

NEW CARGO EXPORT PROJECT – CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN



Prepared for.

Westshore Terminals Ltd. Partnership

Delta, British Columbia

September 2021



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Westshore Terminals Limited Partnership

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Prepared for:

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SEPTEMBER 2021

WTL10606-NV-010

VERSION 7.0

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LIST OF ACRONYMS AND ABBREVIATIONS

BC	British Columbia
BMP	Best Management Practice
CANUTEC	Canadian Transport Emergency Centre
CEMP	Construction Environmental Management Plan
DFO	Fisheries and Oceans Canada
DWT	Deadweight tonnage
EM	Environmental Monitor
EMA	<i>Environmental Management Act</i>
EMBC	Emergency Management British Columbia
ENV	BC Ministry of Environment and Climate Change Strategy
ESC	Erosion and Sediment Control
EZ	Exclusion Zone
FA	<i>Fisheries Act</i>
HADD	Harmful Alteration, Disruption or Destruction
IAA	<i>Impact Assessment Act</i>
IBA	Important Bird Area
kV	Kilovolt
LED	Light emitting diode
m	Metre
MMO	Marine Mammal Observer
Mtpa	Million tonnes per annum
PER	Project Environmental Review
PPE	Personal Protective Equipment
QEP	Qualified Environmental Professional
RMS	root mean square
SDS	Safety Data Sheet
SPL	Sound Pressure Level
SPPP	Stormwater Pollution Prevention Plan
TSS	Total Suspended Solids
VFPA	Vancouver Fraser Port Authority
WHMIS	Workplace Hazardous Materials Information System
Westshore	Westshore Terminals Limited Partnership

1.0 INTRODUCTION

Westshore Terminals Limited Partnership (Westshore) has been in operation since 1970 and is Canada's largest throughput coal export terminal, handling around 31 million tonnes per annum (Mtpa) with a capacity of 36 Mtpa. Through the proposed New Cargo Export Project (the Project), Westshore plans to diversify the products shipped to market through the existing terminal.

The site is located at 1 Roberts Bank, Delta, BC and is entirely on Vancouver Fraser Port Authority (VFPA) property, for which Westshore has an existing lease agreement for current coal export operations (Figure 1). The Project involves modifications to the existing facility to use a portion of the site for potash export to global markets. The Project will result in the shipping of up to 4.5 Mtpa of potash, displacing approximately an equivalent amount of coal export capacity. The overall terminal capacity will remain at 36 Mtpa. A summary Project description is provided in Section 2.2.

This document was prepared in alignment with VFPA's Project & Environmental Review Guidelines - Construction Environmental Management Plan (CEMP)¹. This CEMP is the primary document to guide overall environmental management practices during the Project's construction phase to avoid and/or mitigate adverse effects on environmental resources and the local community. The general objectives of the CEMP are to:

- Identify, avoid and/or mitigate potential Project-related environmental effects;
- Establish requirements and procedures for environmental monitoring and inspection activities protection;
- Guide Project compliance with applicable environmental legislation and regulations, conditions of environmental permits, licences, and approvals; and
- Identify roles and responsibilities as they relate to Project environmental compliance.

¹ <https://www.portvancouver.com/wp-content/uploads/2018/04/PER-Construction-Environmental-Management-Plan-CEMP-Guideline-UPDATE.pdf>


Figure 1 Project Location Overview.



Data Source:
 Orthophoto 0.75 cm, City of Delta,
 26 April 2018, Esri Online Service.

Note: The VFPA checklist identified a scale of 1:5000 for the location figure. The scale was adjusted to show the Project's relationship to the surrounding area.



0 250 500 1000 m 

Scale: 1:35,000
 Projection: NAD 1983 UTM Zone 10N



New Cargo Export Project

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2.0 PROJECT INFORMATION

2.1 LOCATION

The Project is located near Delta, British Columbia (BC). The geographical coordinates at the Project's approximate centre are 49° 1' 2.02" North and 123° 9' 49.72" West. The site is situated at the southwest facing end of the existing Roberts Bank terminal facilities in the Strait of Georgia.

2.2 PROJECT DESCRIPTION

The Project will consist of upgrades to the terminal, including new infrastructure to incorporate potash operations. The Project will receive potash shipments by rail, offload the potash from railcars to a new potash storage building, and transfer potash via conveyor system to the shiploaders onto waiting vessels at the existing Berth 2 for export. Once the Project is operational, Berth 2 for Westshore will facilitate the export of both coal and potash while Berth 1 will remain dedicated to coal.

2.2.1 Project Components

Modifications to existing infrastructure and new infrastructure will consist of:

- A new enclosed potash railcar dumper on the south side of the site adjacent to the existing dumpers;
- A new timber A-frame potash storage building (approximately 400 m long x 70 m wide x 40 m high), including tripper conveyor and portal reclaimer located on the northwest corner of the site;
- Approximately 2,200 m of new enclosed conveyors and transfer towers connecting the new railcar dumper to the potash storage building and to the existing Berth 2;
- Dust collectors at conveyor transfer points;
- Replacement of the existing shiploading conveyors and shiploaders to allow both potash and coal handling, and installation of spout changeout towers at Berth 2;
- Retrofits to the existing Berth 2 foundations;
- Modifications to the existing on-site rail system to include a 700 m section of new rail line to connect the new railcar dumper to the existing inner rail loop; and
- Associated on-site road, civil and electrical infrastructure modifications within the existing facility.

As shown in Figure 2, the Project's infrastructure will displace a portion of the existing coal stockpile areas at the site. Necessary modifications for the Project will be undertaken within the existing terminal footprint.

2.2.2 Construction Methods

Construction activities will include demolition of some existing site infrastructure and utilities and site preparations to facilitate the new potash infrastructure construction. The construction activities, except for the in-water works, will be performed by machinery working from land on the existing Westshore property.

In-water works will be limited to retrofitting the existing marine foundations and installing two elevated spout storage platforms and associated reinforcements. This work will involve pile driving by barge. In total, approximately 42 piles will be installed (6 for the storage towers and 36 for the retrofitting work). Piles will

be installed using a vibratory hammer; an impact hammer will only be used if necessary. The storage platform will include the installation of two steel beams underneath the existing wharfhead concrete decking. In-water work mitigation measures are described in Section 6.10 of this CEMP.

Equipment and materials may arrive or depart by barge or vessel at two temporary barge landing facilities located on the east and west side of the site. All construction activities at the temporary barge landing sites will be above the high-water mark.

Laydown areas will be located within the terminal area, mainly along the northern stockpile. Localized laydown areas will also be located south of the southern stockpile in the vicinity of the dumper.

Construction activities will use conventional land and marine-based construction equipment including land-based cranes, excavators, dump trucks, graders, etc., and marine-based barge mounted cranes and pile driving equipment. Details regarding machinery and equipment management are provided in Section 6.5. The number of onsite construction personnel will vary based on activity and is anticipated to be on average 130 personnel, remaining below 290 personnel during peak construction phases.

As shown in Figure 3, the sequencing of construction activities will be overlapping for the storage building, railcar dumper and conveyors, and transfer towers. The following general sequence of Project construction is planned:

- Earthworks for storage building preparation, including:
 - Stripping of coal and pond coal; and
 - Stripping, stockpiling, and disposal of coal and sand mix off-site at a licenced facility.
- Preload material placed around the area of the potash storage building;
- Movement of preload material within site after settlement in the initial placement area of the potash storage building;
- Removal of a portion of the preload material from site;
- Removal of existing asphalt from the area around the new railcar dumper and location for the potash storage building. Existing asphalt will also be removed in locations for various project infrastructure, including utility relocations and equipment foundations;
- Removal and/or relocation of existing utilities, including removal of a portion of the existing rail line, will need to be removed to facilitate the addition of the line connecting the new railcar dumper;
- Ground improvements and foundation works, including:
 - Excavation, backfill and dewatering activities;
 - Ground densification activities including stone column densification installed under the potash storage building; and
 - Concrete works to form infrastructure foundations.
- Installation of new utilities;
- Additional water collections systems;

- In-water pile driving for spout change out towers, retrofits to the existing in-water foundations and associated works at Berth 2;
- On-site road and rail modifications;
- Construction of new railcar dumper;
- Installation of new potash conveyors and transfer towers;
- Construction of new potash storage building;
- Demolition of the existing coal handling conveyors which are connected to the shiploaders at Berth 2 and replaced with new conveyors; and
- Replacement of the existing shiploader conveyors and shiploaders at Berth 2.

2.3 PROJECT SCHEDULE

Project construction is anticipated to take approximately 4 to 5 years to complete and is currently scheduled to start in Q2 of 2022, subject to permits being in place.

Figure 3 shows the overall general construction timeline for the Project.

2.4 SITE DESCRIPTION: EXISTING CONDITIONS

The Project is located at the existing Westshore Terminal in Delta, BC, approximately 30 km south of Vancouver, BC. The Project footprint will be contained entirely to the current operational facility, within existing coal stockpile locations, paved surfaces, and Berth 2. Westshore has held a lease for coal exports on the property since it first became operational in 1970.

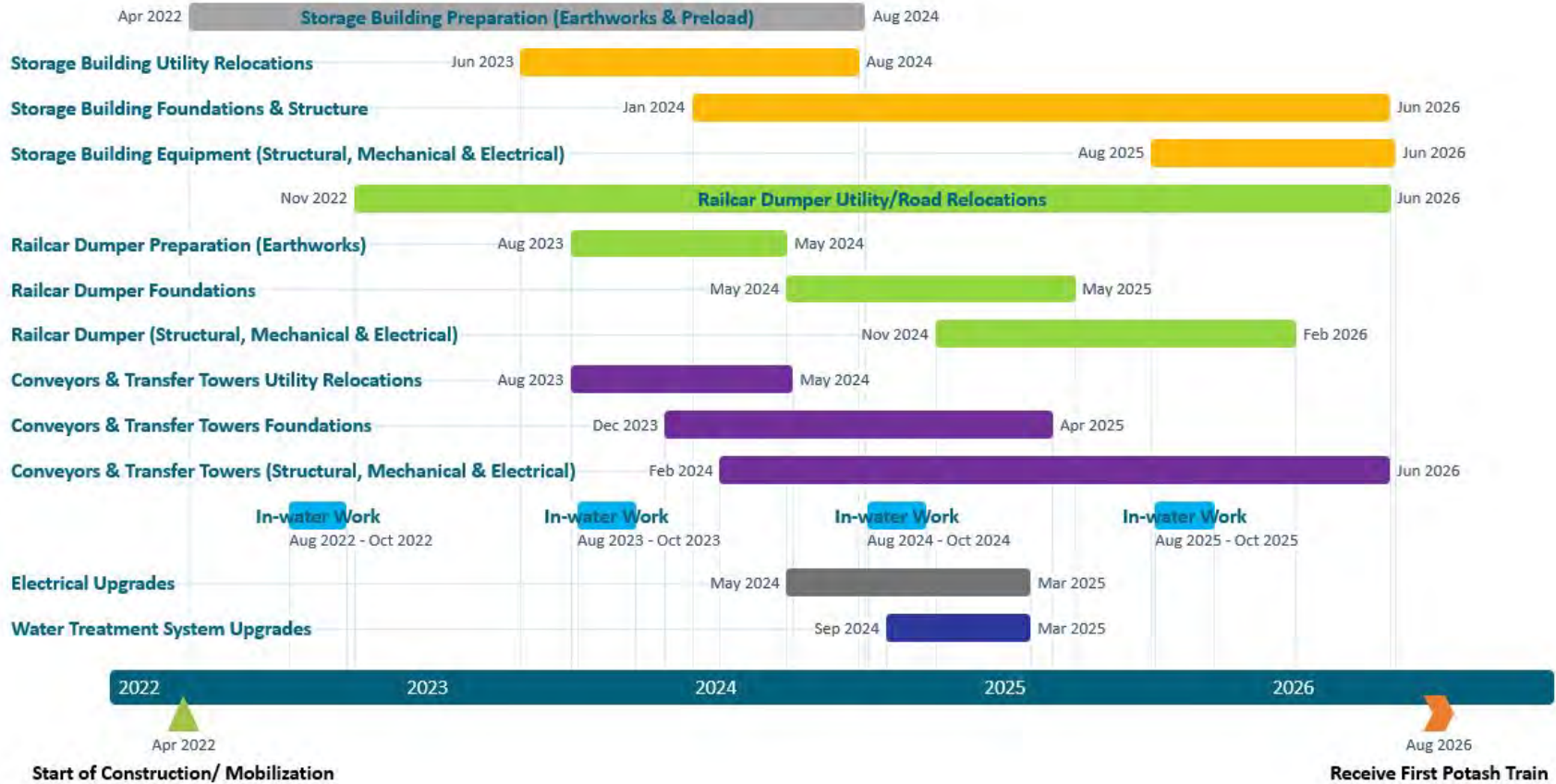
Given Westshore's current operations, there are existing site facilities for parking, office space, site access, fuel storage, fire protection, and managing stormwater and domestic wastewater. In addition to the existing facilities, Westshore maintains site policies and procedures for safe operations, health and safety, protection of the environment, and emergency response.

Westshore Terminal is situated within the traditional territory of the Tsawwassen First Nation and the community living on Tsawwassen land is the closest community to the terminal. Tsawwassen First Nation has approximately 491 members living on Tsawwassen land, about 5 km from Westshore Terminal. The City of Delta includes three urban communities near the Project area: Ladner, Tsawwassen, and North Delta (with centers approximately 9 km, 5 km, and 25 km from the Project, respectively).

Roberts Bank is located in the southern portion of the Fraser River Delta system where seawater from the Strait of Georgia and freshwater and sediment from the Fraser River combine, leading to a complex, dynamic and productive estuarine ecosystem. Several species of marine mammals, including southern resident killer whales (SRKWs), occasionally occur at Roberts Bank.

Numerous archaeological investigations have taken place in the Project area in response to infrastructure development during the past 50 years. These investigations suggest that the potential for effects of the Project on archaeological resources is low. Regardless, Section 6.11 includes mitigation measures and procedures to be implemented regarding archaeological resources.

Figure 3 Estimated Schedule for the New Cargo Export Project.



3.0 CONTACTS AND RESPONSIBILITIES

3.1 KEY PROJECT PERSONNEL AND RESPONSIBILITIES

Westshore is responsible for verifying that the Project is constructed in compliance with environmental legislation and regulations, permitting requirements, Best Management Practices² (BMPs), and other Project environmental documents. Westshore will require that the Contractor, their Project employees, and subcontractors adhere to the CEMP during Project construction.

Contact details for Key Project Personnel are in Table 1. Contact details will be updated within Contractor submissions prior to and during construction to maintain accuracy and reflect changes in personnel.

Table 1 Key Project Contacts.

Name	Responsibility	Contact Information
Project Team		
Greg Andrew [Westshore]	Project Manager	604-946-4491
[Contractor]	Construction Manager	TBD
[Contractor]	QEP/Environmental Monitor	TBD
[Contractor]	Marine Mammal Observer	TBD
Agencies*		
VFPA	Environmental Programs	EnvironmentalPrograms@portmetrovancover.com
VFPA Operations Centre	Harbour Master	604-665-9086 / Harbour_Master@portmetrovancover.com
Conservation and Protection Field Supervisor for Lower Mainland / Squamish	Fisheries and Oceans Canada (DFO)	604-664-9250
Navigation Protection Program	Pacific Regional Office	604-775-8867
Environment and Climate Change Canada	BC Office	604-664-9100
City of Delta	Public Works	604-946-5334

* Emergency response contact numbers, including those for Spill Reporting, are presented in Table 3 within Section 7.1: Emergency Communication.

² Best management practice: an approach based on known science that, if followed, should allow the activity to meet the required standard(s) or achieve the desired objective(s). BMPs take the form of a schedule of activities, prohibitions of practices, maintenance procedures, and other management techniques to prevent or reduce impacts to the environment.

3.2 ENVIRONMENTAL MONITOR RESPONSIBILITIES

During Project works, the Contractor's Environmental Monitor³ (EM) will conduct periodic inspections of construction activities to assess compliance with mitigation measures outline in this CEMP. The EM will be a Qualified Environmental Professional⁴ (QEP) or work under the direct supervision of a QEP. The EM must demonstrate a working knowledge of the site, be knowledgeable of the status of the Project work, and all environmental issues and conditions associated with the Project and the site works. Where required, the EM provides recommendations to the Construction Manager and Contractor's team about environmentally sound practices for activities like equipment operation or maintenance, hazardous material handling, or work in sensitive habitats. It is the Contractor's responsibility to remain in close communication with the EM throughout the Project.

The responsibilities of the EM will include, but are not necessarily limited to the following:

- Monitor compliance with the CEMP and applicable VFPA permit conditions;
- Meet with Contractors to review site conditions and constraints as well as mitigation measures outlined in the CEMP and other applicable BMPs;
- Meet with the Construction team as and when required to discuss Project activities, design modifications, or modified mitigation measures to accommodate site conditions;
- Providing technical assistance on environmental matters to construction personnel;
- Providing recommendations for modifying and/or improving environmental mitigation measures, as necessary;
- Documenting construction activities, mitigation measures, and environmental incidents by field notes and photographs;
- Taking field environmental measurements and conducting analyses, as necessary;
- Maintain contact names and numbers of support personnel and specialized QEPs to be called in the event additional help is required for monitoring or spill response;
- Develop site restoration recommendations if needed;
- Complete and submit environmental monitoring reports to Westshore, as required; and
- Report unanticipated incidents with the potential for adverse effects to the environment, to the Contractor and appropriate on-site contacts.

³ The Environmental Monitor is a qualified environmental professional engaged in environmental monitoring on behalf of the Project for the purposes of compliance, due diligence and guidance on implementing mitigation measures.

⁴ A Qualified Environmental Professional is an applied scientist or technologist who is registered and in good standing with an appropriate BC professional organization or who, through demonstrated suitable education, experience and knowledge relevant to the particular matter, may be reasonably relied on to provide advice within their area of expertise. A qualified environmental professional could be a biologist, agrologist, forester, geoscientist, engineer, or technologist.

The EM will be available to monitor activities during construction that could affect environmentally sensitive areas (e.g., dewatering, soil excavations, at the outset of a new activity). The EM will be present on-site, full time when in-water works are conducted and during concrete placement works conducted over or near the water (e.g., pile and spout tower installation, construction of temporary barge landings). Frequency of site visits will be dependent on the sensitivity of work activities (e.g., in-water works). Additional visits will be conducted as required to meet permit or Contractor needs.

Qualified Marine Mammal Observers⁵ (MMO) will be required to visually monitor for marine mammals during in-water Project works and record observations. The MMO will notify the Contractor to stop the construction activity if a marine mammal is observed, as defined in Section 6.10.

The EM will have the authority to halt work if, in their opinion, current or imminent impacts to the environment that have not been approved as part of Project permits, approvals, or applicable authorizations are at risk of occurring. Appropriate mitigation measures will be carried out by the Contractor under the guidance of the EM.

3.3 CONTRACTOR RESPONSIBILITIES

All Contractors and site managers will review this CEMP and the applicable guidelines prior to each Project phase or new activity.

Typical responsibilities of the Contractor include the following:

- Review the Project CEMP with their staff and sub-contractors prior to commencing works;
- Provide an environmental orientation to all Contractor staff and sub-contractors and provide a copy of this CEMP for review prior to working on the Project. The environmental orientation will include the following:
 - An overview of the CEMP;
 - Roles and responsibilities of personnel and relevant contact information;
 - Site-specific environmental issues, regulatory requirements, environmental protection and mitigation measures; and
 - Responsibilities, protocols, and relevant contact information in response to an accidental spill or other type of environmental emergency, including information specified by relevant standards, codes, or enactments.
- Integrate environmental information and relevant mitigation measures into Project work plans for the Contractor(s) scope of work;
- Comply with VFPA permit conditions, and any other relevant agency permit or licence issued for the Project, as well as all other applicable federal, provincial, and municipal laws, statutes, by-laws, regulations, orders, and policies; and
- Correct deficiencies and any non-compliance issues upon direction from the EM, whether written or verbal. Corrections should be made as soon as reasonably possible, ideally within 24 hours of directions.

⁵ The Marine Mammal Observer is a qualified professional engaged in monitoring on behalf of the Project to identify marine mammals, including seals, whales and dolphins, that may enter the Project area for the purposes of compliance, due diligence and guidance on implementing mitigation measures.

4.0 RELEVANT ENVIRONMENTAL LEGISLATION

Table 2 describes relevant environmental legislation for the Project works.

Table 2 Relevant Environmental Legislation.

Legislation	Agency	Description	Approval or Permit in Place/Forthcoming; or Requirements Met
<i>Federal</i>			
<i>Fisheries Act (FA)</i>	DFO	The FA is the main federal legislation providing protection for fish and fish habitat (section 35). Also, the FA prohibits the deposit of deleterious substances into water frequented by fish (section 36).	No FA authorization is anticipated for this Project as it will not result in death of fish or Harmful Alteration, Disruption, or Destruction (HADD). A Request for Review will be submitted to DFO and any correspondence will be provided to the Contractor. In September 2020, DFO provided a letter in response to Westshore's Berth and Mooring Dolphin Replacement Project at Berth 2 (DFO 2020). Mitigation measures described in this letter were determined to be sufficient to avoid and mitigate the potential for prohibited effects to fish and fish habitat. These measures have been considered in the Project habitat assessment and integrated into mitigation measures outlined in Section 6.10 of this CEMP.
<i>Canada Marine Act</i>	VFPA	The <i>Canada Marine Act</i> is the main federal legislation that recognizes the significance of marine transportation to Canada and its contributions to the Canadian economy. A Port Authority is designated under this act to oversee port operation and is the principal authority for shipping and port-related land and sea use.	VFPA is responsible for overseeing the Port of Vancouver under the <i>Canada Marine Act</i> . This responsibility is covered by the PER process.
<i>Impact Assessment Act (IAA)</i>	VFPA	The IAA governs the environmental assessment of certain activities and the prevention of significant adverse environmental effects. IAA regulations identify the physical activities that may require an Environmental Assessment. The requirements for projects on federal land are also defined in the IAA (sections 82 to 89).	The VFPA must determine that the Project is not likely to result in significant adverse effects before allowing the Project to proceed. This responsibility is covered by the PER process.

Table 2 (Cont'd.)

Legislation	Agency	Description	Approval or Permit in Place/Forthcoming; or Requirements Met
Federal (Cont'd.)			
<i>Canada Shipping Act</i>	Transport Canada	The <i>Canada Shipping Act</i> is Transport Canada's regulatory framework surrounding marine pollution and its enforcement. In the case of a report of pollution in the water, including oil or fuel spills, Canada operates under the National Spill Response Protocol, which specifies that the Canadian Coast Guard is responsible for all spill response and recovery in the marine environment.	Westshore is an existing operational terminal with an Emergency Contingency Plan and Spill Response Plan to be implemented by the Contractor for their scope of work. Additional construction-specific measures regarding Environmental Emergency Plan and a Spill Response Plan have been identified for the construction phase of the Project and are provided in Section 7.0 and Section 7.2 of this CEMP, respectively.
<i>Canadian Navigable Waters Act</i>	Transport Canada	The <i>Canadian Navigable Waters Act</i> is the federal legislation that protects the public right to free and unobstructed passage over navigable waters.	As works are not expected to interfere with navigation, an application for approval to Transport Canada is not expected to be required. A notification of no interference with navigation will be submitted to Transport Canada for the works as applicable.
Provincial			
Spill Reporting Regulations of the <i>Environmental Management Act (EMA)</i>	Ministry of Environment and Climate Change Strategy	The regulation establishes procedures for reporting the unauthorized release of substances into the environment as well as outlining details of reportable amounts for certain substances for sites having Provincial jurisdiction.	Substances (e.g., hydrocarbons) that may be harmful to the environment may be used during the construction period of the Project. An Environmental Emergency Plan and a Spill Response Plan have been developed for the construction phase of the Project and are provided in Section 7.0 and Section 7.2 of this CEMP, respectively.
Contaminated Sites and Hazardous Waste Regulations of the <i>Environmental Management Act (EMA)</i>	Ministry of Environment and Climate Change Strategy	These regulations govern the handling, storage, transportation, treatment, and disposal of contaminated material and hazardous waste.	Contaminated material, if encountered, will be removed from the site for disposal at an appropriate location. Hazardous waste (e.g., used oil) may be generated during Project construction. A Waste Management Plan is provided in Section 9.0 of this CEMP for both general and hazardous waste.
Municipal			
Delta Noise Control Bylaw No. 1906, 1972	The Corporation of Delta	The Delta Noise Control Bylaw regulates or prohibits the making of certain noises and includes information on objectionable noises or sounds, exclusions, enforcement, penalty, and ticketing.	The Project falls under VFPA jurisdiction, thus hours of work and noise levels will be determined through VFPA processes. Reasonable efforts to limit noise emissions during Project construction will be taken. Mitigation measures to be implemented to minimize noise emissions resulting from construction activities are provided in Section 6.4 of this CEMP.

5.0 ENVIRONMENTAL REPORTING

Environmental monitoring reports will be completed and submitted, as required by permit and contractual requirements. Routine environmental monitoring reports, completed by the EM, will include, at a minimum, the following information:

- Name(s) of Environmental Monitor(s);
- Period covered by the report;
- Contractor(s) undertaking work during the reporting period;
- Overall weather conditions during the reporting period;
- Description, photos, and status of Project work activities;
- List of meetings and any other material communications (both those that occurred during the reporting period and any that are scheduled or anticipated in future reporting periods) and a summary of key issues discussed or expected to be discussed;
- A summary of environmental incidents that occurred during the reporting period;
- A description of environmental issues and/or non-compliance with environmental laws, permits, or other environmental obligations and corrective actions taken or planned;
- A summary of any environmental monitoring data collected, and all results received during the reporting period, including water and sediment sampling;
- An organized checklist or table of key mitigation requirements of the CEMP – including those of VFPA and other agencies – to verify implementation and effectiveness at the relevant stages of the Project; and
- An overview of marine mammal, fish, or wildlife observations.

5.1 ENVIRONMENTAL INCIDENT REPORTING

Environmental incident reporting will be carried out for incidents that pose or may pose a threat to the environment, such as spills, disruption of wildlife or marine mammals, or effects on water quality that result in an exceedance of the existing site stormwater discharge permit.

Environmental incident reporting is a responsibility of the EM, in collaboration and cooperation from the Contractor.

An Environmental Incident Report will be generated for any of the following occurrences:

- Spills reportable to EMBC;
- Any incident that poses a safety or health risk, including but not limited to vehicle collisions and fire;

- Any repetitive environmental non-compliance occurrence (i.e., an occurrence of 2 times or greater);
- Adverse publicity with respect to the environment;
- Alteration or damage to archaeological resources; and
- External reporting requirements derived from a Project approval condition, especially if attached to a non-routine or unexpected event.

Spills reportable to Emergency Management British Columbia (EMBC) are defined under the *Environmental Management Act*, *Spill Reporting Regulation*, and/or the *Transportation of Dangerous Goods Act*. In addition, spills of any volume to fish-bearing waters must be reported to the Department of Fisheries and Oceans Canada (DFO).

Details of reportable volumes of substances and agency reporting procedures are outlined in the Spill Prevention and Response Plan (Section 7.2). A list of emergency response contacts is provided in Table 3, Section 7.1 Emergency Communication.

6.0 PROJECT MITIGATION MEASURES AND ENVIRONMENTAL SPECIFICATIONS

6.1 GENERAL PRACTICES

Westshore is a currently operational site that will continue to be operational during Project construction. The Westshore team will continue to implement the Spill Response Plan and Emergency Contingency Program as it relates to operations. The requirements and mitigation measurements below were developed in alignment with Westshore's existing plans and will be implemented by the Contractor as it relates to their scope of work and activities.

The following general mitigation measures are recommended to avoid or minimize impacts to environmental resources or members of the surrounding community resulting from Project works:

- All Project personnel will receive training on how to properly implement protection measures and understand BMPs used on the Project for which they are responsible;
- Environmental awareness talks will be conducted on a regular basis to confirm workers are aware of potential construction-related effects of works, and the mitigation measures to be employed during works, as outlined in the CEMP; and
- The EM will remain in contact with Contractor crews to review site environmental constraints and any additional measures that may require implementing, such as in-water environmental mitigations, or ongoing opportunities for corrective and/or preventive actions.

6.2 SITE ACCESS, MOBILIZATION, AND LAYDOWN AREAS

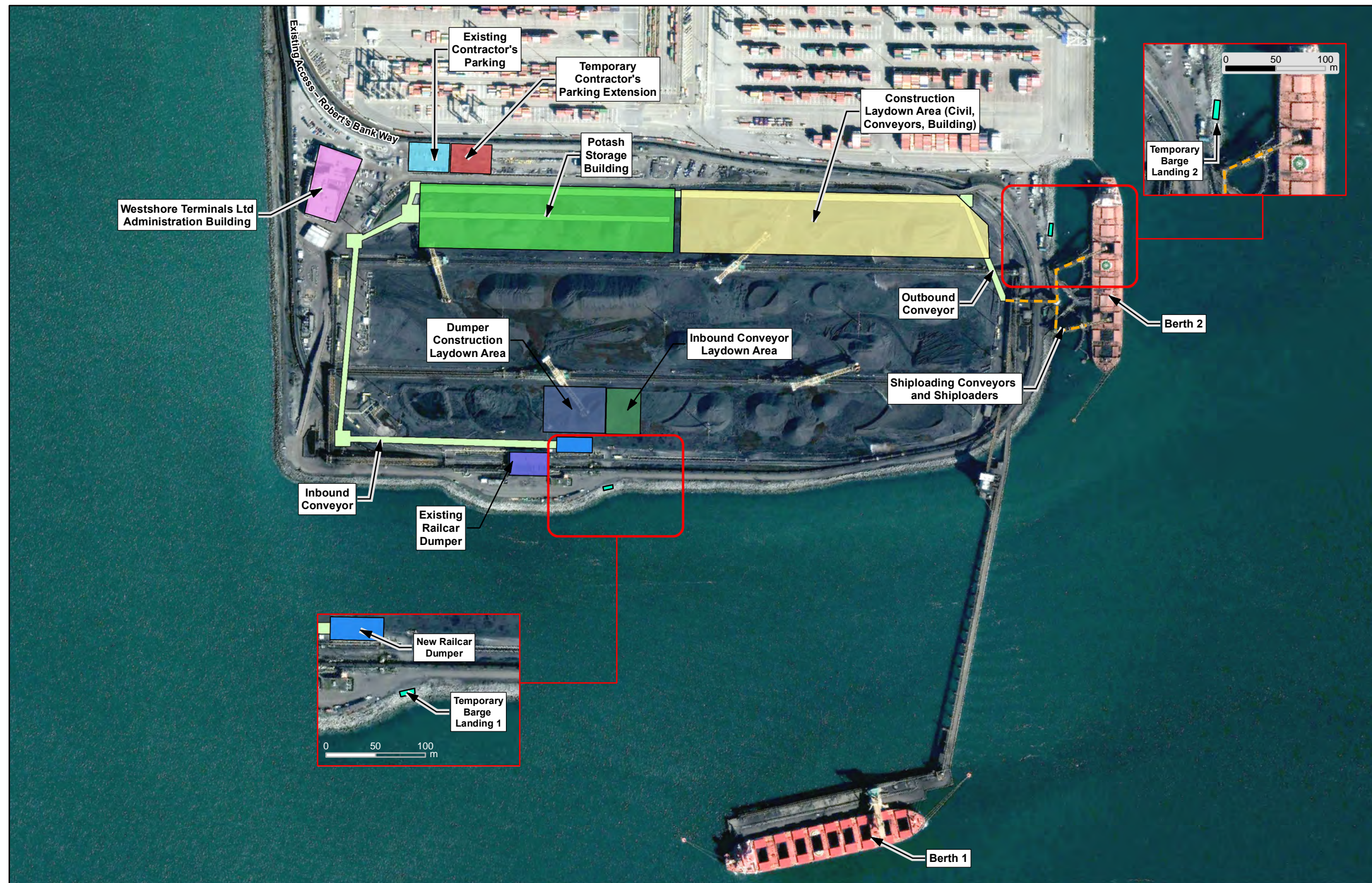
As described in Section 2.0, the Westshore Terminal is part of the Roberts Bank port facility that is situated at the end of the 4.1 km Roberts Bank Way causeway, which will provide the primary access to the site. Some equipment and materials may arrive or depart by barge or vessel at existing Westshore facilities. Laydown areas will be located within the terminal area, mainly along the northern stockpile. Localized laydown areas will also be located south of the southern stockpile in the vicinity of the dumper. Laydown areas have been established on flat, stable ground, as shown on Figure 4. The Project does not require any modifications to existing roads, off-site railways, or VFPA's access gate. It is anticipated that the construction traffic can be easily managed with existing traffic controls. Westshore and the Contractor will work with VFPA in managing traffic through the VFPA's access gate.

6.3 AIR QUALITY

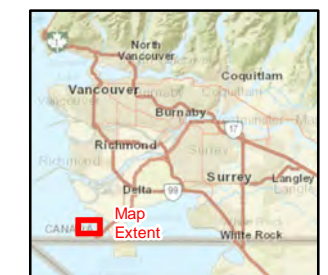
Air quality, including dust and fugitive emissions, have the potential to occur during construction preparation, vehicle and equipment operations, transportation of construction materials, and other Project construction activities producing deleterious air emissions and/or fugitive dust.

Dust is not expected to increase during construction activities, as works are currently operating on the Site 24 hours a day with no issues. The existing dust suppression systems will continue to operate during Project construction. In addition, Westshore currently uses and maintains on-site water trucks to keep the paved roads clean and washed down to prevent dust arising from vehicle use. Potential air quality impacts are expected to be low provided appropriate mitigation measures outlined below are employed during the works.

Figure 4 Project Construction Staging Areas and Contractor Parking.



- Legend**
- Project Components**
- Shiploading Conveyors and Shiploaders
 - Conveyor
 - Construction Laydown Area (Civil, Conveyors, Building)
 - Dumper Construction Laydown Area
 - Existing Contractor's Parking
 - Existing Railcar Dumper
 - Inbound Conveyor Laydown Area
 - Potash Storage Building
 - Temporary Contractor's Parking Extension
 - Westshore Terminals Ltd Administration Building
 - New Railcar Dumper
 - Temporary Barge



0 50 100 m

Scale: 1:6,000

Projection: NAD 1983 UTM Zone 12N

Data Sources:

- a) Project components, Hatfield 2021.
- b) Temporary Barge digitized using Westshore temporary barge landing location.pdf, Nickel Bros 2021.
- c) Base imagery, 14 March 2020, Retrieved from © Google Earth.



The following mitigation measures will be implemented to reduce dust and air emissions resulting from site activities:

- The track out of vehicles from the site shall be managed (e.g., wheel wash station, cleaning of roadways, etc.) in order to reduce the potential for the dispersion of material and debris as fugitive dust;
- To reduce dust, when loading materials onto vehicles, stockpiles, and conveyors adjust drop heights to less than two meters, where feasible;
- Loads of soil and similar materials shall be covered when hauling;
- Trucks shall be loaded so that loads do not spill during movement;
- Minimize engine idling to the extent feasible. All workers will be required to turn off vehicles or equipment when not in use;
- Stationary emission sources (e.g., portable diesel generators, compressors, etc.) will be used only as necessary and turned off when not in use; and
- No burning of oils, rubber, tires, or other materials will be permitted on-site.

6.4 NOISE AND VIBRATION

Typical construction activities will take place within VFPA's regular construction hours, between Monday and Saturday from 7:00 a.m. to 8:00 p.m. However, trucking of fill material, major concrete pours, and work requiring a shutdown of terminal operations (e.g., tie-ins or equipment installations and commissioning activities) will occur on a 24-hour schedule.

Given existing 24-hour operations at Westshore and the type of Project construction activities likely to occur during extended hours, it is not anticipated that these activities will result in an increase in noise levels at the terminal or surrounding communities. Pile driving and other large noise-emitting activities will not be completed during extended hours. The following mitigation measures will be implemented to reduce construction-related noise and vibration resulting from site activities and mitigate possible impacts:

- All construction-related equipment will be properly maintained to limit noise emissions to the extent practical and fitted with functioning exhaust and muffler systems. Machinery covers and equipment panels will be well fitted and remain in place to muffle noise. Bolts and fasteners will be tight to avoid rattling;
- During routine equipment inspections, equipment found to be other than in good condition will be repaired or removed from the job site;
- Site speed limits are in place that reduce vehicle noise and will be adhered to;
- Horns will only be used in the event of an emergency or to prevent an accident;
- Temporary noise barriers made of solid material will be installed if required and placed as close as practical to the source of noise; and

- Westshore's website provides phone and email contact information for communication. In addition, a Project website will provide contact information as a means to identify and address any potential noise or other complaints during Construction, as described in the Project's Construction Communication plan.

6.5 MACHINERY AND EQUIPMENT

Prior to the start of Project works, the Contractor is required to provide a list of all equipment and machinery to be used on-site during construction, identifying equipment type, fuel type, year of manufacture, and engine power rating.

The following mitigation measures will be implemented to avoid or minimize impacts resulting from operation and storage of equipment during construction activities:

- Off-site maintenance of construction-related equipment should be prioritized before field repairs. No on-site equipment maintenance will occur without Westshore's prior approval;
- Mobile equipment (e.g., vehicles, concrete trucks, haul trucks) will be refueled, lubricated, and serviced at designated locations, equipped with secondary containment;
- Barge-based equipment shall be refueled in alignment with mitigations provided in the Spill Response Plan included in Section 7.2.1. This shall include the use of drip trays and sorbent pads when fuelling to prevent drips and spill to the marine environment;
- Equipment and machinery should be in good operating condition and maintained free of leaks, excess oil and grease, invasive species, and noxious weeds;
- Stationary equipment shall be operated on top of a drip tray, and drip trays shall have the capacity to contain any spills or leakage during set-up, operation, and dismantling. Rainfall and hose connections/disconnections shall be taken into consideration when determining the required capacity of drip trays. Total capacity of drip trays shall be a minimum of 110% of potential spill volume;
- Light spill shall be reduced by pointing lights downward, where the direction does not impact safety, and placing task lighting as close to the work area as possible;
- Site refueling procedures will be posted in a visible place where they can be viewed by all operators;
- All operators and designated site personnel shall receive training on proper fuel handling and refueling procedures; and
- A spill containment kit shall be readily accessible both on-site and on each piece of equipment in the event of a release of a deleterious substance to the environment. All members of the construction team should be trained in the use of spill containment equipment/items. Any spill of a substance that is toxic, polluting, or deleterious to aquatic life should be reported as per the reporting procedures described in Section 7.0.

6.6 SURFACE WATER PROTECTION AND CONTROL

The operating terminal has an existing stormwater management system and permitted discharge under an existing permit. A Stormwater Pollution Prevention Plan (SPPP) has been developed as part of the Project PER process (Project PER Application Report; Appendix A8), which describes existing and future operational stormwater management systems on-site.

Westshore is permitted to discharge treated coal wastewater to the ocean through the existing ocean discharge outfall at the south end of the site, slightly west of the existing coal dumper, under their Ministry of Environment and Climate Change Strategy (ENV) Permit PE-6819 at a rate of 10,000 cubic meters per day. Water collected in the existing stormwater collection system will either be stored in the on-site reservoirs or conveyed through the water treatment system for ocean discharge. Any water released through the ocean discharge must meet permit requirements under PE-6819; Total Suspended Solids (TSS) of 50 mg/L or less, oil and grease 10 mg/L or less and a 96h LC50 greater than or equal to 100%⁶.

All stormwater runoff in construction areas will be collected by the existing stormwater collection system and treated for TSS at the ocean discharge treatment building. Any construction activities, such as deep excavations, that generate high TSS levels or other pollutants that will negatively impact the Westshore coal wastewater treatment system, will require specialized water treatment facilities to be installed on-site to treat the water prior to discharge through the existing ocean discharge outfall.

Work over ocean water is confined to Berth 2 modifications and equipment (e.g, conveyors and shiploaders) replacement. Berth 2 shiploaders and conveyors will remain completely contained by the existing and new spill trays on the equipment, and all storm water will be collected and transmitted to the existing stormwater collection system and treatment facilities.

Ground disturbing construction activities are expected to be limited to excavation, backfill, dewatering, and ground densification activities completed in an area that has ongoing operations, with an existing stormwater management system in place. Considering this, concerns related to surface water management and erosion and sediment control (ESC) from the Project works are minimal. Preload areas will be delineated and contained appropriately to prevent release of materials outside of the designated areas during preload activities. Some of the preload will remain in situ due to settlement and some of the material will be re-used for other construction requirements after preload or taken off-site. Should ESC measures be required, an ESC plan will be developed and implemented under the direction of the EM in collaboration with construction personnel.

6.7 SOIL AND GROUNDWATER MANAGEMENT PLAN

The coal and pond coal material in the areas of excavations will be stripped and sold through the existing operations. Any coal and sand mixed material will be stockpiled and disposed of off-site at a licenced facility.

Based on a previous Phase 1 Environmental Site Assessment (ESA) of the site and works that have occurred since the ESA, only one of the nine previous potential areas of concern identified remains, regarding the site-wide fill material (Worley Parsons Canada Services Ltd. 2013). Given the removal of the surficial materials as noted above, the potential for unanticipated encounters of contaminated soil is low.

⁶ 96h LC50 greater than or equal to 100% means that, in a static bioassay on salmonid species, at least 50% of the test fish must survive over 96 hours in undiluted effluent.

The following soil and groundwater management plan will be implemented during construction activities. The Contractor is responsible for Health, Safety, and Environment issues associated with workers coming into contact with contaminated soil, groundwater, and/or soil vapour during Project construction.

Dewatering will be required during Project excavation works for the railcar dumper and the potash storage building. As long as Westshore determines the water from the dewatering activities can be handled within the existing stormwater collection system and Permit requirements in terms of volume and treatment, the on-site system will be used. The Contractor shall notify Westshore prior to any dewatering activities that will impact the site stormwater collection system. Westshore may require the Contractor to confirm water quality and volume prior to discharge for dewatering.

Although the likelihood is low, during the course of the development of the Project, there remains the unanticipated potential to encounter contaminated soil or groundwater. If suspect material is identified, it is the responsibility of the Contractor to temporarily stop the work and obtain advice from the EM. To aid in the identification of potentially contaminated material, the key indicators of potential contamination are described below.

Key indicators that potentially contaminated soil or groundwater has been encountered during construction include the following:

- The presence of hydrocarbon or other strong odours;
- The appearance of an oily sheen on soil or on groundwater or seepages entering excavations or from water draining from stockpiles (Note: an oily sheen on water can be the result of natural organics in the soil. The odour and colour(s) of the sheen can help distinguish between a natural organic sheen and contamination);
- The presence of paint flakes in the soil (associated with metal contamination);
- Air quality measurements indicate the presence of hydrocarbon vapours;
- The presence of fill material (wood waste, debris, metal fragments, etc.); and/or
- Soil staining is observed that is not consistent with previous observations.

The following mitigation measures will be followed during activities with the potential to affect soil and groundwater quality.

General mitigation measures include the following:

- Appropriate construction crews will receive training on how to recognize potentially contaminated soils or groundwater and what steps to follow to appropriately handle both contaminated material and worker health and safety;
- In the event of a spill or leak of a hazardous substance during the Project works, the Spill Prevention and Response Plan (Section 7.2) will be followed. Impacted soil and response materials will be disposed of at an authorized receiving facility. and
- Where imported backfill material is required to complete Project works, the quality of the fill material should be confirmed prior to use on-site.

Measures related to handling, storage, and movement of contaminated soil include:

- If potentially contaminated groundwater is caused or found during Project works, the EM and Environmental Manager will be immediately notified;
- When stockpiling potentially contaminated soils, the following precautions will be followed:
 - The contaminated material will be stockpiled on a plastic liner to prevent migration of contamination into the surrounding area;
 - Plastic sheeting or tarps will be used to cover contaminated material to prevent erosion and runoff;
 - A berm will be installed around the stockpile to prevent runoff leaving the area; and
 - Stockpiles of contaminated material will be located at least 15 m upland of the marine environment.
- Potentially contaminated soils will only be further handled (e.g., placed or moved) after they have been sampled and characterized under the guidance of a contaminated sites approved professional;
- Soils designated as Hazardous Waste and Waste (as defined by the EMA) will be disposed of off-site at a Project-approved disposal facility authorized to accept such waste;
- Contaminated or potentially contaminated soil will only be handled, stored, or transported under the direction of a contaminated sites approved professional, and in consultation with Westshore Management; and
- Tracking and maintaining records of contaminated soil and groundwater movement, including submitting manifest forms is the responsibility of the Contractor.

6.8 TERRESTRIAL

6.8.1 Vegetation Management

No vegetation removal is planned as part of the Project given the site's current disturbed state.

The following general mitigation measures will be followed in an effort to mitigate risk of invasive plant spread during construction:

- Machinery will be inspected and be clean of mud/debris, invasive seeds, and plant material prior to arriving on the Project area; and
- Vehicles will be washed at an approved location outside of the Project area, as required.

6.8.2 Wildlife Management

Project works could potentially result in human-wildlife contacts through the improper management of wildlife attractants, such as food scraps and garbage, or wildlife collisions involving vehicles along the

causeway. Given the absence of wildlife habitat within the Project area, impacts are expected to be minimal provided the mitigation measures described herein are followed:

- Food and food wastes will be stored in a manner that is not readily accessible to wildlife;
- All food and other wildlife attractants, which may contain any substance with a strong smell, will be stored appropriately in a wildlife-proof container or building and removed from the site at the end of each day;
- Feeding of wildlife will be prohibited on-site;
- Environmental incident reporting will be carried out for incidents that pose or may pose a threat to disruption or destruction of wildlife; and
- The Contractor will take measures to reduce the risk of wildlife-vehicle collisions by:
 - Posting and adhering to existing safe speed limits;
 - Reporting dangerous human-wildlife incidents to the EM; and
 - Including discussions of wildlife-human conflicts in tailboard meetings.

6.9 CONCRETE WORKS AND GROUTING

During the Project works, the Contractor will use both pre-cast and cast-in-place concrete, on land and over water at Berth 2. It is currently anticipated that the pilecaps at Berth 2 will be cast-in-place while portions of the storage platforms may be pre-cast. The use of wet concrete has the potential to affect the Salish Sea through accidental release of concrete into the marine environment.

The following mitigation measures shall be implemented to prevent and minimize the potential for adverse effects to the environment during concrete pouring and grouting. The EM shall be on-site to monitor concrete works conducted over or adjacent to the marine environment and confirm the below mitigations have been implemented:

- Use of pre-cast concrete structures whenever possible and practical (i.e., decking on the piles);
- Wash all tools, pumps, pipes, hoses, and trucks used for finishing, placing, or transporting uncured concrete in a designated area, as determined in consultation with the EM, isolated from the marine environment;
- Avoid depositing, directly or indirectly, any concrete, mortars, or other lime-containing construction materials into or near the marine environment;
- Where concrete infilling works are conducted, concrete shall be carefully poured to minimize spillage. Complete isolation of concrete forms is required for cast-in-place concrete works near or over the marine environment at Berth 2;
- Before pouring concrete, all concrete forms shall be thoroughly inspected to verify that form work is fully secured and sealed to prevent the release of concrete or concrete contaminated water into the marine environment. Where necessary, following placement of concrete, the concrete shall be covered with an appropriate material (e.g., plastic sheeting) as required to seal the concrete from the marine environment until the concrete is mostly cured; and

- Any water contacting uncured or partly cured concrete or Portland cement or lime-containing construction materials, such as the water that may be used for wet curing, equipment washing, etc., shall be prevented from entering, directly or indirectly, the marine environment unless this water has been tested and found to have a pH between 6.5 and 9.0 units and a turbidity of less than 25 NTU.

The following mitigation measures for site concrete works will be implemented:

- Potentially high pH water emanating from areas where pours and other concrete or grouting works are recent or ongoing shall be contained and tested as required. The concrete affected water shall be either treated prior to release to ground or to the existing stormwater management system;
- Discharge of concrete truck wash water directly to ground shall be prohibited. Chutes shall be washed into a bucket, and water shall be poured back into the truck. If this is not possible, wash water shall be collected into a polyethylene lined box and allowed to cure. Once hardened, material shall be placed in a drum and transported to an approved off-Site disposal location;
- Report all spills of concrete containing material as per the Spill Prevention and Response Plan (Section 7.2);
- Keep a carbon dioxide (CO₂) tank with regulator, hose, and gas diffuser readily available during concrete works. Use it to release carbon dioxide gas into the affected area to neutralize pH levels should a spill occur. CO₂ shall only be applied if needed and in consultation with the EM;
- Remove all concrete and affiliated equipment or materials upon completion of concrete works; and
- All cementitious materials will be stored such that they are protected from contact with rainwater, machinery, and other sources that may cause leaks or leaching of product.

6.10 MARINE WORKS

Underwater noise and vibration are likely to occur during in-water pile driving works associated with the installation of two additional elevated spout storage platforms and retrofits to the existing marine foundations at Berth 2. Storage platform construction will include the installation of two steel beams underneath the existing wharhead concrete decking. With the application of the below mitigations, underwater noise levels are expected to be below thresholds for the protection of fish and marine mammals.

No existing in-water marine structures will be removed or relocated as part of the Project. However, to meet Project seismic design requirements, retrofits will be undertaken on the existing Berth 2 marine foundations, which will include the installation of 36 new concrete filled steel piles with an approximate diameter of 1 to 1.5 m, reinforcement of existing concrete pile caps and pile to pile cap connections, and infill of existing piles with concrete. In total, approximately 42 piles will be installed (6 for the storage towers and 36 for the retrofitting work). Piles will be installed using a vibratory hammer from a barge; an impact hammer will only be used if necessary and following pile refusal using vibratory methods. This method is similar to the permitted dolphin work that will take place at Westshore (PER No. 19-187⁷).

⁷ <https://www.portvancouver.com/permitting-and-reviews/per/project-and-environment-review-applicant/status-of-permit-applications/westshore-berth-2-mooring-dolphin-upgrades/>

The objective of the following mitigation measures is to avoid or reduce potential adverse environmental effects associated with in-water construction activities, including pile installation and over water construction of associated infrastructure. These measures align with measures described in DFO's September 2020 letter to Westshore regarding the similar permitted dolphin work, as described in Section 4.0 Table 2. A Request for Review will be submitted for the Project, and this CEMP updated with mitigations provided in the DFO response and not yet contained herein. To mitigate the impacts of underwater noise on the surrounding marine environment, the below mitigation measures shall be implemented:

- Conduct pile driving works between August 16 and February 28 during the DFO least risk timing window for the protection of fish (Area 29 – Steveston/Surrey; Vancouver Area Inlet) unless otherwise agreed with DFO and VFPA;
- Conduct full time Environmental Monitoring (EM) for all pile driving or concrete activities. The EM is required to monitor for compliance with regulations and to ensure appropriate implementation of environmental best management practices;
- An experienced and qualified Marine Mammal Observer (MMO) will be present at all times during in-water pile driving activities and shall monitor marine mammal presence, as per requirements below;
- Pile driving activities are to be conducted during daylight hours in good visibility and weather conditions that permit visual observations;
- Water-based equipment shall not ground upon the seabed except for the use of anchors or spuds needed to keep the water-based equipment in place:
 - Ensure there is enough clearance between the seabed and the vessels to avoid/ minimize propeller wash and/or grounding of vessels; and
 - Minimize re-positioning of spuds and avoid placement of spuds on sensitive aquatic vegetation or habitat (e.g., kelp and/or eelgrass).
- Acoustic monitoring and sound source verification is required for pile driving activities. The acoustic monitoring is to confirm that pile driving does not exceed acoustic thresholds, as follows:
 - Underwater noise will be monitored 10 m from the pile and shall not exceed a peak Sound Pressure Level (SPL) of 206 dB re 1 μ Pa;
 - Continuous hydroacoustic monitoring shall be conducted by the EM during the first five (5) days of vibratory pile driving. Monitoring beyond the 5 days shall be at the discretion of the EM. Hydroacoustic monitoring shall be conducted full time during all impact pile driving; and
 - If monitoring indicates sound levels in excess of the above-mentioned thresholds, the activity will cease, mitigation measures reviewed, and additional mitigation implemented as required at the direction of the EM. Pile driving will resume at the discretion of the EM.

- Vibratory pile driving, rather than impact pile driving, is preferred to reduce acoustic impacts on fish and marine mammals. If impact pile driving is to occur, the following additional mitigation measures shall be implemented:
 - A sound attenuation device (e.g., bubble curtain and/or shell and containment system) around the full wetted length of the pile be installed to reduce sound levels. Bubble curtains shall extend from the seabed to water surface in a contiguous curtain surrounding the pile perimeter;
 - The EM shall conduct daily inspection of the sound attenuation device (e.g., bubble curtain) to confirm functionality prior to pile driving works;
 - All impact pile driving will require an increased bubble curtain run time prior to the start of piling activities. The bubble curtain will be run at full power for three (3) minutes prior to the first hammer strike. If a curtain utilizing multiple rings is employed, the rings shall be activated sequentially, one ring at a time starting from the top ring. Bubble curtains shall be operated in accordance with applicable BMPs; and
 - The use of a soft start (ramp-up) procedure shall be implemented for all pile driving installations whereby energy is gradually increased over a period of 10 minutes.

- The EM will establish a cetacean exclusion zone (EZ). Hydrophone monitoring will be conducted at various distances from the pile to determine the distance from pile driving at which underwater noise falls below the root mean square (RMS) SPL of 160 dB re 1 μ Pa (i.e., the point of sound attenuation). This will define the EZ for marine mammal monitoring. Until the EZ is determined through the hydroacoustic monitoring, a precautionary EZ of 1000m shall apply. MMO activities shall be conducted according to the following:
 - The MMO shall be equipped with binoculars and monitor for marine mammals within the EZ for at least 30 minutes prior to the start of pile installation. The MMO must maintain visual observance of the full extent of the EZ to identify approaching marine mammals and halt work before a cetacean enters the EZ. This may require multiple MMOs;
 - If visibility is such that the MMO is unable to effectively monitor for marine mammals within the EZ (e.g., in darkness or heavy fog), the MMO may delay the start of in-water works until visibility improves;
 - If acoustic monitoring indicates sound levels in excess of the above criteria at the boundary of the precautionary EZ (i.e., 1000m), the work must be immediately halted. The work will only resume after adaptive management measures (e.g., extending the EZ, implementing additional bubble curtains, etc.) are implemented to reduce sound levels below threshold levels;
 - Pile driving activities will cease if a cetacean is observed within the EZ and will only resume once the animal has left the EZ or has not been re-sighted for 30 minutes; and

- Construction activities will cease if there is a risk of physical harm to any marine mammal from direct contact. Construction activities may only resume once there is no longer a risk of injury to marine mammals from direct contact.
- As the Project is located in critical habitat for SRKW, MMO will scan the waters using binoculars to make visual observations. Works shall be halted immediately if a killer whale is observed and the DFO Observe, Record, and Report line at 1-800-465-4336 shall be notified. Works shall only be re-initiated after killer whales have not been observed in the area for 30 minutes.
- A spill response plan shall be implemented to avoid a spill of deleterious substances, including into the marine environment.

6.11 ARCHAEOLOGICAL RESOURCES

Construction activities will take place on an area of current operations where the chance of encountering archaeological resources is low.

To mitigate against any possible impacts to archaeological resources during a Chance Find Protocol will be implemented during any ground-disturbing construction activities. The protocol involves the halting of work activities in the event a suspected archaeological or historical object is encountered until an archaeologist can assess the site.

If a suspected archaeological or historical object is encountered during construction, the Contractor will:

- Notify the EM and Westshore of the find;
- Stop work in the immediate vicinity of the suspected find. Further work that could disturb the immediate vicinity of the suspected find site will also be halted, including the transport of soil or rock to or from the immediate vicinity of the site;
- The find will not be moved or otherwise disturbed;
- Isolate the area to prevent additional disturbances of the find; and
- Westshore will notify VFPA of the find and coordinate assessment by an archaeologist or heritage specialist.

Unauthorized alteration of, or damage to, heritage or archaeological resources is defined as a breach of the heritage management requirements and will be considered an Environmental Incident. If an Environmental Incident of this nature were to occur on the Project, the incident reporting procedure must be followed.

7.0 SPILL PREVENTION AND EMERGENCY RESPONSE

Westshore has a Spill Response Plan and Emergency Contingency Program developed for the terminal. During construction of the Project, the Contractor is required to maintain spill prevention and emergency response procedures for the scope of their activities and works in alignment with these plans. It will be important to maintain coordination and communication with Westshore's existing operations.

7.1 EMERGENCY COMMUNICATION

Clear and rapid communication is essential during emergency situations. Contact information for emergency response or reporting of accidents or environmental emergencies are in Table 3.

Table 3 Emergency Response Contact Numbers.

Nature of Incident/Emergency	Authority/Company Name	Contact
Emergency Services	Westshore 20	VHF Channel 1 "Westshore 20" 604 946 3469
	Emergency Services	911
	Delta Police Department	911 / 604-946-4411
	Delta Hospital	604-946-1121
	Local Fire Department-Delta Fire Department	911/ 604-946-8541
	Ambulance	911
Westshore's Emergency Contacts	Security	604 946 3453
	First Aid	604 946 3414
	Operations	604 946 3857
	Maintenance	604 946 8428
	Marine Safety	
	Environment	604 790 3753
Reportable Spills under EMA and Spills to Water	EMBC	1-800-663-3456
Spills to Water Having Potential to cause Death of Fish or HADD	DFO	1-866-845-6776
Spills to Marine Environment	Canadian Coast Guard (Marine Pollution)	1-800-889-8852
Spills of Dangerous Goods in Transport	EMBC	1-800-663-3456
	Emergency Services	911
	Canadian Transport Emergency Centre (CANUTEC)	613-996-6666 or *666 on a cell phone
	Employer/Person in Control of the Dangerous Goods	TBD

7.2 SPILL PREVENTION AND RESPONSE PLAN

Potential environmental emergencies that could occur during construction include:

- Reportable fuel spills and spills of hydraulic oils greases and lubricants;
- Introduction of deleterious substances and/or contaminants into previously uncontaminated soils, Salish Sea at Berth 2, and/or the stormwater management system;
- Negative wildlife interactions; and
- Spill that poses threat to human health and safety.

The EM must be notified of all environmental emergencies, including spills, releases, or compliance incidents. The EM will assess and record all incidents and determine appropriate action. All significant spills will be reported to EMBC and the VFPA Operations Centre. All environmental incidents must be immediately reported to Westshore.

Emergency response equipment will be stored on-site in clearly signed, easily accessible and identified locations. Spill containment and clean-up supplies must always be made available on-site, including during non-operating hours.

7.2.1 Spill Prevention

Hazardous and potentially hazardous fuels, chemicals, and other materials are likely to be kept on-site and used during Project works. Westshore maintains an inventory of hazardous materials handled or stored on-site for operations in their Spill Response Plan. An inventory of hazardous materials handled or stored on-site during construction will be maintained by the Contractor. During pre-construction meetings, workers will identify all materials of a deleterious nature that could be spilled and discuss relevant mitigation measures.

Written spill response procedures, communication protocols, and contact numbers will be kept up to date and posted at conspicuous locations on-site within the Contractor's work areas (site office and fueling locations). Spill response kits will be stored at the Contractor's fueling and equipment maintenance areas, as well as hazardous material storage areas. Personnel will know the locations of the spill kits in each working area and be trained in their use. Spill kit materials and contents will be adequate to the types and volumes of hazardous materials and anticipated spills on-site. Contractors will be responsible for providing the Construction Manager with a list of company contacts and emergency numbers specific to their activities, and products required for their activities during mobilization to site and prior to initiating any construction activities.

Other spill prevention strategies for the Project will include, but are not necessarily limited to, the following:

- Machines operating on-site will have onboard spill kits consisting of; personal protective equipment (e.g., gloves), absorbent pads, and plastic refuse disposal bags;
- One (1) larger spill kit should also be also available at each working area;

- Contractors will conduct daily inspections of machinery for leaks, cracked hoses, and other conditions that may result in spills. Contractors will ensure external equipment surfaces are free of oil, diesel, and other potential contaminants prior to use;
 - Equipment found to be other than in good condition will be repaired or removed from the job site immediately; and
 - Containers or storage areas found to be other than in good condition will be repaired or removed from the job site immediately.
- Fuels, lubricants, and other chemicals will be stored over impermeable areas and/ or in lined, leak-proof containers. Temporary covers will be used as needed to prevent rainfall from pooling in daily-use storage containers;
- Chemicals will be stored on-site in a locked container or will be taken off-site at the end of each day;
- Pumps and other small equipment (e.g., generators) may be refueled on-site as long as they are shut down, and refueled using a funnel with spill pads placed around the funnel, and on the ground to intercept any spilled fuel;
- Equipment operating above or around the water shall be operated using environmentally acceptable or less harmful hydraulic fluids;
- Work shall be planned to reduce the potential for spills to land, to the marine environment, or to the atmosphere, where practicable;
- A spill kit shall be maintained in a convenient location near the water for ready deployment in the case of spills of hydrocarbon products during installation of piles at Berth 2;
- Written procedures for the proper use and storage of chemicals will be provided consistent with the potential risks associated with each chemical, anticipated frequency of use, and any legislated requirements; and
- Small portable equipment such as generators or air compressors will be used in accordance with BMPs, including the use of drip trays.

7.2.2 Spill Response

The following spill response procedures have been developed in general alignment with Westshore's existing Spill Response Plan (Westshore 2021) for the type of work and activities to be undertaken for the construction of the Project. All spills, regardless of type or volume, are to be reported to the EM and Westshore immediately.

In the event of a spill, the following response steps will be followed:

Spills to Land or Water Reportable under EMA

1. Make the areas safe:
 - Verify personal, electrical, and environmental safety;
 - Wear appropriate personal protective equipment (PPE);

- Never rush in, always determine the product spilled before taking action;
 - Warn people in the immediate vicinity;
 - Be aware of wind direction; and
 - Verify no ignition sources if spill is a flammable material.
2. Call for assistance from co-workers / Supervisor / Safety Department.
 3. Stop the Flow (where possible and safe to do so):
 - Act quickly to reduce the risk of environmental impacts;
 - Close valves, shut off pumps, or plug holes and leaks;
 - Utilize all available resources to initially contain the spill (i.e., spill kits, excavators, or any material, equipment, or tool that can safely contribute to containment efforts); and
 - Stop the flow or the spill at its source.
 4. Secure the Area:
 - Limit access to the spill area; and
 - Prevent unauthorized entry onto the spill site by securing and marking the area to limit exposure to workers and vehicle traffic.
 5. Contain the Spill:
 - Prevent spilled material from entering drainage structures;
 - Use spill-absorbent material to contain the spill;
 - If necessary, use a dyke or any other method to prevent any discharge on-site;
 - A temporary sump may be employed to contain or direct spilled liquids if groundwater is not present;
 - Make every effort to minimize contamination; and
 - Take soil or water samples for laboratory testing.
 6. Notify/Report:
 - Notify the EM immediately (provide spill details);
 - EM or Construction Manager or a designate notify Westshore immediately;
 - Westshore will work with the Contractor and EM to determine who will contact VFPA and other authorities, as required;
 - If a reportable spill has occurred Westshore, the EM, Construction Manager or a designate shall call EMBC at 1-800-663-3456 (24 Hour);
 - Any incident involving the spillage of oil or petroleum lubricating products into the marine environment shall be reported immediately to the Canadian Coast Guard and EMBC;

- When reporting a spill, the caller shall be prepared to provide the dispatcher with the following information as accurately as possible:
 - Location and time of the spill;
 - Type and quantity of the substance spilled;
 - Cause and effect of the spill;
 - Details of action taken or proposed;
 - Description of the spill location and surrounding area;
 - Names of agencies/responders on scene; and
 - Names of other persons or other agencies advised or to be advised concerning the spill;
- Provide necessary spill details to other external agencies as required; and
- Complete an Environmental Incident Report.

7. Clean-Up:

- The EM and the Contractor shall coordinate spill clean-up;
- Additional assistance on clean-up procedures and residue sampling shall be available from the EM, as required;
- Clean-up the affected area, including confirmatory testing on the cleaned area;
- Remove the impact/debris and decontaminate any equipment or tools used in the clean-up;
- Dispose of waste materials at an approved disposal site in compliance with the BC EMA, HW Regulation, and BC *Waste Management Act*;
- Dispose of all material used in clean-up (e.g., used sorbents, oil containment materials, etc.) in accordance with the above regulatory requirements; and
- Treat and dispose of contaminated material in compliance with the BC EMA, CSR, and HW Regulation.

Spills to Land Non-Reportable under EMA

For spills of any volume, notify the EM and Westshore. The EM shall monitor Site clean-up of minor leaks and spills of oil, grease, and hydraulic fluids that are greater than 5 L in size. Remove contaminants by implementing the following measures:

- Remove the impact/debris and decontaminate any equipment or tools used in the clean-up;
- Clean-up the affected area, including confirmatory testing on the cleaned area; and
- Dispose of waste materials at an approved disposal site.

Spills to Water

In the unlikely event of spills that were to enter the Salish Sea at Berth 2, the following mitigation measures are recommended:

- The EM, the Construction Manager, and Westshore shall be notified immediately;
- Aquatic booms shall be used to contain any fuels, oils, or other surfactants at the source of the spill;
- The spill area shall be lined with absorbent padding to absorb contaminants from the water surface, as practical;
- The spill shall be reported to VFPA and DFO; and
- The steps outlined in Spills to Land or Water Reportable Under EMA above shall be followed.

7.2.3 Spill and Incident Reporting

An Environmental Incident Report shall be generated for any of the following:

- Spills reportable to EMBC;
- Spills of any amount to water or any spill with the potential to introduce a harmful substance to the aquatic environment;
- Spills on land greater than 5 L or with a surface area greater than 1 m² and/or deeper than 300 mm, or any release of a hazardous substance that could cause contamination of the Site or any lands or waters in the vicinity of the Site;
- Any incident that poses a safety or health risk, including but not limited to vehicle collisions and fire;
- Any repetitive occurrence (i.e., an occurrence of 2 times or greater);
- Any occurrence involving more than 1 piece of machinery;
- Adverse publicity with respect to the environment;
- Alteration or damage to archaeological resources; and
- External reporting requirements derived from a Project approval condition, especially if attached to a non-routine or unexpected event.

8.0 FUEL MANAGEMENT PLAN

The Contractor will be responsible for fuel and fuel management in regard to their scope and activities for the Project. There will not be access to Westshore's existing on-site fuel facilities. The following mitigation measures are recommended to reduce the risk and potential environmental effects from the handling, transportation, and storage of fuels.

- All fuel dispensers shall be designed to meet the statutory regulations and recommended practices described in *A Field Guide to Fuel Handling, Transportation and Storage* (BC MOWLAP, 2002);
- Specific locations for equipment re-fueling shall be identified before the start of Construction and should be located as far as possible from the water edge (i.e., edge of project site) and communicated to employees in the pre-work environmental orientation training session;
- All operators shall stay with the fuel nozzle while refueling. Ignition shall be turned off while the vehicle, equipment, or machinery is being refueled. The operator shall immediately shut off the source if a spill occurs;
- Fuel storage tanks shall include secondary containment capable of containing 110% of the volume of the largest tank. Containment areas shall be designed so that containment shall remain effective in all weather conditions. Precipitation shall be prevented from accumulating within fuel containment areas. Tanks shall be physically protected from collision;
- All fuel storage tanks shall be CSA approved and shall comply with the statutory regulations and recommended practices described in *A Field Guide to Fuel Handling, Transportation and Storage* (BC MOWLAP 2002);
- Container materials and the hazardous materials shall be made of compatible materials. The container material must not react with the hazardous substance. Only containers that are in good condition shall be used;
- All necessary equipment to clean and mitigate spills, including fire prevention equipment, shall be stored in or near the storage area;
- Fuel and chemical storage locations shall be inspected daily for leaks, spills, and obvious abnormal conditions. Any leakage shall be repaired immediately;
- Smoking shall be prohibited in and around explosive, oxidizing, reactive, or flammable hazardous materials handling areas;
- Fire-fighting equipment shall be kept at oxidizing, reactive, or flammable hazardous substance handling areas;
- All servicing and refueling areas shall be kept tidy, with materials stored appropriately in accordance with all environmental laws and guidelines;
- Containers for the transportation of fuel shall be labeled to communicate the hazard the material represents, made of a material that is compatible with the transported fuel, and in good condition;
- Vehicles for the transportation of fuels shall be labeled to communicate the hazard the material represents. Hazardous materials shall be transported by appropriately licensed transporters;
- Fuels shall be transported separately from other hazardous or non-compatible materials; and
- Transport containers shall be properly secured and sufficiently spaced to allow safe access and handling of containers.

9.0 WASTE MANAGEMENT PLAN

Construction activities can be expected to generate a variety of waste. The Contractor is responsible for management, containment, and disposal of waste as it relates to their construction work and activities. During Project works, all efforts will be taken to avoid or mitigate threats to human health and safety and/or wildlife through improper storage, handling, and management of waste.

This section describes waste generating construction-related activities and outlines the methods for waste minimization, recycling, storage and disposal, and the monitoring and reporting requirements. Typical strategies and BMPs for managing hazardous and non-hazardous wastes in the vicinity of the Project construction-site are described below. Implementation of these BMPs will minimize the potential for adverse effects to a variety of resources as a result of wastes generated on-site.

Hazardous and non-hazardous wastes potentially generated by the Project include:

- Garbage (e.g., waste food, paper, and other garbage produced by site workers);
- Other non-hazardous solid waste, including construction debris;
- Waste petroleum products (e.g., engine oils, lubricants, filters, etc.) from machinery and equipment;
- Batteries and battery fluid; and
- Oily rags or sorbents containing flammable liquids.

9.1 GENERAL

The following mitigation measures will be implemented to reduce the effects of waste materials generated on-site unless alternative measures are identified by the EM:

- Adhere to all applicable legislation with respect to the handling, transportation, and/or disposal of all materials related to the Project works. These regulations may include (but not be limited to) the BC Hazardous Waste Regulations, Spill Reporting Regulations, Workers Compensation Board Regulations, Transportation of Dangerous Goods Regulations, etc.;
- Provide properly labeled separate containers for hazardous wastes, such as for oily rags and hydrocarbon absorbing pads;
- All hydrocarbon products and other hazardous wastes potentially present during project activities should be identified, and the associated Workplace Hazardous Materials Information System (WHMIS) and Safety Data Sheets (SDS) made available to all construction team members;
- All recyclable or compostable materials should be collected separately from general waste as per Metro Vancouver Regional District requirements;
- All debris and waste materials resulting from the Project will be contained in the immediate working area and will be removed in a timely manner;
- Specific locations for waste collection and sorting will be identified by the Contractor before the start of construction and communicated to employees;

- Waste material will be stored in a manner that is secure and protected from the elements;
- Any refuse containers that are damaged or leaking will be repaired or replaced;
- No burning of wastes will be conducted on-site;
- All temporary sanitary facilities will be self-contained with no septic fields. Portable sanitary facilities will be located away from the marine environment, on flat ground, in an area that is protected from damage resulting from construction activities, vandalism, or environmental factors. Sanitary facilities will be regularly maintained by an approved operator for disposal (i.e., vac truck) off-site; and
- Maintain records of all off-site waste disposal. Records must indicate volumes and dates of all waste materials removed from site and will be kept on-site.

9.2 NON-HAZARDOUS WASTE

Project works may generate non-hazardous waste. The following mitigation measures are recommended to reduce the potential for releases of non-hazardous waste materials to the environment:

- Littering is prohibited on-site. Measures will be implemented to prevent and control litter;
- All recyclable or compostable materials will be collected separately from general waste;
- Construction personnel will be trained in determining whether wastes can be recycled on-site, off-site, or must be disposed of as wastes;
- Cigarettes will be discarded in an appropriate receptacle in designated smoking areas and not be littered on-site;
- Regular disposal or recycling will be carried out at a frequency sufficient to prevent accumulating large quantities of waste. All solid waste will be handled in accordance with applicable municipal, provincial, and federal regulations and disposed of at an authorized receiving facility. All materials will be transported in accordance with the *Transportation of Dangerous Goods Act* and regulations and the BC Hazardous Waste Regulations; and
- Waste materials generated that do not pose a risk to contamination of the site will be reused where possible. Non-hazardous waste materials generated on-site that cannot be reused will be recycled at an approved facility, where practicable.

9.3 HAZARDOUS WASTE MANAGEMENT

Project works may generate hazardous waste, including waste oils, chemical wastes, and used absorbent materials and filters. The following mitigation measures are recommended to reduce the potential for releases of hazardous waste materials to the environment and were developed in accordance with *Hazardous Waste Legislation Guide* (MOE 2016):

- Workers handling hazardous wastes will be appropriately trained in handling, storage, and disposal methods. Training records for those involved with the handling and transportation of hazardous waste will be maintained by the Contractor;

- Hazardous wastes will be managed, transported, labeled, stored, and disposed of according to the BC Hazardous Waste Regulations via licensed transportation and disposal facilities;
- Hazardous wastes will be segregated from non-hazardous wastes and stored and transported in a manner that prevents incompatible materials from being mixed;
- Wastes contaminated with flammable liquid will not be mixed with wastes contaminated with oil;
- Each container or area used to store hazardous waste will be clearly labeled as containing hazardous waste and will be equipped with adequate secondary containment;
- Hazardous waste containers will be kept closed except when being filled or emptied;
- Hazardous waste storage areas will be routinely inspected and a corresponding inspection log will be maintained by the Contractor;
- Hydrocarbon products and other hazardous wastes potentially present during site activities will be identified and the associated WHMIS and Safety Data Sheets (SDS) made available to the construction crew;
- Hazardous waste containers will be labeled and stored in accordance with all requirements of the *Transportation of Dangerous Goods Act* and *Workers Compensation Act* (e.g., WHMIS SDS labeling requirements);
- Waste rags and sorbents will be stored in containers with self-closing lids, with the bottom of the container raised and vented;
- If necessary, hazardous waste will be temporarily stored in designated, secure areas with secondary containment and protected from the weather;
- Hazardous wastes will be managed in compliance with applicable fire codes;
- Stockpiled contaminated and hazardous materials will be separated from non-contaminated materials and segregated according to material quality classes. Hazardous waste and Industrial Land materials will not be mixed together, nor will they be diluted with clean water or materials;
- An inventory and description must be maintained by the Contractor of any hazardous materials used during Project works, including storage and handling methods; and
- Spills of hazardous materials shall be cleaned-up and immediately reported to the EM and to appropriate regulatory agencies in accordance with the EMA and the Spill Response Plan (Section 7.2.2).

10.0 REFERENCES

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APPENDICES

Appendix A1
Spill Response Plan

Appendix A2
Emergency Contingency Program
