the site must be equipped with a 'snout' to permit the delivery chute and equipment to be washed into a contained tank and recycled back into the drum. Concrete wash water is highly toxic to aquatic life and must not be allowed to enter watercourses or riparian areas.
	17. A dedicated area will be designated for fueling and servicing equipment, well away from riparian areas, watercourses, and drainage pathways. The fuel storage area will be equipped with appropriate containment of at least 120% of stored volume.
Water Quality: Hydrocarbons	18. Hydrocarbons (e.g., hydraulic fluids detectable by sight or smell) will not be released to the aquatic environment.
Flora and Fauna	19. Activities should be completed in such a way as to limit stress and disturbance to resident flora and fauna.
Air and Noise Quality	20. Limit equipment and machine idling.
	21. Turn off heavy equipment when inactive for more than 30 minutes.
	22. Verify that equipment and machinery are in good operating condition prior to work.
	23. Carry out regular maintenance on equipment and machinery.
	24. Equipment and machinery will have noise abatement equipment (e.g., mufflers) in good working order.
Wildfire Prevention	25. Smoking will only be permitted in designated areas.
	26. Fire suppressing equipment must be present at the work site and at designated smoking areas. Each piece of heavy equipment must be equipped with a fire extinguisher.
	27. Fires and burning of rubbish and vegetation are not permitted on site.

6.3 SITE ACCESS, MOBILIZATION AND LAYDOWN

The site will be accessed from Burnside Road. Laydown and stockpile areas will be situated within the footprint of construction for the facility and located away from watercourses. Vegetated areas will not be cleared for laydown and stockpiling.

6.4 WORK IN AND NEAR WATER

Work will be required both within and adjacent to the onsite watercourses. Work will be able to proceed with the implementation of the measures outlined in Table 6.2. Mitigation must function such that the turbidity and Total Suspended Solids (TSS) limits outlined in Table 6.3 (MOE 2001) are not exceeded.

Table 6.2 Work In and Near Water

Category	Mitigation Measure
Equipment	1. Equipment and machines are to work from the banks of all watercourses and not within the channel unless the channel is dry.
Vegetation	2. Limit disturbance to existing riparian vegetation to the extent required for access and working space. This will likely be limited to the connection of Watercourse 2 to Craigflower Creek. Construction access will not encroach within creek setbacks unless specifically authorized in environmental permits.
Site Isolation	3. Instream work must be isolated from flow. This will consist of the use of inert material to isolate the work zone.
	4. The intakes of pumps used for dewatering or bypass pumping located in fish-bearing areas must be screened to be consistent with DFO's Interim Code of Practice for end of pipe fish screens (DFO 2020).
Site Isolation (cont'd)	5. The outlets of all hoses must discharge to a hard surface to provide energy dissipation.
	6. The Contractor will not commence instream work until after the channels are isolated and fish and amphibian salvages are completed.
Water Quality	7. If turbidity levels approach threshold values contrary to applicable guidelines (see Table 6-3 below), the onsite EM and construction personnel will work to develop corrective actions. If corrective actions are not successful, construction activities will be temporarily suspended until environmentally effective solutions can be identified and the EM indicates that work can continue.
Release of Deleterious Substance	8. A release of a deleterious substance (e.g., sediment, hydrocarbons, concrete wash water) into the aquatic environment will be reported without undue delay to the EM. From there, the EM will notify the BC Transit Project Manager. Reporting to regulatory agencies will be conducted by BC Transit unless a delegate has been approved. If the EM cannot reach the BC Transit Project Manager they will contact the Victoria Transit Communication Centre (TCOMM) who will complete any required immediate spill reporting.
Spill Prevention, Response, and Control	9. The spill prevention, response and control measures described in Section 6.5 will be followed.

The background levels outlined in Table 6.3 will be measured on Craigflower Creek immediately upstream of the point of discharge of the site to the creek. Comparison will be made to water quality readings approximately 10 m downstream of the confluence.

Table 6.3 BC Approved Water Quality Guidelines for Turbidity and TSS

Water Use	Turbidity	Total Suspended Solids (TSS)
Aquatic Life (Freshwater, Marine, Estuarine)	Change from background of 8 nephelometric turbidity units (NTU) at any one time for a duration of 24 hours in all waters during clear flows or in clear waters	Change from background of 25 mg/L at any one time for a duration of 24 hours in all waters during clear flows or in clear waters
	Change from background of 2 NTU at any one time for a duration of 30 days in all waters during clear flows or in clear waters	Change from background of 5 mg/L at any one time for a duration of 30 days in all waters during clear flows or in clear waters
	Change from background of 5 NTU at any time when background is 8–50 NTU during high flows or in turbid waters	Change from background of 10 mg/L at any time when background is 25–100 mg/L during high flows or in turbid waters
	Change from background of 10% when background is >50 NTU at any time during high flows or in turbid waters	Change from background of 10% when background is >100 mg/L at any time during high flows or in turbid waters
NOTE: Background values should be measured within Craigflower Creek upstream of the project site during each monitoring event to capture current natural conditions within the watercourse.		

6.5 SPILL PREVENTION, RESPONSE AND REPORTING

Substances that are deleterious to the aquatic environment (*i.e.*, fish and fish habitat) and may pose a spill risk for this Project include:

- gasoline
- diesel
- hydraulic fluid
- transmission fluid
- engine oil
- lubricants (grease, etc.)
- sediment
- concrete wash water

Table 6.4 outlines procedures for prevention and control of spills including responsibilities, storage, and equipment.

Table 6.4 Spill Prevention, Mitigation Measures, Response, and Reporting

Category	Mitigation Measure
Spill Coordinator	1. The Contractor's supervisor will be knowledgeable in spill mitigation, containment, and reporting procedures.
	2. The supervisor will keep an inventory of all hazardous materials on site.
Training	3. The Contractor will provide staff with training in the use of hazardous materials and the location and use of spill kits.
	4. The Contractor will confirm on-site personnel know the location of spill kits, containment berms, and other spill control materials and that they are readily accessible.
Fuel Handling Guide	5. Fuel handling, storage and labelling procedures shall be consistent with *A Field Guide to Fuel Handling, Transportation and Storage* (MWLAP 2002). If there are discrepancies between this CEMP and the Fuel Handling Guide, the Project will err on the side of the more stringent standard unless approved by BC Transit.
Fuel	6. Where possible, fuel storage, equipment, or machinery refueling and servicing will occur a minimum of 30 m from any waterbody within a designated area. Where operational constraints require fuel storage, equipment or machinery refueling and servicing within 30 m of a waterbody, measures to prevent the release or spill of hazardous materials must be discussed and approved by BC Transit and the EM.
	7. Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill. Fuel will be stored in a designated area that does not have a topography that would convey spills to aquatic habitat. The area will be bermed or isolated in such a way as to contain spills should they occur. Containment areas should be inspected frequently to confirm they are operating as intended.
Fuel (cont'd)	8. All portable fuel tanks (e.g., jerry cans) will be stored within leak-proof secondary containment with absorbent pads with a capacity of 120% of its volume.
	9. Fuel storage, including secondary containment, will be kept free and clear of collected rainwater and snowfall. Accumulated water in the containment will be removed regularly so as not to diminish the capacity of the containment.
	10. While refueling, the operator must stay with the fuel nozzle.
	11. Vehicles and equipment must be shut off while refueling.
	12. Smoking will not be permitted during refueling.
Environmentally Sensitive Oil	13. Where possible, environmentally sensitive (e.g., biodegradable /food-grade/environmentally friendly) oils, hydraulic fluids and lubricants that are non-toxic to aquatic life and that are readily or inherently biodegradable will be used in equipment and machines unless the Contractor can demonstrate that it is not feasible because of: a) Unavailable biodegradable/food-grade/environmentally friendly oils and lubricants b) Technical performance issues/constraints c) Negative impacts on equipment d) Other reasons deemed acceptable to BC Transit

Table 6.4 Spill Prevention, Mitigation Measures, Response, and Reporting

Category	Mitigation Measure
Concrete Wash Water	14. Uncured concrete will be covered for a period of 72 hours to prevent the conveyance of wash water to nearby watercourses.
	15. Concrete wash water will not be allowed to discharge to aquatic habitat or any area that may transmit flow to aquatic habitat.
	16. It is recommended that the contractor monitor wash water and implement treatment (i.e., use of a CO_2 bubbler or other treatment) in the event that there is a discharge to aquatic habitat and if pH levels approach 9.0.
Equipment	17. Equipment will be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline, and other petroleum products.
	18. Containers, hoses, and nozzles will be free of leaks.
	19. Small machinery (e.g., pumps, generators) should be placed in secondary containment, such as within drip trays with sorbent pads.
	20. Hydraulic hoses and couplings should be inspected and free of leaks and excess hydrocarbons prior to use.
	21. Containers not in use will be sealed with a proper fitting cap or lid.
	22. Impervious materials, such as tarps, drip pans, or spill trays must be placed underneath equipment and machinery during servicing when there is a potential for accidental drips or spills.
Equipment Maintenance/ Servicing	23. In the event of a leak, all fueling/filling operations will be stopped until the cause of the leak has been identified and it has been repaired.
Spills	24. Spills must be reported to the EM immediately, regardless of volume.

In the event of a spill, the mitigation measures presented in Table 6.5 should be implemented.

Table 6.5 Spill Response and Reporting Mitigation Measures

Category	Mitigation Measure
Spill Response Materials	1. Spill response materials are required to be readily available when working at the Project site. These materials include, but are not limited to: a) Spill kits b) Containment booms c) Personal protective equipment (e.g., nitrile gloves, safety glasses, suits) d) Fire extinguishers e) Shovels
Spill Kits	2. The Contractor will provide an appropriate number of spill kits on site. The suggested contents of a spill kit for working near water is as follows: a) 5 sorbent pads (oil, gas, and diesel) b) 5 universal sorbent pads suitable for water-based fluids (e.g., coolant) c) 25 kg of dry oil sorbent d) 4 x 4' (~1.2 m) sorbent linkable socks (oil, gas and diesel) e) 4 x 4' (~1.2 m) universal sorbent linkable socks (e.g., coolant) f) 4 x 10' (3 m) sorbent linkable floating booms g) 4 rolls of 25 x 4 m polyethylene sheeting (for underlay) h) 25 heavy-duty plastic garbage bags i) Personal protective gear as required
	3. Spill kits will be inspected by the Contractor on a regular basis and will be re-filled immediately after use.
Backup supplies	4. The Contractor will have adequate spill response supplies to maintain spill kits.
Response	5. The initial response to the spill may include: a) Stop work b) Ensure your own safety and the safety of others c) On-site personnel wear personal protective equipment, such as nitrile gloves and safety glasses d) Identify the spilled materials and refer to the Material Data Safety Sheet(s) to determine if human health or ignition hazards exist e) If possible and safe to do so, contain the spill by any safe means possible (e.g., plug leak, close/isolate leaking valve, etc.) f) Obtain assistance of others g) Begin containment of the spill and stop it from spreading h) Clean up the spilled substance using available supplies from the on-site spill kits i) If the spill is to water, use measures such as installing sorbent rolls as floating booms to contain the spill and sorbent pads to soak up the material j) Report the spill to the EM; the EM will notify BC Transit's Project Manager. If the EM cannot reach the BC Transit Project Manager they will contact the Victoria Transit Communication Centre (TCOMM) who will complete any required immediate spill reporting. k) The EM will determine if notification to regulatory agencies is required.

Table 6.5 Spill Response and Reporting Mitigation Measures

Category	Mitigation Measure
Clean-Up	6. Final clean-up and reclamation will be conducted following an assessment (by a qualified professional) of soil and/or water conditions. Conduct *in situ* remediation only if approved by BC Transit and appropriate regulatory agencies. Specific clean-up measures will be determined in consultation with BC Transit, regulatory agencies, and appropriately qualified professionals.
Reporting	7. BC Transit is responsible for notifying regulatory agencies or authorizing notification on their behalf (e.g., EM) to regulatory agencies of all hazardous spills and for meeting spill reporting provincial and federal requirements. **BC Transit should report all spills to water to Emergency Management BC (1-800-663-3456).**
	8. The Spill Reporting Regulation under the British Columbia *Environmental Management Act* identifies externally reportable quantities for certain substances. Reportable quantities by substance are provided in Appendix C.
Environmental Incident / Non-Compliance Report	9. The EM will prepare an Environmental Incident/Non-Compliance Report in the event of a spill.
	10. The following information should be collected as it may be required when reporting a spill to regulatory agencies and should be included in the Environmental Incident/Non-Compliance Report: A draft template for spill reports is provided in Appendix B. a) Reporting person's name and telephone number b) Name of the owner of the product that spilled or leaked and phone number c) Name and phone number of the person who identified the spill or leak d) Date and time of the spill or leak e) Description of the spill or leak f) Location of the spill or leak g) Receiving environment description h) Type of material spilled and quantity i) Source of spill or leak j) If the spill or leaked product is contained, and if not, where is it flowing k) Description of the response and when it occurred l) Percent of material recovered m) Details of further action required n) Recommendations for preventative/mitigation measures o) Names of other persons or agencies advised concerning the spill or leak

In the event that potential contamination is observed during excavation (e.g., hydrocarbon sheen, oily smell, soil with a "wet" appearance), work at that location will be stopped and the EM contacted. The EM will collect soil samples for analysis at an approved laboratory. A site-specific approach to addressing contamination will be developed based on the results of the analysis.

6.6 EROSION AND SEDIMENT CONTROL

Construction mitigation measures designed to protect freshwater resources from the potential adverse effects associated with erosion and sedimentation are provided in Table 6.6. Sediment inputs to the aquatic environment can increase turbidity levels, directly affecting the quality of fish habitat should it be conveyed to fish-occupied channels.

Table 6.6 Sediment and Erosion Control

Category	Mitigation Measure
Work	1. Activities should be completed in such a way as to limit the volume of fines and organic debris that may enter nearby aquatic environments.
Rain Events	2. The Contractor shall be prepared for rain events and have sediment and erosion control materials readily available and in sufficient quantity.
	3. Work will be stopped during heavy rain events (i.e., >25 mm in a 24-hr period) and site conditions assessed to determine if mitigation is functioning. Work will only resume once mitigation is confirmed to be effective.
	4. Work should be avoided during forecasted periods of high rainfall to limit the potential for sedimentation events.
Vegetation	5. Limit disturbance to existing vegetation as part of sediment and erosion control measures to reduce the potential for a sediment release.
Supplies	6. The Contractor will maintain an appropriate amount of ESC supplies on site. The suggested materials that should be on hand are as follows: a) Silt fencing b) Stakes c) Straw bales d) Filter cloth e) Sand bags f) Dewatering bags g) Flexible piping h) Appropriately sized pumps i) Personal protective gear as required
Erosion and Sediment Control Measures	7. The Contractor shall employ a precautionary approach to erosion and sediment control. Sediment control measures will be in place before starting any works that may result in sediment mobilization or cause erosion. Construction will not start until sediment and erosion control measures are in place and deemed functional by the EM.
	8. The Contractor will stage the work site such that exposed soil is limited to that which is required to undertake construction. Clearing of the entire site prior to construction should be avoided to the extent possible.
	9. Silt fence will be installed adjacent to watercourses where local topography can direct runoff to open water. Silt fence will be toed into the ground to a depth of 30 cm with the toe oriented upslope. The ends of sections of silt fence will overlap by a minimum of 15 cm. A silt fence installation schematic is provided in Appendix D

Table 6.6 Sediment and Erosion Control

Category	Mitigation Measure
Erosion and Sediment Control Measures (cont'd)	10. When Project activities have the potential to release sediment, erosion and sediment control measures (e.g., erosion control fabric, plastic sheeting, silt fences, gravel check dams, etc.) will be installed by the Contractor. Additional site-specific protection measures may be required at the direction of the EM.
	11. The Contractor shall make use of coverings to limit exposed erodible material (e.g., straw mats, poly sheeting).
	12. Rock used for constructing and enhancing watercourses will be non-acid generating, clean and free of silt and sediment that could discharge to adjacent watercourses.
Erosion and Sediment Control Measures (cont'd)	13. Soil that is placed amongst riprap as a growing medium will be seeded to promote grass cover and reduce the potential for sedimentation downslope.
	14. Erosion and sediment control measures will be maintained and repaired regularly by the Contractor and functionality and effectiveness will be monitored by the EM until the site is stabilized.
	15. Erosion and sediment control measures will remain in place and be maintained throughout construction regardless of weather conditions, and will only be removed once construction is complete, ground conditions have stabilized, and water quality (measured by turbidity) downstream of the control measures meets background conditions or water quality guidelines as measured by BC Transit or the EM.
	16. Catch basins (CBs) on local roads will use CB protection (socks, silt bags, etc.) to prevent sediment entry to the storm sewer system.
	17. Track-out of vehicles from the site will be managed (e.g., wheel wash station and cleaning of roadways) to reduce dispersion of sediment.
Spoil Piles	18. Excavated soils / spoil piles will be trucked off-site for disposal at an approved facility. If piles are required onsite, they will be situated as far from aquatic habitat as conditions permit.
	19. Spoil piles that will be maintained onsite for more than 24 hours will be covered with weighed down poly-sheeting to reduce the runoff potential.

6.7 VEGETATION MANAGEMENT

Vegetation at the site is dominated by low-lying shrubs although some sections are forested with young trees. Mitigation measures that will be implemented to limit vegetation disturbance are outlined in Table 6.7.

Table 6.7 Vegetation Mitigation Measures

Category	Mitigation Measure
Access	1. Limit access to the site from Burnside Road. Do not create alternate access routes unless required for safety reasons.
Laydown	2. Construction materials will not be stored on vegetated areas, unless approved by the EM.
Traffic	3. Vehicle and equipment traffic will avoid vegetated areas, except where specified by construction plans and authorized by the EM.
	4. Snow fencing or an approved alternate barrier will be placed along the dripline of trees and other significant vegetation that is to be retained onsite. Tree fencing recommendations are provided in Appendix E
Tree Injury	5. Physical injury to the roots, bark, trunks, and crowns of trees from machinery or vehicles will be avoided.
Parking	6. Designated parking areas will be identified away from significant vegetation.
Rare Plants	7. If a previously unidentified rare plant is found prior to or during construction, those areas will be flagged and avoided where possible. If not possible, then a QEP will determine appropriate mitigation.
Revegetation	8. All soil covered areas will be hydroseeded with a coastal reclamation mixture approved by BC Transit as soon as weather permits.

6.8 INVASIVE SPECIES CONTROL

The Project has the potential to alter the environment such that the establishment and spread of invasive terrestrial vegetation species is increased. Invasive species have the potential to alter ecosystems to the detriment of native wildlife and plants. Mitigation and management measures to reduce, prevent, and control invasive species proliferation during and after Project construction are described in Table 6.8.

Lists of invasive species may be found in the Weed Control Regulation of the *Weed Control Act* and the Invasive Species Council of BC website (ISPBC, 2021). Species of concern at this location include Himalayan blackberry, gorse, teasel, and English ivy. The land occupier has a duty to control noxious weeds. While no permit is required, measures should be implemented to make sure material is handled and disposed of properly, so the removal effort does not spread the invasive plant. In cases where herbicide application is required, a pesticide applicator license would be required.

Table 6.8 Invasive Species Mitigation Measures

Category	Mitigation Measure
Equipment	1. Equipment, vehicles, and machines will arrive to site clean, paying special attention to undercarriages, tracks, tires, and blades prior to arrival at the Project site.
	2. Equipment and machines used to remove invasive species will be washed in a designated area prior to leaving the site.
Material	3. Imported material must be free of invasive species.
Transportation	4. If invasive species are found to be located within the construction footprint, removal will require special attention to contain the vegetation and prevent its spread. Species-specific removal plans will be developed by a QEP.
	5. Removed invasive species and associated soils must be transported to an appropriate disposal facility approved by BC Transit.

6.9 ARCHAEOLOGICAL AND HERITAGE RESOURCE PROTECTION

As referenced in Section 4.4, an AIA has been completed for the site. Provincial archaeological standards and practices (FLNRO 1998), including implementation of a chance find protocol, will be in place for this Project. A chance find protocol is under development for the project.

Evidence of what is thought to be a heritage resource may include the following:

- artefacts of stone or other material
- shell deposits
- charred wood or rock
- human remains

If an archaeological or heritage resource is encountered during construction, the work must be stopped in the vicinity of the find and the EM will notify the BC Transit Project Manager. From there, BC Transit or their delegate will contact the BC Archaeological Branch and/or a professional archaeologist immediately.

6.10 WASTE CONTROL

Waste from Project activities has the potential to adversely affect the aquatic and terrestrial environments; therefore, the mitigation measures outline in Table 6.9 will be implemented:

Table 6.9 Waste Control Mitigation Measures

Category	Mitigation Measure
Waste	1. Waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the aquatic or terrestrial environment.
	2. All on-site personnel will make best efforts to prevent debris from entering the aquatic environment.
	3. Litter in the form of coffee cups, lunch wrappers, cigarette butts, and other such items will be stored and secured in such a way as to prevent attracting wildlife.
	4. Construction debris/waste will be collected, transported, and disposed of off-site and in accordance with applicable legislation, guidelines, and BMPs.
Portable Toilets	5. Portable toilets, if required, will be located a minimum of 30 m from any waterbody. Sewage from portable toilets will be disposed of in an approved sewage disposal facility on an as-needed basis.
Hazardous Waste	6. Although hazardous waste is not anticipated for this Project, it should be noted that sorbent materials or soils saturated with hydrocarbons (greater than or equal to 3 percent by weight) are classified as hazardous waste under the *British Columbia Environmental Management Act* and must be managed accordingly.
	7. Used petroleum products, including their empty containers, will be collected and transported to a licensed recycling facility in approved storage containers following applicable regulations.

6.11 AIR QUALITY

Construction activities can cause adverse impacts to local air quality. The mitigation measures outlined in Table 6.10 will be implemented to mitigate concerns regarding the potential degradation of local air quality during construction:

Table 6.10 Air Quality Mitigation Measures

Category	Mitigation Measure
Equipment	1. Mechanical equipment that is required on-site will be in good working order.
	2. Idling of vehicles and equipment will be kept to a minimum.
	3. Low-sulphur fuels will be used for on-site machinery.
	4. The Contractor will visually inspect vehicles and equipment. Vehicles or equipment producing excessive exhaust pollution will be repaired or replaced prior to being used on the Project.
Burning	5. No on-site burning of cleared vegetation or other construction-related materials will be permitted.
Dust Management	6. Loads of dusty material will be covered when entering or leaving the site.
	7. Water or some other environmentally acceptable dust suppressant and appropriate application equipment will be available to be used as needed. Chemical dust suppressants will not be used.

6.12 CONSTRUCTION NOISE

Short-term noise generation will result from construction equipment and associated activities during Project construction. The general mitigation measures outlined in Table 6.11 will limit the potential for construction-related noise effects:

Table 6.11 Construction Noise Mitigation Measures

Category	Mitigation Measure
Equipment	1. Equipment will be properly maintained to limit noise generation and fitted with functioning exhaust and muffler systems.
	2. Equipment and machinery will be turned off (as appropriate and in compliance with Section 6.11 Air Quality) when not in use.
Timing	3. As much as possible, construction activities will be coordinated with daytime periods.
	4. The work will occur in compliance with the Town of View Royal Noise Control Bylaw No. 523.

6.13 WILDLIFE MANAGEMENT

Activities associated with this Project, such as vegetation clearing and heavy equipment operations, have the potential to directly and/or indirectly affect wildlife. The following measures (Table 6.12) will be implemented to mitigate potential impacts and effects:

Table 6.12 Wildlife Mitigation Measures

Category	Mitigation Measure
Wildlife Feature Pre-Construction Survey	1. Prior to construction, the site will be inspected by a QEP for wildlife features, such as occupied bird nests or amphibian egg masses. If wildlife and/or wildlife habitat features are observed on site, guidance documents for wildlife and wildlife habitat features will be followed.
Birds and Bird Nests	2. The Contractor is not permitted to fall trees or clear areas with bird nests without approval from the EM and, if applicable, regulatory agencies.
	3. If clearing is proposed during a nesting window, a nest sweep will be required beforehand. Clearing must commence within seven days of completion of the sweep but ideally within 24–48 hours.
Feeding	4. Feeding of wildlife shall not be permitted. All meals and food waste shall be securely stored in vehicles, offices, or appropriate disposal facilities to prevent attraction of wildlife.
Dead, Sick, or Injured Animals	5. If dead, sick, or injured animals are observed, report to the EM immediately.

Table 6.12 Wildlife Mitigation Measures

Category	Mitigation Measure
Site Access and Footprint	6. The Contractor should consult with the EM when selecting site access routes, as they should consider resident flora and fauna, especially during times of the year when they are most sensitive.
	7. The Project footprint should be clearly defined by the Contractor. Equipment presence will be restricted to the immediate work area. The establishment of approved work areas will limit disturbance and the potential to alter, damage, and/or destroy fish and wildlife habitat and sensitive ecosystems.
Wildlife Stress	8. All activities should be completed in such a way as to reduce stress and disturbance to resident fauna.
	9. Prior to construction, the active work footprint should be inspected for sensitive habitats and routinely inspected during work.
	10. Project activities should only be conducted where entirely necessary. This will reduce effects to nearby soils, vegetation, and resident species.

7.0 ENVIRONMENTAL MONITORING, REPORTING AND COMPLIANCE

7.1 GENERAL ENVIRONMENTAL MONITORING

An EM will perform environmental monitoring as part of the Project to verify that all ongoing Project components are monitored against this CEMP, construction-specific BMPs, and applicable regulatory and legal requirements. If this CEMP is followed, the potential for environmental impacts and adverse environmental effects will be limited; however, an on-site EM will be required regularly (i.e., at least once per week and more frequently during high risk activities such as work within or adjacent to watercourses) to inspect erosion and sediment control measures, attend tailgate meetings, complete machinery inspections, conduct water quality sampling (if required), and provide support/advice as required to advance construction activities. If the EM is not on-site, the Contractor will communicate with the EM to discuss the on-site construction activities, potential environmental risks, and specific mitigation measures. In addition, the EM will confirm with the Contractor that any new on-site personnel understand their environmental responsibilities and the requirements of the CEMP.

7.2 STOP WORK ORDER

The EM will have authority to alter the work methodology and/or issue stop work orders to prevent environmental impacts and/or adverse environmental effects, whether probable, imminent, or occurring. The EM may also stop work if circumstances are likely to result in a non-compliance with legislation, Project approvals, Project-specific mitigation measures, or this CEMP.

Once corrective actions have been implemented and deemed appropriate by the EM or BC Transit Project Manager, suspended Project activity will be allowed to resume under their guidance.

7.3 MONITORING REPORTS

The EM is responsible for keeping notes of site activities and for preparing a final monitoring report upon completion of construction. This report will be submitted as draft to BC Transit for review and comment. The EM will be provided time to address BC Transit's comments on the draft report. Once the EM has addressed BC Transit's comments, the report will be finalized and submitted.

The monitoring report will summarize the following at minimum:

- construction activities
- monitoring period
- mitigation measures and activities that were implemented or recommended
- non-compliances and environmental incidents
- details and results of water quality testing, if required
- photographs
- overall compliance or non-compliance with the CEMP and/or regulatory permits/authorizations

Non-compliances and incidents will be reported to BC Transit (and regulators where required) as soon as possible, but a minimum within 24 hours of occurrence. Water quality incidents or exceedances are to be reported to BC Transit immediately.

7.4 NON-COMPLIANCE AND INCIDENT REPORTING

Non-compliances and incidents must be reported to BC Transit. Non-compliances include non-compliance with this CEMP, Project-specific mitigation plans, or Project permits/authorizations/legislation (e.g., fish kills or spills). Incidents include workplace incidents such as spills, hazards, injuries etc.

The Non-compliance and Incident Reports should include:

- Reporting person's name and telephone number
- Date and time of the non-compliance or incident, including major steps (such as when the incident occurred, when did response occur)
- Description and cause of the non-compliance or incident (if a spill—including type, source, and quantity of material)
- Receiving environment description
- Names of other persons or government agencies notified
- Description of the response and when it occurred
- If a spill, percent of material recovered

- Details of further action required
- Recommendations for preventative/mitigation measures

7.4.1 Issue Resolution

Issues such as non-compliances and incidents must be resolved immediately by the BC Transit Project Manager, the EM and the Contractor. When a non-compliance or incident occurs, remedial actions must be taken as soon as possible (i.e., as soon as the site is safe).

7.5 EMERGENCY RESPONSE AND COMMUNICATION

Emergency contacts for the Project our provided in Table 7.1.

Table 7.1 Emergency Contact List for Project

Contact	Phone Number
BC Transit Project Manager, Lori Beaulieu	250-217-3869
Victoria Transit Communications Centre	TBD
Environmental Monitor	TBD
Contractor Supervisor	Office: TBD Mobile: TBD
Emergency Management BC, 24-hour Spill Reporting	1-800-663-3456
BC Archaeology Branch	250-953-3334
Island Health – Environmental Health Officer	TBD
DFO, Violations and Reporting, Report All Poachers and Polluters (RAPP)	1-877-952-RAPP (7277)
Medical Emergency	Use 911
Work Safe British Columbia	1-866-621-7233

8.0 POST-CONSTRUCTION

A post-construction environmental monitoring report (see Section 7.3) will be prepared after the site has been stabilized and equipment demobilizes. The report will outline construction as it relates to environmental protection, the efficacy of mitigation, adherence to the CEMP, environmental incidents and responses (if any), and areas of concern to focus on during post-construction, as required.

It is anticipated that post-construction habitat monitoring requirements will be outlined in the Project's environmental permits issued by FLNRORD and DFO. A post-construction monitoring program will be developed upon receipt of the applicable permits. Post-construction assessment of the site will be required to confirm that the site remains stable, restored habitat is functioning, and any installed vegetation is being maintained and is establishing. Post-construction will continue until these goals are achieved and/or as required under environmental permits for the site.

9.0 CLOSURE

We trust that this information meets with your present requirements. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Regards,

Stantec Consulting Ltd.

Prepared By:

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APPENDIX A

Monitoring Report Template

Stantec

Memo

To:	Recipient's Name Recipient's Office	From:	Sender's Name Stantec Consulting Ltd. 500-4730 Kingsway Burnaby BC V5H 0C6
File:	Victoria handyDART Transit Centre	Date:	Date

Reference: Victoria handyDART Transit Centre – Environmental Summary Report
Water Sustainability Act, Section 11(1) Change Approval, File No. XXXX

INTRODUCTION

SITE DESCRIPTION

SUMMARY OF CONSTRUCTION WORKS

Construction Phase	Date	Construction Activities	Environmental Monitoring Inspections	Mitigation Measures

Stantec

Memo

CONSTRUCTION AND ENVIRONMENTAL MONITORING ACTIVITIES

CLOSURE

Regards,

Stantec Consulting Ltd.

Author

Phone: Sender's Phone
Email: Sender’s email
:

Attachment: Site Photographs

cc. XXX

APPENDIX B

Spill Reporting Form

Stantec

INITIAL SPILL REPORT

Client:		Project Name:	
Client File#:		Project Number:	
Insured:		Report Number:	1
DGIR#:		Site Visit Date:	
Weather:			
Prepared by:			

Interim update only, information has not been verified at the time of document preparation

1.0	**Safety**
2.0	**Site Personnel**
	• • • •
3.0	**Equipment on Site**

4.0	**Background**	
4.1	Site Location	
4.2	Release Specifics	
4.3	Release Mechanism	
4.4	Actions to Date	
5.0	**Work Completed During Assessment**	
5.1	**Material Disposal (trucking companies, disposal location + approx. volume)**	
	Vac truck	
	Vehicle debris	
	Excavated material	
	Other	

5.2	**Site Sketch (include sample locations, physical features, slope direction, waterbodies, etc.)**

6.0	**Delineation of Impacted Site**					
6.1	Receptors	Currently Impacted	Potential for Impacts	Approximate Distance/direction from spill		
	Surface Water					
	Storm Drain					
	Storm Sewer					
6.2	Land Use (residential, agricultural, etc.)	North	South	East	West	
6.3	Surface Cover	Grass	Soil	Gravel	Asphalt	Concrete
		%	%	%	%	%
6.4	Comments					
7.0	**Planned Actions**					

8.0	**Additional Information** *(fill in each box yes, no, or N/A add information as required)*		
	Saddle Tanks Damaged	☐	
	Product Identified	☐	
	Land Use Identified	☐	
	Property Damage	☐	
	Reported to EMBC	☐	Incident #
	Property Owner Contact	☐	
	SiteContact	☐	
		☐	
		☐	
9.0	**Photographs**		
	Spill Site	☐	
	Adjacent N	☐	
	Adjacent S	☐	
	Adjacent E	☐	
	Adjacent W	☐	
	Water features	☐	
	Screenshot of location	☐	
	Any product?	☐	
	Location of samples	☐	
		☐	

APPENDIX C

Spill Reporting Quantities

Appendix 2: Prescribed substances and quantities for immediate spill reporting

Item	Column 1 Substance Spilled	Column 2 Specified Amount
1	Class 1, Explosives as defined in section 2.9 of the Federal Regulations[1]	Any quantity that could pose a danger to public safety or 50 kg
2	Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a) of the Federal Regulations	10 kg
3	Class 2.2 Non-Flammable and Non-Toxic Gases as defined in section 2.14 (b) of the Federal Regulations	10 kg
4	Class 2.3, Toxic Gases as defined in section 2.14 (c) of the Federal Regulations	5 kg
5	Class 3, Flammable Liquids as defined in section 2.18 of the Federal Regulations	100 L
6	Class 4, Flammable Solids as defined in section 2.20 of the Federal Regulations	25 kg
7	Class 5.1, Oxidizing Substances as defined in section 2.24 (a) of the Federal Regulations	50 kg or 50 L
8	Class 5.2, Organic Peroxides as defined in section 2.24 (b) of the Federal Regulations	1 kg or 1 L
9	Class 6.1, Toxic Substances as defined in section 2.27 (a) of the Federal Regulations	5 kg or 5 L
10	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
11	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"
12	Class 8, Corrosives as defined in section 2.40 of the Federal Regulations	5 kg or 5 L
13	Class 9, Miscellaneous Products, Substances or Organisms as defined in section 2.43 of the Federal Regulations	25 kg or 25 L
14	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
15	Leachable toxic waste as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
16	Waste containing polycyclic aromatic hydrocarbons as defined in section 1 of the hazardous Waste Regulation	5 kg or 5 L
17	Waste asbestos as defined in section 1 of the Hazardous Waste Regulation	50 kg
18	Waste oil as defined in section 1 of the Hazardous Waste Regulation	100 L
19	Waste containing a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L

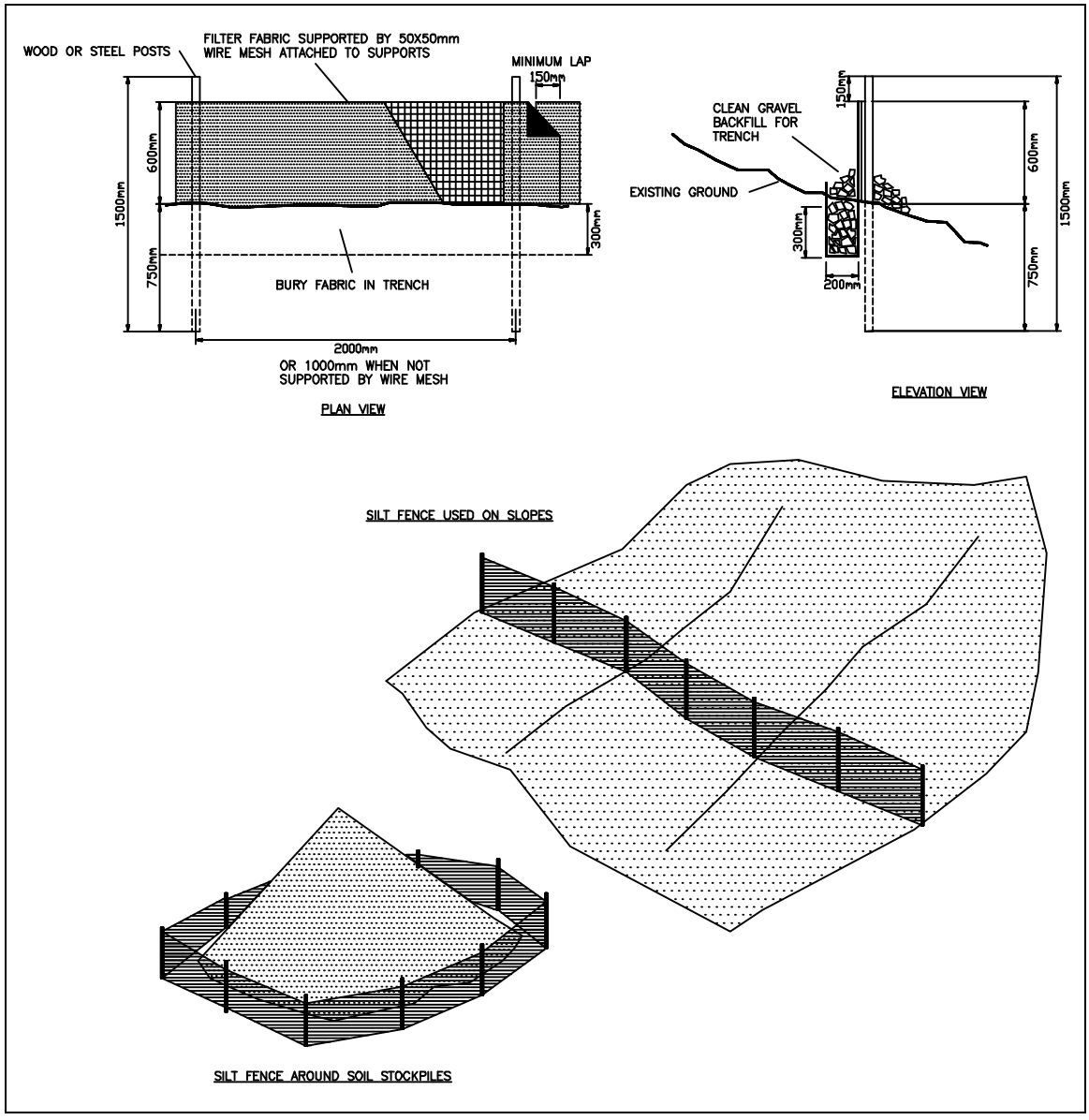
[1] *"Federal Regulations" means the Transportation of Dangerous Goods Regulations made under the Transportation of Dangerous Goods Act (Canada);"Hazardous Waste Regulation" means B.C. Reg. 63/88.*

20	PCB Wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
21	Waste containing tetrachloroethylene as defined in section 1 of the Hazardous Waste Regulation	50 kg or 50 L
22	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
23	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
24	A substance, not covered by items 1 to 23, that can cause pollution	200 kg or 200 L
NEW	**Items 1-24 if spilled to a body of water -marine and fresh waters whether or not it usually contains water or ice including stream, lake, pond, river, creek, spring, aquifer, ravine, gulch, wetland or glacier, and ditch that is not self-contained and connects to a body of water.**	**Any quantity**
25	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

APPENDIX D

Silt Fence Schematic (DFO 1993)

Figure 3.3 Typical Silt Fence Construction and Applications



APPENDIX E

Tree Fencing Recommendation

Appendix C: Tree Protection Recommendations

TRUNK DIAMETER X (cm)	MINIMUM PROTECTION REQUIRED AROUND TREE- DISTANCE FROM TRUNK Y (m)
20 cm	1.2 m
25 cm	1.5 m
30 cm	1.8 m
35 cm	2.1 m
40 cm	2.4 m
45 cm	2.7 m
50 cm	3.0 m
55 cm	3.3 m
60 cm	3.6 m
75 cm	4.5 m
90 cm	5.0 m
100 cm	6.0 m