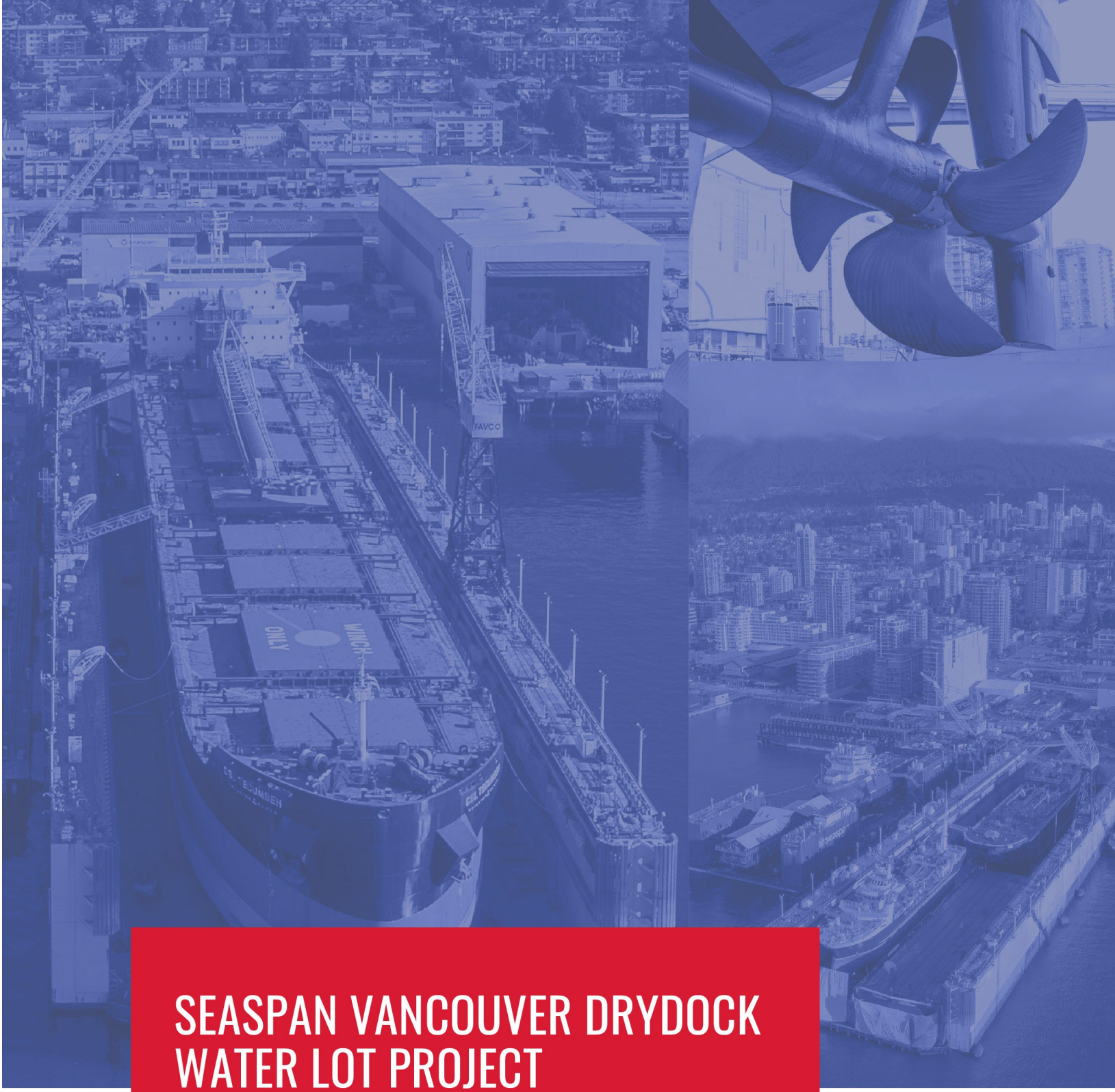

SEASPAN VANCOUVER DRYDOCK WATER LOT PROJECT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

April 14, 2021

seaspan

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BC	British Columbia
BMP	Best Management Practices
CD	Chart Datum
CEMP	Construction Environmental Management Plan
CO_2	Carbon Dioxide
CNV	City of North Vancouver
DFO	Fisheries and Oceans Canada
EM	Environmental Monitor
EMA	Environmental Management Act
EPP	Environmental Protection Plan
EMBC	Emergency Management BC
EZ	Exclusion Zone
FA	Fisheries Act
GVRD	Greater Vancouver Regional District
HADD	Harmful Alteration, Disruption or Destruction
IAA	Impact Assessment Act
MMO	Marine Mammal Observer
NTU	Nephelometric Turbidity Units
PER	Project and Environmental Review
QEP	Qualified Environmental Professional
SDS	Safety Data Sheets
SEL	Sound Exposure Level
SPL	Sound Pressure Level
TBD	To Be Determined
VDC	Vancouver Drydock Company
VFPA	Vancouver Fraser Port Authority
WHMIS	Workplace Hazardous Materials Information System

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AMENDMENT RECORD

Issue	Description	Date	Approved by	
1	First version of Drydock Expansion CEMP	20210412	Stewart Wright Project Environmental Director	Rebecca Kordas Project Environmental Manager
2	Second version of Drydock Expansion CEMP	20210414		
			Stewart Wright Project Environmental Director	Rebecca Kordas Project Environmental Manager

1.0 INTRODUCTION

Hatfield Consultants (Hatfield) has been retained by Seaspan ULC (Seaspan) for environmental management and regulatory support associated with a proposed expansion of marine infrastructure within the Vancouver Fraser Port Authority (VFPA) leased Seaspan Vancouver Drydock water lot (the Project), located at 203 East Esplanade in North Vancouver, British Columbia (BC).

This Construction Environmental Management Plan (CEMP) supports the application to VFPA under the Project and Environmental Review (PER) process and other permit applications. The CEMP will also be provided to the construction Contractor as the basis for the development of their work plans and associated Environmental Protection Plans (EPPs). Additionally, a Request for Review was submitted to Fisheries and Oceans Canada (DFO) on March 8, 2021 (DFO# 21-HPAC-00285). On April 7, the file was transferred to a Fish and Fish Habitat Protection Program biologist.

The objective of the CEMP is to support environmental compliance by providing guidance with environmental mitigation protection and monitoring to facilitate the Contractor's implementation of appropriate measures. It has been prepared following the VFPA CEMP Guidelines (VFPA 2018).

2.0 PROJECT DESCRIPTION

2.1 Project Overview

Seaspan is proposing to consolidate ship repair activities at their Vancouver Drydock Company (VDC) facility by adding new infrastructure to better accommodate and service smaller vessels. The Project involves the installation of a floating work pontoon and two additional drydocks on the west side of the existing deep-water outfitting pier (Figure 1). The work pontoon will be used to access the existing Careen and two new drydocks. Both new drydocks will be fabricated from steel plate and will look similar to the existing Careen but will be smaller (Table 1). To make room for the arrangement of the new drydocks, the existing Careen will be moved 40 m to the south, and there is a need to exercise the lease option to expand the existing water lot approximately 40 m to the west (Figure 1). The new drydocks are expected to operate on an approximate two- or three-week cycle period with vessel repairs. Except for maintenance or other rare occurrences, the drydocks will remain at berth in their working location during their service life.

Figure 1 Project overview.

Legend

- Pile
- Crane
- Bathymetry (Interval 10m)
- Vancouver Fraser Port Authority Boundary
- Existing Water Lot Boundary
- Expanded Water Lot Boundary

Project Features

- Work Pontoon
- New 100m Dry Dock
- New 55m Dry Dock
- Relocated Existing Careen

0 10 20 40 60 m

Scale: 1:2,500

Projection: NAD 1983 UTM Zone 10N

Data Sources:
a) Project features, water lot, Advisian 2021.
b) Water lot boundaries, Seaspan 2021.
c) Bathymetry, DFO 2020.
d) Vancouver Fraser Port Authority Boundary, Port of Vancouver 2018.
e) GeoEye-01 50 cm, 15 March 2020, Esri Online Service.

Hatfield

Vancouver Dry Dock Water Lot Project

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Table 1 New infrastructure characteristics.

	100 m Drydock	55 m Drydock	Work Pontoon
Lift Capacity (t)	4,500	1,200	n/a
Length (m)	100	55	98
Beam (m)	30	22	13
Depth (m)	10	8	4
Sidewall Height (m)	7	6	n/a
Maximum Draft (m)	8	6	n/a

Project construction will be conducted from barges and involve:

- Constructing six monopile moorings, including fendering and mooring connections and davit arms.
- Relocating the existing Careen drydock approximately 40 m south of its existing position on the west side of the existing pier. This requires no new construction.
- Receiving and mooring three new floating craft, with the assistance of tug/work boat(s):
    - One 98 m long pontoon to provide floating access along the north end to the two new and one existing drydocks;
    - One 55 m long floating drydock; and
    - One 100 m long floating drydock.
- Fitting out works to the work pontoon, including:
    - Fitment and shore hook-up of utilities (power, lighting, freshwater, wastewater, welding gas, compressed air);
    - Fitment of new winches, fenders, and mooring points;
    - Installing an access ramp from the existing outfitting pier to the pontoon; and
    - Installing access ramps from the pontoon to each of the three drydocks.

The three new floating structures will be towed in from off-site and anchored in place by monopiles. Given the Careen will be moved past the south end of the outfitting pier, it will require a mooring line to the south end of the existing Panamax drydock. A total of six new 1.2 m and 1.5 m diameter steel piles will be installed to moor and hold the three new floating vessels in position. The piles will be placed in water that ranges in depth from 8 m to 17 m below chart datum (CD; Appendix 1). Piles will be driven into the substrate using vibratory hammers and, if necessary, impact hammers on spud-barge-mounted cranes. Temporary pilings (up to four per permanent mooring) may be required to facilitate positioning and straight driving. Such temporary piles, if needed, would be removed once the permanent piles are installed. Drilling may be required to advance piles depending on the density of the underlying till in the location of each pile. Once penetration depths are achieved, the piles will

be cleaned out to facilitate concrete infill using tremie pour methods. Additional structural steel sections or reinforcing bar cages, if required, will be installed before the tremie process into the cleaned-out pile. Water inside the piles will be monitored and captured for safe disposal during infilling and disposed of off-site to ensure it does not spill over into the surrounding marine environment. Concrete for filling inside of the piles will be supplied either from the support barge or pumped from delivery trucks that would arrive and drive onto the existing outfitting pier. Otherwise, all materials will be stored on barges.

2.2 Location and Jurisdiction

The Project is located along the north shore of the Inner Harbour of Burrard Inlet at 203 East Esplanade (Figure 1) within water lots that have a contractual permitted use from the VFPA for ship repair, new vessel construction, and commercial marine transportation uses. The geographical coordinates for the approximate center of the water lot are 49.307266 North, -123.078617 West.

2.3 Project Schedule

Subject to permitting and approvals, Project construction is anticipated to begin October 2021 with anticipated completion in January 2022. In-water works will be conducted during the regional DFO least risk timing window of August 16, 2021, to February 28, 2022.

2.4 Site Description

The Vancouver Drydock Limited Partnership, through its general partner VDC Limited is a subsidiary of Seaspan ULC, which operates three major shipyards within the pacific northwest. The properties on which the VDC operations are carried out are owned or leased by an affiliate of Seaspan ULC.

Facilities at the VDC Site include two Lloyds registered floating drydocks (the Careen and Panamax), a heavy machine shop with two 40 tonne overhead travelling cranes and lathes capable of handling shafts up to 18 meters (60 feet). The two floating drydocks, with lifting capacities of 36,000 tonnes in a Panamax beam dock, and 30,000 tonnes in a self-contained, deployable dock, are berthed against an outfitting pier with an 85-tonne rail-mounted crane servicing the length of the pier. The shipyard is an active repair facility with services including engineering, tail shaft repairs and fabrication, steel fabrication and repairs, diesel engine servicing, hull cleaning and painting, and outfitting services.

Based on field surveys, the Site has been classified as having low-value marine habitat with the substrate dominated by silts (Hatfield 2021). Anthropogenic debris (bottles, tires) was observed scattered across the seafloor. Within the Site, the water depth ranges from approximately 5 m to 20 m below CD.

2.5 Contacts and Responsibilities

Seaspan shall be responsible for verifying that the Project is constructed in compliance with environmental legislation and regulations, permitting requirements, Best Management Practices

(BMPs) and other Project environmental documents. Seaspan's Environment Manager will oversee construction supported by consultants, as required.

The selected Contractor shall be responsible for conducting works in accordance with conditions provided in permits, contract specifications and this CEMP.

Qualified Environmental Professionals (QEPs) will be responsible for environmental monitoring during Project construction. Contractual arrangements for environmental monitoring are yet to be determined. It is likely that both Seaspan and the Contractor will retain Environmental Monitors (EM) and/or Inspectors. EMs shall 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.

Contact details for key Project personnel and a description of the roles and responsibilities of the environmental personnel are provided in the following sections.

Table 2 Key project contacts.

Name	Company	Responsibility	Contact Information
Project Team			
Russ Bradley	Seaspan	Project Manager	C 604-209-4673 russ.bradley@seaspan.com
Sean McCoy	Seaspan	Environmental Manager	C 604-315-9574 sean.mccoy@seaspan.com
Darren Beaumont	Advisian	Engineering Consultant	604-298-1616 Darren.Beaumont@advisian.com
Rebecca Kordas	Hatfield	Environmental Consultant	C 604-348-9366 rkordas@hatfieldgroup.com
TBD	TBD	Construction Contractor	TBD
TBD	DFO	Conservation and Protection Field Supervisor for Lower Mainland / Squamish	604-664-9250
Environmental Programs	VFPA		environmentalprograms@portvancouver.com
Harbour Master	VFPA Operations Centre		604-665-9086, harbour_master@portvancouver.com
Dave Owens	CNV	Deputy Fire Chief, Prevention and Public Safety	T 604-904-5206 C 604-841-5756 DOwens@cnv.org
Navigation Protection Program Pacific Regional Office	Transport Canada		604-775-8867

2.5.1 Typical Responsibilities of Seaspan or their Representative

- Review the Environmental Protection Plan (EPP) prepared by the Contractor and Environmental Monitoring Reports.
- Provision of Seaspan BMPs to the Contractor.
- Engage VFPA, other regulators and Indigenous communities, as required.
- Oversight to verify the Contractor is conforming to and complying with permit conditions, legislation, regulations, and the requirements of this CEMP.

2.5.2 Typical Responsibilities of the EM

- Verify that all works are carried out in compliance with the environmental obligations set out in the environmental legislation and permit conditions and in conformance with this CEMP.
- Oversee preparation and submission to VFPA of all reports required under this CEMP and all other reports required under permits and approvals.
- The EM shall have the authority to halt construction activity and issue a Stop Work Order, if works fail to meet environmental requirements, or are, in their professional judgment, representing a significant or unacceptable risk to the environment. Recommendations to resume work shall be made once the causes leading to the Stop Work Order have been identified, addressed, controlled, and the environmental risks have been acceptably reduced or eliminated. Work will be allowed to resume once conditions detrimental to the environment have been rectified to the satisfaction of the EM and Seaspan.
- Liaise with Seaspan and the Contractor and provide technical advice to resolve situations that may impact the environment as they arise.
- Oversee the successful implementation of the CEMP and environmental compliance.
- Review the Contractor and sub-Contractor work procedures to verify functionality and compliance with the CEMP and applicable regulations, standards and BMPs.
- Complete monitoring tasks as defined in Section 8.1.
- Facilitate resolution of any identified environmental issues.
- The permit holder or EM will notify VFPA immediately in the event of non-compliance.

2.5.3 Typical Responsibilities of the Contractor

- The Contractor shall prepare a site-specific EPP based on this CEMP, to be reviewed and approved by Seaspan prior to the initiation of works.
- The Contractor shall comply with the VFPA Project permit and any other 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.

- The Contractor shall cooperate with the EM appointed for the work. The Contractor shall comply with written or verbal instructions with respect to conducting activities in compliance with mitigation measures outlined in the CEMP.
- The Contractor shall prioritize the correction of deficiencies and any non-compliance issues. Corrections shall be made as soon as reasonably possible, ideally within 24 hours of directions.
- The Contractor shall provide an environmental orientation to all staff and sub-contractors and provide a copy of this CEMP and/or the associated EPP for review prior to working on the Project.

3.0 RELEVANT ENVIRONMENTAL LEGISLATION

Table 3 describes relevant environmental legislation for the Project works.

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Table 3 Relevant environmental legislation.

Legislation	Agency	Description	Approval or Permit in Place/Forthcoming; or Requirements Met
Federal			
Fisheries Act (FA)	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).	A Request for Review was submitted to DFO in March 2021. A determination has not yet been made by DFO. Protection measures for fish and fish habitat and the avoidance of deleterious substances entering the water are provided in Sections 4.7 and 5.3 of this CEMP.
Canada Marine Act	VFPA	The *Canada Marine Act* 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 within its managed federal lands and waters.	VFPA is responsible for overseeing the Port of Vancouver under the *Canada Marine Act*. This responsibility is covered by the PER process.
Impact Assessment Act (IAA)	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 require an Impact Assessment. An Impact Assessment is not required for the Project. 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 under section 82 of the IAA before allowing it to proceed. This responsibility is covered by the PER process.
Canada Shipping Act	Transport Canada	The *Canada Shipping Act* 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.	An Environmental Emergency Plan (Section 5.0) and a Spill Response Plan (Section 5.3) have been developed within this CEMP for the construction phase of the Project.
Canadian Navigable Waters Act	Transport Canada	The *Canadian Navigable Waters Act* is the federal legislation that protects the public right to free and unobstructed passage over navigable waters.	An application to amend Seaspan's current approval will be submitted to Transport Canada. Works are not expected to interfere with navigation and therefore it is expected that they will be approved by Transport Canada. Navigation will also be dealt with by VFPA under the PER process as the Site is within the VFPA navigational jurisdiction.
Provincial			
Spill Reporting Regulations of the Environmental Management Act (EMA)	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 (Section 5.0) and a Spill Response Plan (Section 5.3) have been developed within this CEMP for the construction phase of the Project.
Hazardous Waste Regulations of the EMA	Ministry of Environment and Climate Change Strategy	These regulations govern the handling, storage, transportation, treatment and disposal of contaminated material and hazardous waste.	Hazardous waste (e.g., used oil) will be generated during work activities. A Waste Management Plan is provided in Section 7.0 of this CEMP.
Municipal			
Noise Regulation Bylaw No. 5819	CNV	The Noise Regulation Bylaw regulates or prohibits the making of certain noises in the City and includes information on objectionable noises or sounds, exclusions, enforcement, penalty, and ticketing (CNV 2011).	Port operations are industrial in nature and occur on a 24/7 basis following protocols to ensure worker safety. Mitigation measures to be implemented to minimize noise resulting from construction activities are provided in Section 4.4 of this CEMP.

4.0 POTENTIAL IMPACTS AND MITIGATION

4.1 General Practices

The following construction mitigation measures are recommended to avoid or minimize impacts resulting from the operation and storage of equipment during construction:

- All works within the Site shall comply with Seaspan's BMP-04 Site Management and Housekeeping (Appendix 2).
- Site managers and contractors will be prepared to change existing measures and BMPs should they fail or should additional measures be required. The EM will be notified of any changes to ensure they are adequate and installed properly.

4.2 Site Access, Mobilization, and Laydown Areas

Access to the Site and most of the Project work will be marine based on barges and/or other vessels resulting in little to no trucking of materials. The use of trucks would be minimal if at all, and congestion and delays are not expected due to these works. A Traffic Impact Study is not required for the Project and therefore has not been included as part of this CEMP.

A laydown area for storage of equipment and materials will be confined to barges (shown on Engineering Drawings in Appendix 1).

4.3 Air Quality

Potential exposure pathways include air pollution from machinery and equipment. Air quality issues, if apparent, are expected to be limited in duration to working hours.

The following mitigation measures shall be implemented to reduce air emissions resulting from Site activities:

- No burning of any materials shall be permitted at the Site.
- Contractors will ensure that all equipment, vehicles and stationary emission sources shall be well-maintained and used at optimal loads to minimize emissions. A preventative maintenance program shall be implemented for all diesel and gasoline-powered equipment (e.g., 500 hours or sooner if required by manufacturer). Any parts showing excessive signs of wear or malfunction shall be promptly repaired or replaced. Electric equipment shall be used where practical.
- Contractors will ensure that all equipment shall be fitted with standard emission control devices in compliance with federal, provincial, regional district, and municipal regulations and standards.
- Contractors will ensure that equipment shall be in compliance with the VFPA's Non-Road Diesel Emissions program (VFPA 2015).

- Vehicle and equipment idling time shall be restricted and minimized during construction to the greatest practical and safe extent. Employees shall be required to turn off vehicles or heavy equipment when not in use.
- Stationary emission sources (e.g., portable diesel generators, compressors, etc.) shall be used only as necessary and turned off when not in use.

4.4 Noise and Vibration

Project works at the Site will produce above-water noise. Noise management issues could potentially occur during the following construction activities:

- Mobile equipment, machinery, and vessels on Site.
- Equipment operation, including pumps.
- Pile driving activities.

Underwater noise and vibration are also likely to occur during in-water works, including pile driving (see Section 8.1.1 for monitoring). The following land and underwater mitigation measures and BMPs shall be implemented to minimize noise emissions resulting from Site activities:

- VFPA authorizes work from 07:00 to 20:00 Monday to Saturday, No work is permitted on Sundays or holidays, as per VFPA standard work hours.
- Contractors shall ensure that all equipment shall be properly maintained to limit noise emissions to the extent practical and fitted with functioning exhaust and muffler systems. Machinery covers and equipment panels shall be well fitted and remain in place to muffle noise. Bolts and fasteners shall be tight to avoid rattling.
- Contractors shall ensure that engines shall be turned off when not in use. Vehicle and equipment idling time shall be restricted and minimized during construction.
- Contractors shall ensure that machinery and equipment shall only be operated within specification and capacity (e.g., machines shall not be overloaded).
- Driving of piles shall be initiated using a vibratory or drop hammer. A diesel or hydraulic hammer or other technology such as drilling may be required to install the piles.
- Procedures shall be put in place for receiving and responding to noise complaints. Records of any complaints shall be kept for a minimum of six months.
- Mitigation and monitoring for underwater noise are discussed in Sections 4.7 and 8.1.1 respectively.

4.5 Concrete Works

During Project works, wet concrete will be used to infill six piles. This process has the potential to affect Burrard Inlet through the accidental release of concrete or concrete contact waters into the marine environment. Concrete leachate is alkaline and can be highly toxic to fish and other aquatic life.

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

- Where concrete infilling works are conducted, concrete shall be carefully poured using a tremie pipe to avoid spillage.
- Spill cleanup materials shall be readily available and easily accessible. Contractors shall be aware of the materials required to clean up a concrete spill. Spills should follow the Spill Response Plan outlined in Section 5.3.
- Concrete and concrete-laden water shall not contact Burrard Inlet outside of the piles, either directly or indirectly.
- Raw or uncured waste concrete and grouts shall be disposed of in a manner that shall not affect Burrard Inlet. Excess uncured concrete and grout mixtures shall be stored in an impermeable container, isolated from Burrard Inlet and in an area protected from rain. Materials shall be disposed off-site at an approved facility once the mixture has cured (approximately 72 hours).
- Any water contacting uncured or partly cured concrete, 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 (nephelometric turbidity units).
- Containment facilities shall be provided that allow for wash-down water produced from concrete delivery, concrete pumping equipment, and other tools and equipment, to be trapped on Site and reused (i.e., flat ground, a minimum of 30 m from the inlet or any surface water feature).
- 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 before release to the ground or removed for off-Site disposal at an approved facility.
- Discharge of concrete wash water shall be prohibited. Chutes shall be washed into a bucket, and water shall be poured back into the vehicle. 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.

- Water quality monitoring shall be conducted in accordance with the Environmental Monitoring Plan (Section 8.1.2). In the unforeseen event that pH elevations are noted, gaseous carbon dioxide (CO_2) may be dispersed into the area of elevated pH. The CO_2 shall be applied at depth with a weighted diffuser apparatus. CO_2 shall only be applied if needed and in consultation with the EM. While it provides an effective means of mitigating pH impacts from cementitious materials, its overuse could lead to adverse impacts on the blood chemistry of fish (hypercapnia).

4.6 Archaeological Resources

Ground disturbance activities are not anticipated during this Project. Despite this, the Contractor shall establish procedures to avoid and/or protect potentially existing, or as yet undiscovered, archaeological and heritage resources in the Project area. Although unlikely, if works result in the discovery of previously undiscovered archaeological resources, the Contractor shall:

- Immediately stop any activities that might disturb the archaeological resource or the site in which it is contained.
- Not move or otherwise disturb artifacts or other remains present at the site.
- Stake or flag off the site to prevent additional disturbances.
- Immediately notify the EM, the Seaspan Environmental Representative, and VFPA.

4.7 Fish and Fish Habitat

The Site is located within Burrard Inlet, the principal aquatic receptor of the Project. Project works could potentially lead to water quality, and fish and fish habitat concerns. Activities that have the potential to cause adverse environmental effects on water quality and fish and fish habitat in a marine environment include:

- Pile installation and clean-out.
- Infill of concrete piles.
- Other activities that could potentially result in the introduction of deleterious substances into Burrard Inlet (e.g., accidental spills of petroleum-based products).

Dredging is not required to construct the Project, and therefore the potential for resuspension of sediment is low. Propeller wash from tugs has the highest likelihood of resuspending sediment in the shallower parts of the Site, which is an ongoing operational activity in the facility anyway.

The following mitigation measures will be implemented to avoid causing the death of fish or the harmful alteration, disruption, or destruction (HADD) of fish habitat:

- All marine in-water works shall be conducted during DFO's Least Risk Window, between the period of August 16 and February 28 inclusive.

- Visual and hydrophone monitoring will be conducted during pile driving activities, as described in Section 8.1.2. If sound pressures exceeding DFO thresholds are measured, or distressed, injured, or dead fish are observed following the initiation of pile driving, work will be halted immediately and measures (i.e., bubble curtain) to reduce the sound pressure waves will be implemented before the work is resumed. The bubble curtain shall be deployed adjacent to the pile base as close as practical and shall be installed in a way that bubbles successfully encircle the entire pile to achieve maximum effectiveness. The exact style of bubble curtain will be contingent upon construction activities and localized site conditions (e.g., tides, current).
- Barges or other vessels used during construction shall not be permitted to ground on the foreshore or seabed. Spuds will be used to secure barges when necessary.
- No equipment shall operate on the intertidal foreshore.

The direct or indirect release of deleterious substances into the aquatic environment shall be prevented during the works. Debris, removed paint, and other residues shall be contained. A Spill Response Plan is included in this CEMP (see Section 5.3).

5.0 EMERGENCY RESPONSE

Prevention is the first line of defence against environmental emergencies. Mitigation measures that are properly implemented reduce the risks and magnitude of potential impacts.

Potential environmental emergencies that could occur during construction include:

- Reportable fuel spills.
- Negative wildlife interactions.
- Observation of previously unidentified sensitive environmental features.

The EM shall be notified of all environmental emergencies. The EM shall assess and record all incidents and determine appropriate action. Incidents shall be reported to Emergency Management BC (EMBC) and the VFPA as described in Section 8.2.2. All spills, releases, or non-compliance incidents must be reported to Seaspan.

The following storm and earthquake-related mitigation measures are recommended to avoid or reduce the potential for environmental emergencies as a result of Project construction activities:

- Incoming severe weather warnings shall be observed and responded to accordingly.
- Personnel, tools, equipment, and supplies shall be made as safe and secure as possible prior to storm events.
- During and/or immediately after a major storm event, facilities and work areas shall be inspected for damage and repaired as required.

- Although seismic activity is not expected to affect marine-based equipment, North Vancouver is located in a high-risk earthquake zone that encompasses the Lower Mainland coast. Workers shall familiarize themselves with earthquake preparedness measures. In the event of an earthquake, all gas, electricity, and water sources shall be immediately shut off and workers shall stay clear of any hazardous material storage areas, trees, power poles, or other objects that could fall.

5.1 Emergency Communication

Clear and rapid communication is essential when dealing with emergencies. Table 4 contains contact information for all parties who are responsible for the project or are critical to the response or reporting of accidents or environmental emergencies.

Table 4 Emergency response contact numbers.

Nature of Incident/Emergency	Authority/Company Name	Contact
Emergency Services	Emergency Services	911
	RCMP	911 / 604-985-1311
	Lions Gate Hospital	604-988-3131
	Local Fire Department-North Vancouver City Fire Department	911/ 604-980-5021
	Ambulance	911
	North Shore Emergency Management Office	778-338-6300
Seaspan Emergency Contacts	Marine Dispatch	604-988-3111
	VDC Security	604-778-1902
	Safety	604-842-1697
	Environment	604-315-9574
Reportable Spills under EMA and Spills to Water >100 L	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
	RCMP	911
	Canadian Transport Emergency Centre (CANUTEC)	613-996-6666 or *666 on a cell phone
	Employer/Person in Control of the Dangerous Goods	TBD

5.2 Environmental Emergency Plan

Emergency response equipment shall be stored in clearly signed, easily accessible and identified locations. Existing spill containment and clean-up supplies shall always be made available on Site including during non-operating hours. Details of reportable volumes of substances and agency reporting procedures, along with a list of emergency contacts, are outlined in the Spill Response Plan (Section 5.3).

Emergency response equipment shall be appropriate to the situation and could include, but is not limited to:

- Emergency kits (e.g., spill kits, earthquake kits, first-aid, etc.) and hazard-specific personal protection equipment (e.g., flame resistant clothing, rubber gloves for electrical work, fall arrest harness, respirators, etc.).
- Fire alarm systems, gas detectors, and firefighting equipment.
- Emergency backup generators, as required, located at critical facilities that require power to prevent injury to workers and impact to property and the environment (e.g., pumps, communications systems etc.).
- First aid equipment, attendants, and supplies. Minimum levels of first aid equipment, first-aid attendants, supplies, services, and facilities in accordance with WorkSafe BC guidelines.
- Clean-up materials and equipment.

Procedures and schedules for the maintenance and replacement of emergency equipment (e.g., fire extinguishers, ladders, emergency earthquake kit, etc.) shall also be provided.

5.2.1 Emergency Response Training

Construction personnel shall have the appropriate training and skills to perform their job in a safe manner.

- Construction personnel shall be trained in the use of spill containment equipment/items.
- An environmental component shall be included in the Project orientation that outlines sensitive features of the Site and Project works; proper storage, handling and use of controlled products; orientation to spill kit contents and their proper usage; and spill response procedures.
- Construction personnel who regularly handle hazardous materials and waste shall be trained for product-specific hazards and mitigation measures, as well as clean-up and emergency response procedures.

5.3 Spill Response Plan

Hazardous and potentially hazardous fuels, chemicals and other materials are likely to be stored on barges during construction. An inventory of hazardous materials anticipated to be handled or stored during normal operations shall be kept on barges.

Spill response procedures vary based on the quantity, type, and location of the substance and/or spill (Appendix 3). All spills, regardless of type or volume, are to be reported to the EM and Seaspan Project and Environmental Managers. Spills of flammable liquids, hydrocarbons, and oils >100 L are reportable to EMBC.

Spill response procedures are defined in the following sections.

5.3.1 For Spills (to Land) Above Spill Reporting Regulations, Reportable Under EMA

1. Make the area safe.
2. Call for assistance from co-workers / Supervisor / Safety Department or Seaspan Dispatch.
3. Stop the flow (where possible and safe to do so).
4. Contain the spill.
5. Clean-Up:
    - The details of the spill are to be reported to the EM, Seaspan Project and Environmental Manager.
    - The EM, Seaspan Project and Environmental Managers, 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 the affected area(s), including confirmatory testing of the cleaned area(s).
    - Remove impact/debris and decontaminate any equipment or tools used during clean-up.
    - Dispose of waste materials at an approved disposal facility in compliance with the BC EMA and Hazardous Waste Regulations.
    - Dispose of all materials used in the clean-up (e.g., used sorbents, oil containment materials, etc.) in accordance with the above regulatory requirements.
    - Treat and dispose of contaminated material in compliance with the BC EMA, Contaminated Sites Regulations and Hazardous Waste Regulations.

5.3.2 For Spills (to Land) Below Spill Reporting Regulations, that are Non-Reportable under EMA

All spills, regardless of type or volume are to be reported to the EM and the Seaspan Project and Environmental Managers. The EM shall provide recommendations on appropriate clean-up and disposal of potentially contaminated materials.

5.3.3 Spills to Water

In the event of spills of oil or petroleum lubricating products entering Burrard Inlet, the following steps will occur:

- 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.

6.0 FUEL MANAGEMENT

The following mitigation measures are recommended to reduce the risk and potential environmental effects from the handling, transport, and storage of fuels.

- Fuel handling and storage shall occur on stable ground > 30 m from the ordinary high-water mark of Burrard Inlet, except on a barge.
- Drip containment shall be used for all fueling activities.
- Fuel containers or tanks shall not be filled above the manufacturers' assigned, safe filling level.
- Containment systems for any storage areas shall be designed and constructed with due consideration for potential rainfall volumes.
- Fuels shall be stored separately from corrosive materials.
- Storage containers shall be fit for purpose, shall not leak, and shall be properly sealed so that they do not leak if overturned.
- Fuels shall be labelled and transported in accordance with the Transport of Dangerous Goods Act Regulations and Workplace Hazardous Materials Information System (WHMIS) 2015.
- All containers, hoses and nozzles shall be free of leaks.
- Fuel nozzles shall be equipped with automatic shutoffs.
- Fuel remaining in the hose shall be returned to the storage facility.
- Smoking shall be prohibited in the vicinity of fuel storage and dispensing facilities in accordance with Seaspan's BMP-04 Site Management and Housekeeping (Appendix 2).

- Spill kits shall be provided wherever fuel handling and storage will occur.
- Fuel management within the Shipyard shall comply with Seaspan's BMP-03: Spill Prevention and Response (Appendix 2).

7.0 WASTE MANAGEMENT

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.
- Waste petroleum products (engine oils, lubricants, filters, etc.) from machinery and equipment.
- Batteries and battery fluid.
- Oily rags or sorbents containing flammable liquids.
- Other debris or infrastructure removed from the seabed (e.g., small amounts of waste materials, such as tires, observed on the seabed).

7.1 General

The following mitigation measures are recommended when dealing with wastes generated on Site:

- Contractors shall provide properly labelled separate containers for hazardous wastes, such as oily rags and hydrocarbon absorbing pads.
- All debris and waste materials resulting from the Project shall be contained in the immediate working area and shall be removed as soon as possible. Any submerged debris and waste material resulting from the Project shall be removed using a diver or other non-intrusive methods.
- Specific locations for waste collection and sorting shall be identified before the start of construction and communicated to employees in the pre-work environmental orientation training session.
- Outdoor refuse containers shall always remain sealed except when filling or emptying. Any refuse containers that are damaged or leaking shall be repaired or replaced.
- All waste shall be stored in the appropriate locations at the end of each day and labelled appropriately.
- Waste material shall be stored in a manner that is secure and protected from the elements and wildlife.
- All waste types must be segregated; recyclables, hazardous waste, general waste, construction waste (i.e., scrap metal, wood).
- No burning of wastes shall be conducted on Site.

- Waste management within the Shipyard shall comply with Seaspan's BMP-02 Waste Management and Recycling (Appendix 2).

7.2 Non-Hazardous Waste

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

- Littering shall be prohibited on Site. Measures shall be implemented to prevent and control litter.
- All recyclable or compostable materials shall be collected separately from general waste as per CNV requirements.
- Designated areas and repositories shall be labelled for all recyclable and non-recyclable wastes. Construction personnel shall be trained in determining whether wastes can be recycled on-site, off-site or must be disposed of as wastes. Labelling of waste containers shall include a description of what materials are and are not accepted in each container.
- Cigarettes shall be discarded in an appropriate receptacle in designated smoking areas and not be left or buried on the Site, as per existing Seaspan requirements.
- Food and food wastes shall 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, shall be stored appropriately in a wildlife-proof container or building and removed from the Site at the end of each day. Feeding of wildlife shall be prohibited on Site.
- Regular disposal or recycling shall be carried out at a frequency sufficient to prevent accumulating large quantities of waste. All solid waste shall be handled in accordance with applicable municipal, provincial, and federal regulations and disposed of at an authorized receiving facility. All materials shall be transported in accordance with the Transportation of Dangerous Goods Act and regulations and the BC Hazardous Waste Regulations.
- Records indicating volumes and dates of non-hazardous waste materials removed from Site and sent to off-site disposal facilities shall be kept on Site. Waste materials generated that do not pose a risk to contamination of the Site shall be reused where possible. Non-hazardous waste materials generated on Site that cannot be reused shall be recycled at an approved facility, where practicable.

7.3 Hazardous Waste

Project works may generate hazardous waste including concrete and concrete-laden water, waste oils, chemical wastes, and used absorbent materials and filters.

The following mitigation measures are recommended to reduce the potential for the release of hazardous waste materials to the environment.

- Workers handling hazardous wastes shall be appropriately trained in handling, storage, and disposal methods.
- Hazardous wastes shall be managed, transported, labelled, stored, and disposed of according to the BC Hazardous Waste Regulations via licensed transportation and disposal facilities.
- Hazardous wastes shall 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 shall not be mixed with wastes contaminated with oil.
- Each container or area used to store hazardous waste shall be clearly labelled as containing hazardous waste and shall be equipped with adequate secondary containment that holds 110% of the volume of the largest tank or container, or 10% of the total volume of all containers, whichever is greater. Hazardous waste containers shall be kept closed except when being filled or emptied.
- Hydrocarbon products and other hazardous wastes potentially present during Site activities shall be identified and the associated WHMIS and Safety Data Sheets (SDS) made available to the construction crew.
- Hazardous waste containers shall be labelled and stored in accordance with all requirements of the Transportation of Dangerous Goods Act and Workers Compensation Act (WHMIS SDS labelling requirements).
- Waste rags and sorbents shall be stored in containers with self-closing lids, with the bottom of the container raised and vented.
- Used oil and antifreeze shall be collected by the BC Used Oil Management Association.
- If necessary, hazardous waste shall be temporarily stored in designated, secure areas with secondary containment and protected from the weather. The storage areas shall be located at least 30 m away from Burrard Inlet or similarly contained aboard barges during construction. Hazardous wastes shall be managed in compliance with applicable fire codes.
- Spills of hazardous materials shall be cleaned up and immediately reported to the EM and appropriate regulatory agencies in accordance with the Spill Response Plan (Section 5.3).
- Hazardous Waste management within the Shipyard shall comply with Seaspan's BMP-01 Hazardous Materials Management (Appendix 2).

8.0 ENVIRONMENTAL MONITORING

Primary measures to verify the protection of Burrard Inlet shall be acoustic and turbidity monitoring during in-water works and visual inspection of the Site. Monitoring will confirm the adequacy of mitigation measures used during Project works and shall be conducted by an EM with experience in the monitoring of similar marine infrastructure projects.

8.1 On-site Environmental Monitoring

An EM will be on Site to oversee all environmental aspects of the Project and to verify that compliance with the CEMP is being achieved. EM commitments can be found in Section 2.5.2.

The EM will maintain contact with the Contractor Supervisor and will be available for emergency response, monitoring, and associated sampling requirements.

8.1.1 Acoustic Monitoring and Marine Mammal Observation Plan

Marine construction activities may generate underwater noise with the potential to affect marine mammals and fish. Preference shall be placed on the use of vibratory pile driving techniques wherever feasible, and impact pile driving methods shall not be attempted until vibratory techniques are found unviable. If impact pile driving becomes necessary mitigation will be implemented to prevent auditory injuries or enduring behavioural changes (i.e., area avoidance).

To monitor the effectiveness of sound attenuating mitigations, the EM shall utilize a calibrated hydrophone to monitor underwater noise in-situ throughout the first five days of pile driving. During this time, a marine mammal exclusion zone (EZ) will be established based on acoustic monitoring results. Once the EZ is established and assuming no exceedances of the DFO sound thresholds are observed, hydrophone monitoring will be discontinued after 5 days. Marine mammal observation will continue throughout pile driving.

A calibrated hydrophone will be positioned 10 m from the point of pile driving to monitor peak SPL levels and confirm compliance with DFO established acoustic thresholds of 206 dB re 1 µPa, and cumulative SEL below 186 dB (dB cSEL; re 1 μPa^2 sec). Any exceedance at the 10 m monitoring locations of the peak SPL threshold shall trigger a temporary cessation of pile driving, review of current mitigations and the use of further sound attenuating mitigations, as required (e.g., modifications to the bubble curtain).

In addition, 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 SPL_{rms} of 160 dB re 1 µPa (i.e., the point of sound attenuation). This will define the EZ for marine mammal monitoring.

During pile driving works, the EM will monitor for marine mammal presence to mitigate potential harm. The extent of monitoring shall be contingent upon the results of the hydrophone monitoring of construction activities (e.g., impact vs. vibratory pile driving) and marine conditions (e.g., visibility considerations). Works requiring marine mammal observation shall occur only during hours when there is sufficient light for the EM to conduct marine mammal observations at the defined EZ. During

pile driving, the EM shall record any sightings of marine mammals inside and outside the EZ. Observations made by the EM shall include taxa, numbers, and behaviour.

During pile driving, an EZ shall be established extending to a variable location corresponding to the point of sound attenuation as determined by hydrophone monitoring. EZ's shall be monitored by the EM at all times during pile driving activities. Any marine mammals observed within the EZ will trigger a temporary cessation of works.

The protocols listed below shall be followed:

- The EM shall monitor the EZ for 30-minutes before the beginning of pile driving (or restarting after a 30-minute cessation of works). Pile driving will not be initiated unless marine mammals observed within the EZ are seen leaving, or none have been observed inside the EZ during the observation period.
- If visibility is such that the EM is unable to effectively monitor for marine mammals within the EZ (e.g., in darkness or heavy fog), the EM may delay the start of in-water works until visibility improves. Upon improvement of visibility, the EM shall monitor the EZ for marine mammals, as above.
- The beginning of pile driving (or restarting after a 30-minute cessation of works) shall include a slow start technique, gradually increasing hammer strikes in both intensity and frequency. This process is intended to allow any marine mammals in the vicinity time to vacate the area.
- Upon detection of underwater noise greater than thresholds stated in Section 8.1.1, pile driving will temporarily halt, and additional mitigation measures will be considered in consultation with the EM.

The marine mammal observation shall be active during all pile driving works, and the EM will be properly equipped to observe the entirety of the EZ and conduct acoustic hydrophone monitoring. The EM shall maintain contact with the Contractor Supervisor at all times, in order to communicate any necessary modifications to work procedures (e.g., temporary cessations of works, bubble curtain modifications, etc.). The exact location of the EZ will be centred on concurrent pile driving, and thus its exact location will shift with works. Further, the final size of the EZ may change depending upon in-situ underwater sound measurements taken during pile driving.

8.1.2 Water Quality Monitoring

Water quality monitoring shall be conducted by the EM and include a combination of visual observations and in-situ water quality measurements. Visual inspection of in-water works shall be conducted to monitor for increases in turbidity associated with Project works. In-situ water quality profiles and sampling of treated concrete contact water discharge shall be conducted using a water quality multimeter (e.g., YSI ProDSS) capable of measuring turbidity and pH. For in-situ monitoring, measurements shall be collected at three depths in the water column; at near-surface, mid-column, and near-bottom locations to a maximum depth of 20 m. Data shall be uploaded daily to Project

records. The water quality multimeter shall be calibrated as per the manufacturer's specifications, and all calibration data shall be included with Project records.

If concrete infilling of piles requires active dewatering during tremie pours, water having contacted cementitious materials shall be isolated and treated to meet water quality objectives set out in Section 4.5 (i.e., pH between 6.5 and 9.0 and a turbidity of less than 25 NTU) prior to discharge to the marine environment. The EM shall test treated water for pH and turbidity prior to release to the marine environment to confirm water quality objectives have been achieved. Hourly testing of treated discharge shall be undertaken by the EM throughout the duration of treated water discharge.

8.1.3 Frequency and Location of In-Situ Measurements

In-water works are not expected to generate substantial increases in turbidity. If an increase in turbidity is observed, water quality measurements shall be taken hourly at a compliance point located 30 m downstream of the works, at an exact location determined by the EM. Samples shall be collected at locations and frequencies listed in Table 5. Exact sampling locations shall be contingent upon construction activities and marine conditions. Water quality performance criteria, as they apply to all in-water works, shall be primarily focused on turbidity, and will be evaluated at an appropriately located compliance point. Incidental water quality parameters (i.e., pH, temperature) will also be collected and maintained in Project records. Samples shall be taken at 1-hour intervals during in-water works where signs of elevated turbidity are observed. This frequency may be increased at the discretion of the EM (e.g., upon observation of a turbidity plume).

Table 5 Sampling frequency and turbidity performance criteria for in-situ profiles.

Project Activity	Location of Compliance Point Sampling Station	Sampling Frequency During Works	Performance Criteria
All Other In-Water Works	30 m down current of works, at 3 depths	Hourly, if visual monitoring indicates it is necessary	≤ 5 NTU above background if background ≤ 50 NTU OR ≤ 10% above background if background > 50 NTU

In-situ profiles will also be collected from a reference (background) station to identify background conditions, such that changes over background can be established for parameters such as turbidity, and to assess sources of potential influence at the ambient point. Two reference stations will be established approximately 500 m east and west of the Site. However, only the reference station located "up current" of the Site will be sampled during each sampling event. This will result in one reference area being sampled during each sampling event, dependent on local tides and currents.

If monitoring identifies a non-compliance event (i.e., results exceed water criteria at the compliance point), the EM shall take the following actions:

- Confirm the source and/or cause of the exceedance (i.e., visible observation of a turbidity plume and its source).
- Should the exceedance be the result of in-water works, the Contractor shall be notified, and BMPs/mitigations adjusted.
- Increase frequency of turbidity monitoring.
- Should exceedances at the compliance point persist, in-water works shall be halted until work methods have been reviewed and additional mitigations applied in consultation with the EM.

8.2 Reporting

8.2.1 Monitoring Reports

Environmental monitoring reports shall be produced weekly throughout Project construction. The environmental monitoring report shall be submitted to VFPA. Weekly environmental monitoring reports shall include, at a minimum, the following information:

- Name(s) of EM(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 have occurred during the reporting period.
- A description of outstanding environmental issues and/or non-compliance with environmental laws, permits or other environmental obligations and corrective actions taken, or that will be taken, and a schedule for such actions.
- Any issues or concerns raised by the EM and measures taken, or that will be taken, to address those issues or concerns.
- 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 DFO – to verify implementation and effectiveness at the relevant stages of the Project.
- A list of marine mammal, fish and wildlife observations.

8.2.2 Incident Reporting

Environmental incident reporting shall be carried out for incidents that pose or may pose a threat to the environment, such as spills, death of fish, or disruption or destruction of fish habitat. Spills may be reportable to EMBC under the 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 DFO. Spills must be reported verbally to a Seaspan Supervisor, Seaspan Dispatch (for vessels), to the Seaspan business unit Environmental Representative or to the Seaspan Safety Department (Table 4).

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

- 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.
- Any incident that poses a safety or health risk, including but not limited to vehicle collisions and fire.
- Any repetitive occurrence of an environmental non-conformance.
- Adverse publicity with respect to the environment.
- Alteration or damage to archaeological resources.
- In the event of a spill, the following reporting steps will be followed:
    - Notify the EM immediately (provide spill details).
    - Report as per Section 5.3.
- If a reportable spill has occurred the EM or Seaspan Environmental Manager or a designate shall **call EMBC at 1-800-663-3456 (24 Hour).**
- 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 spill.
    - Type and quantity of substance spilled.
    - Cause and effect of spill.
    - Details of action taken or proposed.
    - Description of spill location and surrounding area.
    - Names of agencies/responders on the scene.
    - Names of other persons or other agencies advised or to be advised concerning spill.
- Inform Seaspan immediately of a hazardous materials spill.
- Complete an Environmental Incident Report.

- For spills >100 L reaching Burrard Inlet, contact back-up commercial spill clean-up companies and local fire response teams.

9.0 ORIENTATION AND TRAINING

Contractor personnel shall be provided with an orientation covering this CEMP and records shall be retained for the duration of the Project or as required by Seaspan. Training may be provided through any (or all) of the following means:

- General Environmental Orientation – This would be provided to all persons who perform work on the Project at the Site. The orientation would include an overview of environmental sensitivities for the Project and an overview of environmental obligations, roles, and responsibilities.
- Pre-Work Construction Environmental Orientation Meetings – This would be provided to personnel involved in a specific scope of work (as defined by an approved Project work plan or equivalent) that has an elevated risk to the receiving environment. The pre-work construction environmental orientation meeting would be completed before the start of work, defined in the relevant work plan, and include a detailed description of the activities to be completed, how these activities interface with environmental receptors, the potential effects these activities may have on said environmental receptors, and the mitigation measures developed to prevent or minimize these effects.
- Toolbox Talks/Tailboard Meetings/Morning Safety Meetings – This would be opportunistic in that it would provide field personnel with an informal venue in which they may voice concerns, ask questions, or provide a recommendation on matters of environmental importance to the Project, as appropriate. The EM would attend these sessions to support discussions on a rotation basis (or as described in the monitoring plan) or at the request of field supervision.

Records shall be maintained for all instances of environmental training and shall include (at a minimum):

- Full names of all individuals who attended the training.
- The date the training occurred.
- Topics discussed.
- Name of Trainer or Supervisor.

10.0 REFERENCES

CNV. 2011. Noise Regulation Bylaw 1987, No. 7188. The City of North Vancouver. Effective Date – January 24, 2011.

Hatfield Consultants. 2021. Seaspan Vancouver drydock water lot project, habitat assessment. Prepared for Seaspan ULC, North Vancouver.

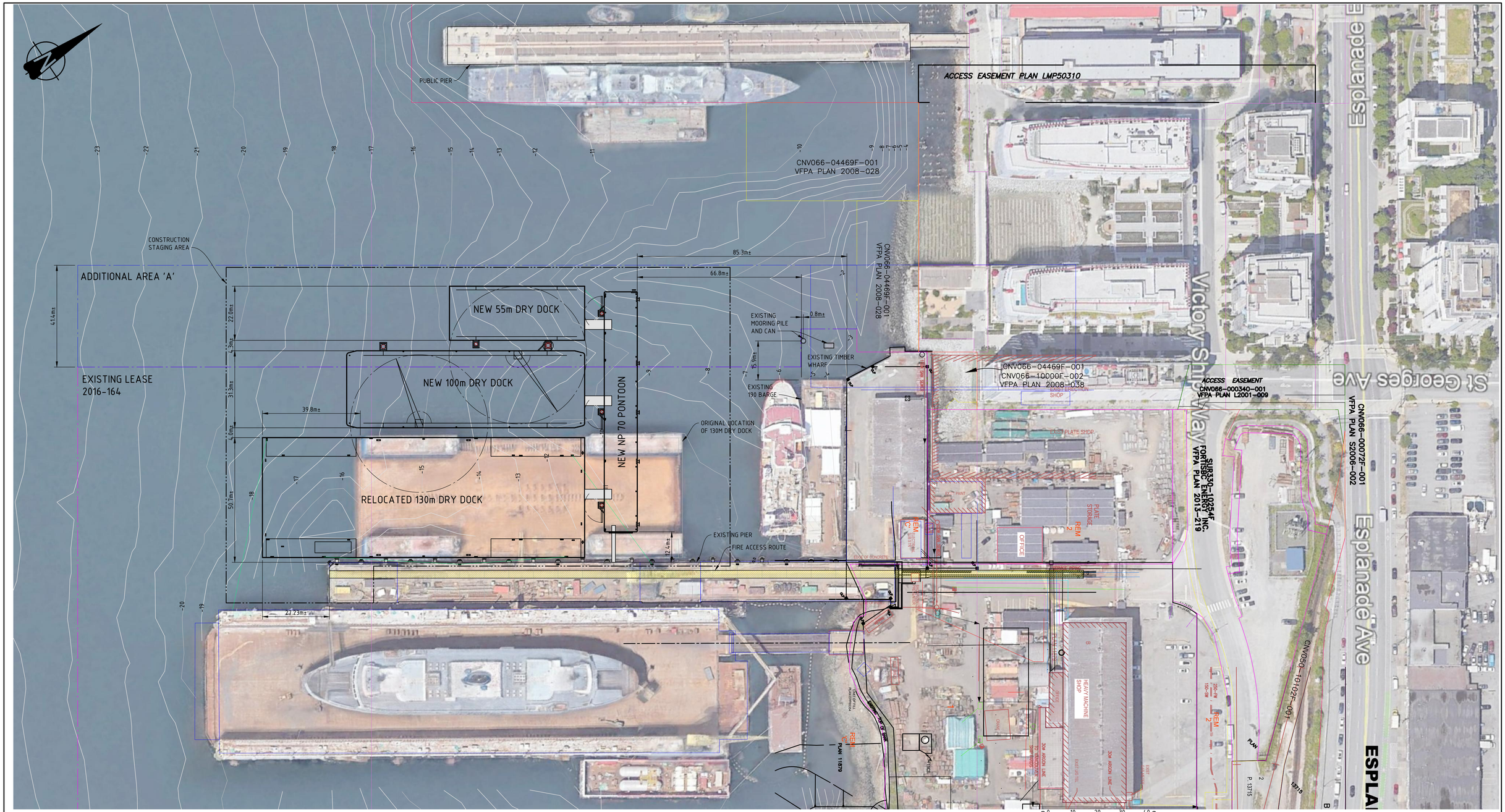
VFPA. 2015. Non-Road Diesel Engine Emission Program. https://www.portvancouver.com/environmental-protection-at-the-port-of-vancouver/climate-action-at-the-port-of-vancouver/non-road-diesel-emissions-program/

VFPA. 2018. Project & Environmental Review Guidelines – Construction Environmental Management Plan (CEMP). Vancouver Fraser Port Authority. April 2018.

Appendix 1

Engineering Drawings

seaspan SHIPYARDS



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D SHEET | SCALE SHOWN

OneWay to zero harm

WORLEY PROJECT No
317086-32308

ENGINEERING AND PERMIT STAMPS (As Required)

PRELIMINARY
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SEASPAN
WATER LOT PROJECT
SITE PLAN

DRG No
317086-32308-00-MA-DGA-1501

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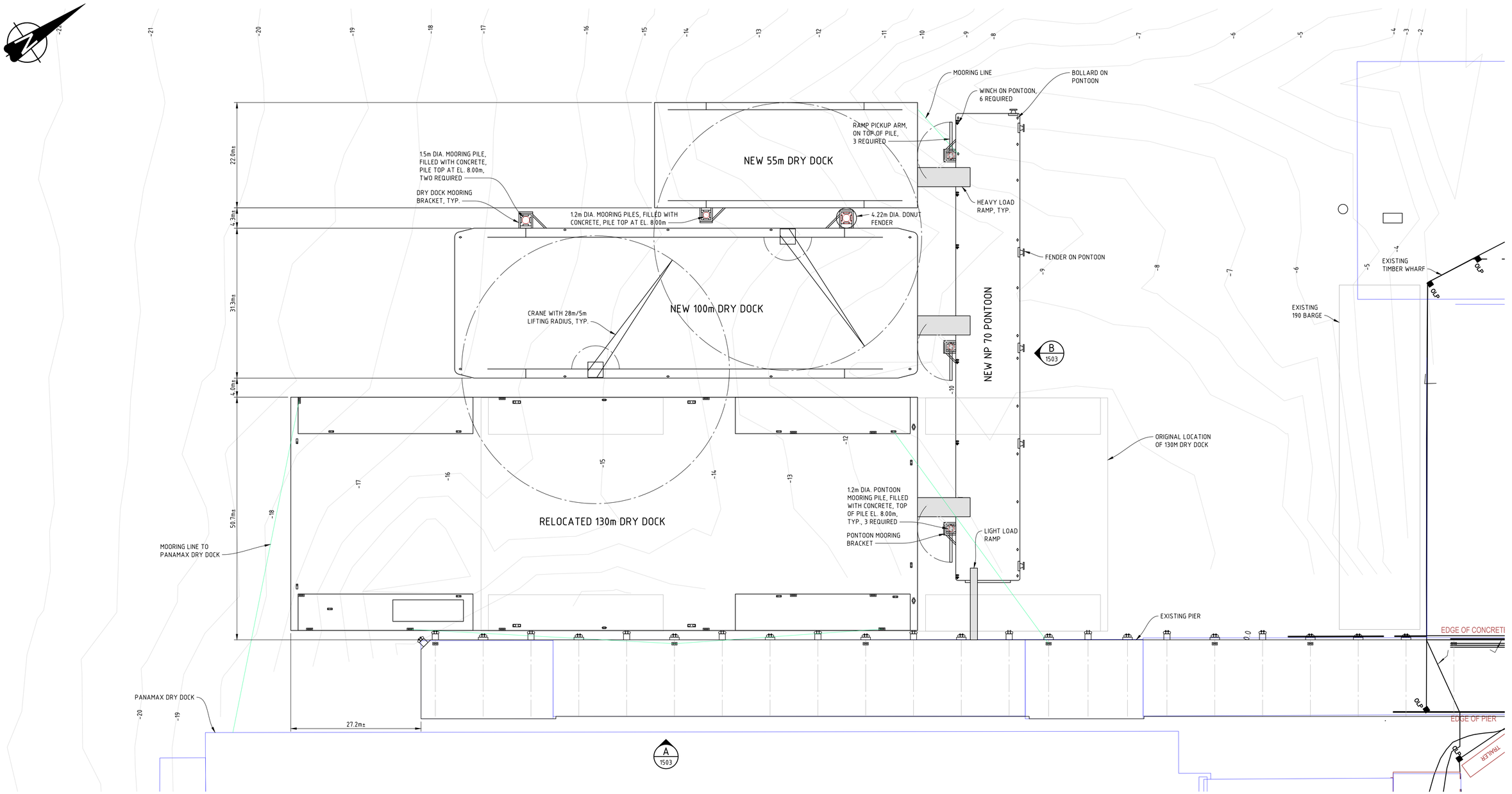

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OneWay to zero harm

WORLEY PROJECT No
317086-32308

ENGINEERING AND PERMIT STAMPS (As Required)

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SEASPAN
WATER LOT PROJECT
GENERAL ARRANGEMENT
PLAN

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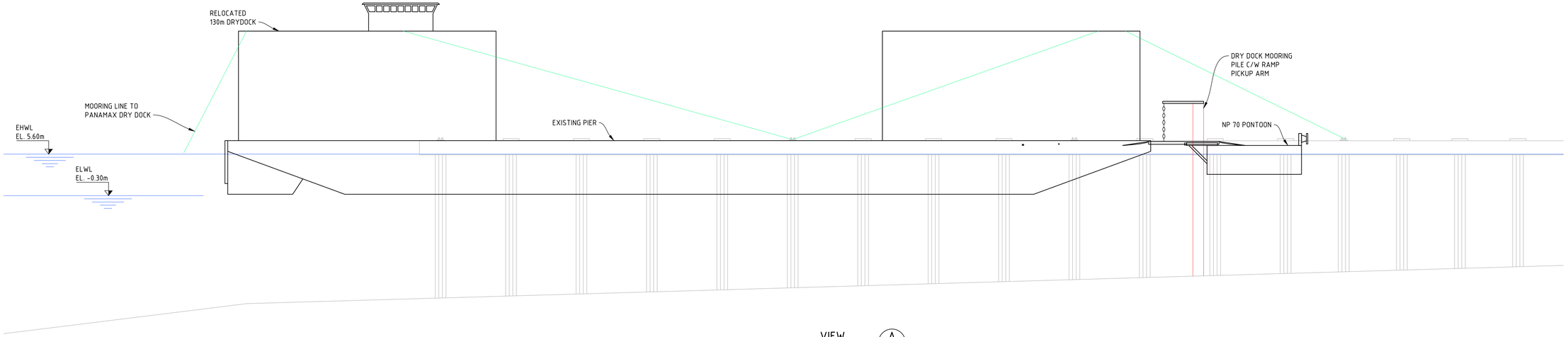

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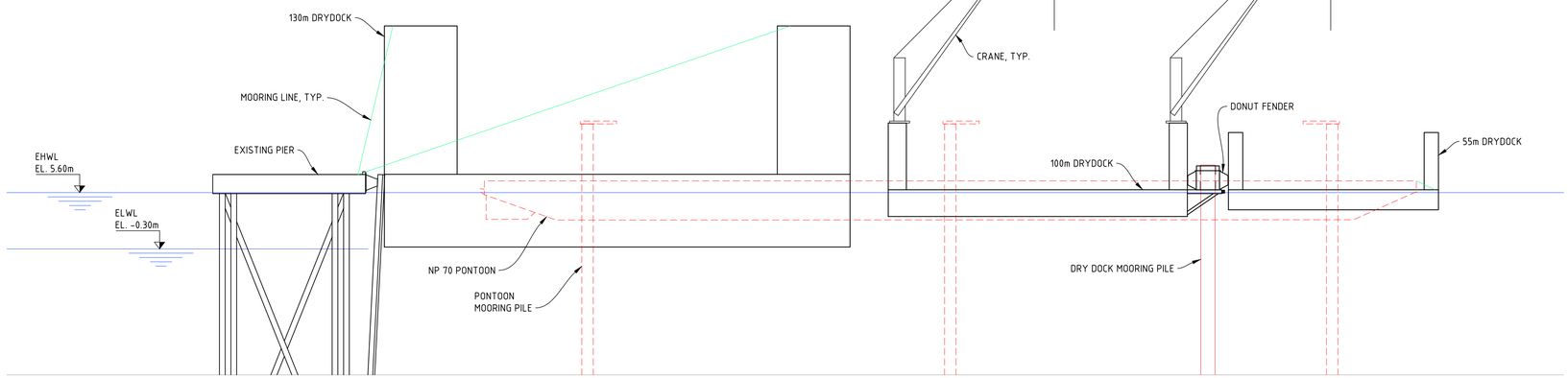

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OneWay to zero harm

WORLEY PROJECT No
317086-32308

ENGINEERING AND PERMIT STAMPS (As Required)

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
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seaspan

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SEASPAN
WATER LOT PROJECT
GENERAL ARRANGEMENT
SECTIONS

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Appendix 2

Seaspan BMPs

seaspan
SHIPYARDS

Subject: ENVIRONMENTAL BEST MANAGEMENT PRACTICES INDEX AND AMENDMENTS

PURPOSE: To indicate contents and revision level of the Seaspan ULC Environmental Best Management Practices

BEST MANAGEMENT PRACTICES

BMP No.	Title	Issue	Issue Date	Page(s)	Revised Paragraph(s) Description
BMP-01	Hazardous Materials Management	D	April 15/13	1	General revision
BMP-02	Waste Management & Recycling	D	April 15/13	2	General revision
BMP-03	Spill Prevention & Response	D	April 15/13	1	General revision
BMP-04	Site Management (Yards, Shops & Vessels)	D	April 15/13	1	General revision
BMP-05	Wildlife Management	C	April 15/13	3	General revision
BMP-01	Hazardous Materials Management	E	Feb 20/17	2	General revision, Manager change, added more details
BMP-02	Waste Management & Recycling	E	Feb 20/17	2	General revision, Manager change, added more details
BMP-03	Spill Prevention & Response	E	Feb 20/17	2	General revision, Manager change, added more details
BMP-04	Site Management (Yards, Shops & Vessels)	E	Feb 20/17	2	General revision, Manager change, added more details
BMP-05	Wildlife Management	D	Jan 15/17	3	General revision, Manager change, added more details

Subject: ENVIRONMENTAL BEST MANAGEMENT PRACTICES INDEX AND AMENDMENTS

PURPOSE: To indicate contents and revision level of the Seaspan ULC Environmental Best Management Practices

BMP No.	Title	Issue	Issue Date	Page(s)	Revised Paragraph(s) Description

BMP - 01: Hazardous Materials Management

PURPOSE: Seaspan ULC comprises many different business units, locations, and vessels. All operational units have specific Standard Operating Procedures (SOPs) or equivalent operational procedures which incorporate environmental protective measures where appropriate. These BMPs are intended to compliment those procedures, provide guidance for employee and contractors, and outline the minimum requirements to meet Seaspan's environmental regulatory, due diligence, and Core Value commitments.

GENERAL

Hazardous materials commonly used throughout the company include oil, blast grit, adhesives, fuel, paint, solvent, batteries, compressed gas, cleaners, and resins. All hazardous materials must be handled, stored, labelled and transported in accordance with applicable regulations, standards and guidelines.

LABELLING

- All hazardous materials must be labelled in accordance with TDG Regulations and WHMIS.
- Labels should include: product name, safety precautions, date, vessel/project/job number and contact name (if applicable).
- Containers with mixed materials must have labels with all contents described.
- Empty hazardous materials drums or containers should identify as such where possible, (i.e. stored in a designated area, labelled "empty) to aid emergency responders in identifying hazards.

STORAGE

- Storage must be in accordance with the BC Fire Code; do not store excessive or unnecessary amounts of hazardous materials at work sites.
- Store materials in a protected, contained location away from drains, in designated hazardous materials lockers/storage containers or under cover where possible
- Secondary containment, as a guideline, should be:
  - 110% of the volume of the largest tank or container, or 10% of the total volume of all the containers, whichever is greater.
  - Regularly inspected for cracks, leaks, drains, water accumulation.
  - If rainwater collects inside secondary containment, inspect prior to draining or pumping to ensure there is no contamination. Contaminated water must be disposed of according to BC Hazardous Waste Regulation.
- Where practicable, containment berms should be present around all equipment that uses large amounts of oil.
- Store and maintain appropriate spill cleanup materials in a location near to the location of any hazardous materials
- Any hazardous materials considered incompatible must be stored at least 7 meters apart (review MSDS or Safety Data Sheets for chemical compatibility guidance). In general, corrosive/ reactive materials, or oxidizers should not be stored with flammable or combustible materials.

HANDLING AND TRANSPORTATION

- The movement of hazardous materials to and from the worksite is governed by TDG Regulations. The TDG Act defines the term "handling" as the "loading, unloading, packing or unpacking of dangerous goods in a means of containment or transport for the purposes of, in the course of or following transportation and includes storing them in the course of transportation". Workers involved with the above noted activities must trained

in the TDG aspects applicable to their assigned duties.

- The movement and handling of hazardous materials within the worksite is governed by WHMIS regulations. Workers involved in the handling of hazardous materials must be educated on the hazards and safe use of products in the workplace, take necessary steps to protect themselves and their co-workers and participate in identifying and controlling hazards.
- When performing activities such as the transfer of fueling or transfer of oil on or off a vessel, refer to and follow to specific procedures.
- The movement of hazardous materials by any means (i.e. forklifts, crane, golf cart or truck), onsite requires all loads to be secured and in appropriate containment.

USE

- MSDS or Safety Data Sheets must be available at the point of work of any hazardous material.
- Use the MSDS and Safety Data Sheets to determine hazards, disposal requirements, PPE, and the product-specific emergency response requirements.
- Always have a supply of appropriate spill response equipment/materials at the location of use.
- Mix paints and solvents in designated areas away from drains, ditches, piers and surface waters. Always use drip trays.
- All materials including paint must be stored away from heat, flame, sparks or other sources of ignition

DISPOSAL

- Dispose of hazardous wastes according to applicable municipal, regional, provincial and/or federal regulations (refer to BMP-02).

SPILL PREVENTION, RESPONSE & REPORTING

- Store and use hazardous materials away from drains and surface waters where possible.
- Respond to any releases immediately as per site-specific and vessel training.
- Report all spills directly to a Supervisor, Seaspan Dispatch or to an EMS Representative.

MONITORING & INSPECTION

- Monitor storage areas periodically to check that containment is intact, there are no leaks, and storage is adequate (i.e. stored in containers appropriate for the nature of material).
- Regularly inspect containers for leaks, deterioration and proper labelling. Ensure they are closed and secure. Transfer materials out of any containers that are leaking, corroded or otherwise deteriorating, into safe containers
- Check for appropriate labelling (i.e. product name, safety precautions, date, project/job number).
- Check for expired chemicals and waste materials – remove and dispose of appropriately.

TRAINING

- Train employees on proper hazardous materials management including specific procedures, WHMIS and TDG if applicable.
- Train employees on proper spill containment and cleanup. Ensure awareness of location all Spill Response equipment

ADDITIONAL INFORMATION

- *Environmental Management Act*, BC Hazardous Waste Regulation
- Transportation of Dangerous Goods, Transport Canada
- Workplace Hazardous Materials Information System (WHMIS), Health Canada, WorkSafe

BMP - 02: Waste Management and Recycling

PURPOSE: Seaspan ULC comprises many different business units, locations, and vessels. All operational units have specific Standard Operating Procedures (SOPs) or equivalent operational procedures which incorporate environmental protective measures where appropriate. These BMPs are intended to compliment those procedures, provide guidance for employee and contractors, and outline the minimum requirements to meet Seaspan's environmental regulatory, due diligence, and Core Value commitments.

GENERAL

Operations at Seaspan ULC business units - including vessels, generate a variety of waste streams:

- hazardous waste (i.e. asbestos, oil filters, waste paint and solvents, oily rags & absorbent pads);
- hazardous recyclables (i.e. waste oil, batteries);
- general landfill waste; and,
- common recyclable materials (i.e. cardboard, paper, plastic, glass, organics).
- Some waste materials that are not recyclable can be disposed of by a waste to energy process where available

Each business unit is responsible for collecting and disposing of all waste and recyclables that are generated from their activities, properties, and vessels that they are accountable for in accordance with the applicable regulations. Each business unit is also responsible for maintaining the waste documentation and disposal records.

HAZARDOUS WASTE & RECYCLABLES

LABELLING

- All hazardous waste must be labelled in accordance with TDG Regulations, BC Hazardous Waste Regulations (BC HWR), and WHMIS (where applicable).

TEMPORARY STORAGE

- Storage must be in accordance with the BC Fire Code and compatibility requirements; do not store new products with hazardous waste products.
- Segregate each hazardous waste stream and maintain adequate organization.
- Ensure containers used are appropriate for the type of waste (i.e. separate drums for waste oil, oil filters, antifreeze, oily rags, contaminated clean up pads, paint and solvents, spent grit).
- Inspect all valves and storage containers for rust or damage before use.
- Do not dilute or mix hazardous waste with other non-hazardous wastes.
- Store hazardous wastes in contained, designated, signed, temporary storage areas. This could include a paved, contained area, away from drains.
- Cover wastes containers to prevent exposure to weather.

SPILL PREVENTION, RESPONSE & REPORTING

- Store as per above, always have a supply of spill response equipment available near hazardous waste storage areas.
- Respond to any releases immediately as per site-specific and vessel spill response plans and training;
- Report all spills directly to a Supervisor, Seaspan Dispatch or to an EMS Representative.

BMP - 02: Waste Management and Recycling

MONITORING & INSPECTION

- Monitor hazardous waste areas periodically to check that containment is intact, there are no leaks, and storage is adequate (i.e. stored in containers appropriate for the nature of waste).
- Check for adequate labelling (i.e. waste name, safety precautions, date, vessel/project/job number, contact name – where applicable).

DISPOSAL

- Dispose of hazardous wastes according to applicable regulations (regional, provincial, federal). Use a registered hazardous waste transport contractor and a registered receiving facility.
- Maintain appropriate records for disposal of hazardous waste as per regulation (i.e. BC Government Hazardous Waste Manifest, Bills of Lading etc.).

GENERAL SOLID WASTE & RECYCLABLES

- Recyclable materials must be segregated from the general solid waste stream. Recyclables could include, but are not limited to: hard plastics, mixed paper, cardboard, glass and organics.
- Other solid waste such as scrap metal (i.e. aluminum, copper, wire, and steel), wood, rope, electronics, and soft plastics should also be segregated and recycled at an appropriate facility.
- Bin signage and employee instruction must be implemented to assist with segregation. Recycling areas should be conveniently located and easily identifiable.

TRAINING

- Ensure all employees handling hazardous waste have been trained on the appropriate procedures, including safety, labelling and emergency response.
- Educate all staff on importance of reducing waste and recycling materials.

DO NOT pour any waste liquids down floor, sink, outdoor storm drains or into the water.

DO NOT allow large quantities of waste materials to build up on site.

DO NOT abandon any quantity of waste materials whether liquids or solids.

BMP - 03: Spill Prevention and Response

PURPOSE: Seaspan ULC comprises many different business units, locations, and vessels. All operational units have specific Standard Operating Procedures (SOPs) or equivalent operational procedures which incorporate environmental protective measures where appropriate. These BMPs are intended to compliment those procedures, provide guidance for employee and contractors, and outline the minimum requirements to meet Seaspan's environmental regulatory, due diligence, and Core Value commitments.

GENERAL

Care for the Environment is a shared Core value and is the foundation of the Seaspan ULC Environmental Policy. While preventing spills is the priority for all Seaspan ULC operations, all facilities, vessels and projects, must be prepared to respond effectively in the event of an environmental incident or emergency.

SPILL PREVENTION

- Identify high risk activities using appropriate hazard assessments, including:
    - Risk registers
    - Project hazard assessments
    - Point of Work Safety Assessments (POWSA) cards or
    - Deck Level hazard Assessments (DLHA).
- Review SOP's and BMP's as they apply to the required work
- Ensure that training is available for workers requiring emergency response knowledge.
- Ensure that adequate spill response materials and equipment are available
- Follow all applicable requirements for the handling, storage and movement of hazardous materials including: labelling, secondary containment, load securement, disposal

SPILL RESPONSE

All Seaspan Business Unit facilities, vessels, and on site operations are require to have Spill and/or Emergency Response Plans, appropriate response equipment (based on the substances which could be spilled), and personnel trained to carry out the plans.

LEVELS OF SPILL RESPONSE

- **Level 1**

  Required for a minor spill incident that may easily be cleaned up by the person(s) creating or responding to it

- **Level 2**

  Requires Assistance from additional personnel (likely the spill response or ERT Team). All spills to water are considered at least a level 2 response

- **Level 3**

  Requires assistance beyond the capacity of site personnel. Assistance from external responders is required, for example, WCMRC, Canadian Coast Guard, Port Metro Vancouver Operations, Harbour Masters.

BASIC SPILL RESPONSE GUIDANCE

1. **BE SAFE – ASSESS THE RISK:**
   - Protect yourself and others
   - Use an exclusion zone – isolate the site
   - Estimate quantity spilled
   - If possible, identify the product
   - Recognize what you can and cannot do
2. **CALL FOR ASSISTANCE:**
   - Implement the Incident Command System – first on site is incident commander until someone more qualified arrives
   - Call in the spill to dispatch, safety department, Division Manager and Environmental Representative. Dispatch contacts Security and they will activate the ERT pager system
   - If further assistance is required, notify the Duty Port Captain
3. **STOP FLOW:**
   - If it is safe to do so
     - close valves, plug leaks, set the container upright and into containment
   - Consider possible fire or explosion hazard, vapours, exposure of skin to product
4. **CONTAIN SPILL:**
   - Block drains, culverts, scuppers, and other escape points.
   - Contain spill with sorbents, earth, sand or other non-combustible materials. Do not use detergents to disperse oil products.
5. **CLEAN UP & WASTE MANAGEMENT:**
   - Collect all used sorbent material using clean non-sparking tools.
   - Place all waste materials in labelled, sealed containers or plastic bags.
   - Use appropriate waste contractor for disposal do not place used materials in the garbage

ENSURE SPILL IS REPORTED:

- Report details of the spill verbally to a Supervisor, to the Safety Department and Environmental Representative (EMS Rep). Additional external reporting requirements may be necessary based on the details of the release.
- All external reporting is managed under Seaspan's communication policy and regulatory requirements
- It is the responsibility of the designated Incident Commander to ensure the internal spill report is accurately filled out and given to the Environmental Representative for input into the Seaspan ULC Spill Reporting System (SRS)
- Spills are tracked internally for trends with a goal of continual improvement.

BMP - 04: Site Management and Housekeeping (Yards, Shops & Vessels)

PURPOSE: Seaspan ULC comprises many different business units, locations, and vessels. All operational units have specific Standard Operating Procedures (SOPs) or equivalent operational procedures which incorporate environmental protective measures where appropriate. These BMPs are intended to compliment those procedures, provide guidance for employee and contractors, and outline the minimum requirements to meet Seaspan's environmental regulatory, due diligence, and Core Value commitments.

GENERAL

An organized and clean facility/work area can eliminate workplace hazards and reduce the potential for incidents affecting worker safety and environmental impacts.
Housekeeping is not just cleanliness; it includes keeping work areas neat and organized, maintaining floors free of slip and trip hazards and the removal of waste materials. The proper management of hazardous materials is crucial to avoiding a release to the environment.
Effective site management is an ongoing operation: it is not a hit-and-miss cleanup done occasionally and is the responsibility of every worker.

BENEFITS

- Improved hygienic conditions leading to improved health
- Lower worker exposures to hazardous substances (dust, vapour)
- Reduced handling to ease the flow of materials
- Decreased fire hazards
- Fewer tripping and slipping hazards in clutter-free and spill-free work areas
- Better control of tools and materials, including inventory and supplies
- More efficient equipment cleanup and maintenance
- More effective use of space
- Improved preventative maintenance
- Improved productivity
- Improved morale

WORK AREA

- Assess the work area and determine the most effective layout for your task and set it up properly before starting

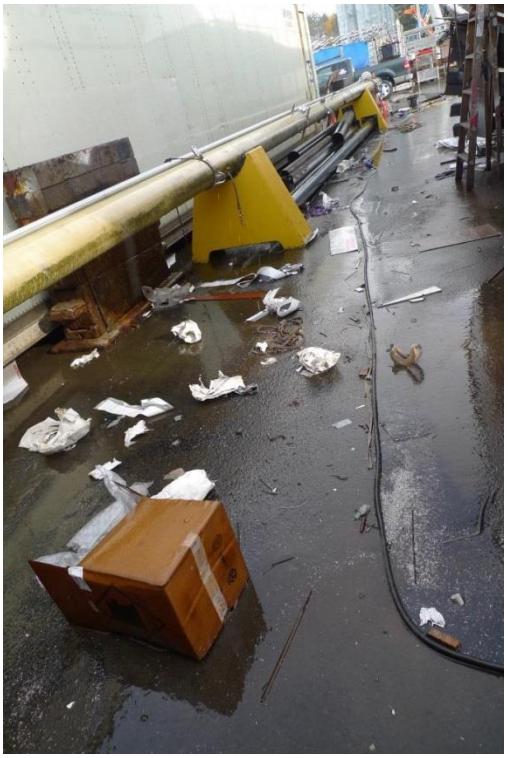
CLEAN UP

- Dust and dirt removal: remove frequently by sweeping or vacuuming
- Do not allow equipment or materials to clutter up the floor areas
- Maintain light fixtures for visibility, turn off when not in use
- Keep walkways around work areas clear and accessible, including cable management
- Waste disposal – make use of the recycling facilities provided, ensure that hazardous waste is handled according to regulations and Seaspan BMP 01 and 02
- Use drip pans and spill trays to prevent spills
- if spills occur, clean up immediately and report to your supervisor
- Keep flammable materials away from ignition sources and minimize the amount of material at hand

BMP - 04: Site Management and Housekeeping (Yards, Shops & Vessels)

STORAGE

- Store materials such that the risk of falling objects is minimized
- Do not use extra space for the random storage or dumping of materials and equipment.
- Regularly inspect/monitor work storage areas for unidentified or improperly stored materials.
- Ensure all containers (i.e. pails, drums, totes) are in good condition, have a clean exterior, and are appropriately labelled as per BMP-01 and BMP-02.
- Use signage to guide workers in organized storage of equipment, tools and materials.
- Keep materials away from drains and pathways to the ocean.
- Have sufficient and properly labelled waste and recycling containers.



Above – example of poor housekeeping

Above - disorganized work area

Above - well organized and tidy work area

BMP - 05: Wildlife Management

PURPOSE: Seaspan ULC comprises many different business units, locations, and vessels. All operational units have their own specific Standard Operating Procedures (SOPs) or equivalent operational procedures which incorporate environmental protective measures where appropriate. These BMPs are intended to compliment these standard procedures, and outline the basic requirements of environmental management across the company in line with Seaspan ULC Core Values.

GENERAL

Seaspan ULC daily operations and activities of all Business Units have the potential to affect the well-being and behaviour of local wildlife. Wildlife may use Seaspan ULC facilities and equipment for nesting / breeding, foraging, or migration / movement through the area. Species presence at a facility may vary between seasons. This BMP provides examples of typical wildlife species that may be present at Seaspan ULC facilities, outlines key points for managing interactions between wildlife and Seaspan ULC activities, and describes where to find further information; it also reflects Seaspan ULC's Core Value of *care for the environment.*

If you are unsure of how to handle any situation, please contact your Environment Representative or Coordinator for guidance.

Examples of wildlife that may be encountered at Seaspan ULC operational areas include:

Birds - Common	Ravens, starlings, rock pigeons (domestic pigeons), crows, gulls and songbirds
Birds - Migratory	Ducks, geese, herons, sandpipers, gulls, and many songbirds
Birds - Raptors	Hawks, falcons, eagles, and ospreys
Mammals	Mice, rats, raccoons, beavers, skunks, deer, marine mammals (harbour seals, otters)
Amphibians	Bullfrogs, green frogs, pacific chorus frogs (tree frogs)
Species at Risk	Peregrine falcon, great blue heron, double-crested cormorant, barn swallow, surf scoter, band-tailed pigeon, sea otter, killer whale

LEGISLATION

Unless exempted by the Act, by regulation or by a permit, a person commits an offense if:

- Under the BC *Wildlife Act* (1996), they:
  - Hunt, take, trap, wound, kill, or attempt to capture wildlife.
  - Possess, take, injure, molest, or destroy a bird, its eggs, or a nest occupied by a bird or its eggs.
  - Possess, take, injure, molest, or destroy the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl at any time, whether occupied or not.
  - Disturb, molest, or destroy a beaver house, den or dam.
- Under the federal *Migratory Birds Convention Act, 1994,* they kill, capture, injure, take, or disturb migratory birds, or damage, destroy, remove, or disturb their nests.
- Under the federal *Species at Risk Act* (2002), they kill, harm, harass, capture or take an individual, or damage or destroy the residence or defined critical habitat, of a wildlife species that is listed as extirpated, endangered species or threatened. The Act typically only applies on federal land with the exception of marine and aquatic species, but can

also be applied to provincial and private land under certain circumstances.

- Under the federal *Fisheries Act* Marine Mammal Regulations (SOR/93-56), they disturb a marine mammal.

The prohibitions above do not apply to rats, house mice (old world mice), European cottontails, opossums, grey squirrels, bullfrogs, green frogs, crows (excluding ravens), domestic pigeons, house sparrows, starlings, or brown-headed cowbirds.

WORKER GUIDANCE

- Report to your Supervisor, Business Unit EMS Representative, Seaspan ULC Environmental Manager, and/or EGD Environmental Services (VSL only) if:
  - Contravention of any of the guidance provided below has occurred or is required;
  - Abnormal wildlife interactions are observed; or
  - There is uncertainty regarding the applicability of any of the guidance provided below.

All Wildlife

- Do not harass wildlife. Minimize disturbance to wildlife encountered, whenever possible.
- Exclusion of wildlife from the workplace is preferred to avoid unnecessary interaction or harm.
- Do not take, trap, wound, kill, or attempt to capture wildlife species.
- Store and dispose of food waste and garbage so it does not attract nuisance animals.
- Do not feed wildlife.
- Injured wildlife can only be handled under the direction of a local animal rehabilitation center, BC Conservation Officer, or EGD Environmental Services (VSL only).

Birds

- Do not possess, take, injure, molest, or destroy a bird or its egg, or a nest that is occupied by a bird or its egg (unless the species is exempt under the BC *Wildlife Act*).
- Deter nuisance species from nesting by installing chicken wire, or spike belts; see page 3.
- Do not clear vegetation, demolish buildings, or conduct any works that could destroy active bird nests during the bird nesting window from April 1 to July 31.
- Do not remove, destroy, or disturb the nest of an eagle, peregrine falcon, osprey or heron at any time of the year, whether occupied or not.

Amphibians

- Do not drain or infill any ditch, pond, or other semi-permanent or permanent waterbody that could provide habitat for amphibians.
- Do not molest, remove, disturb or destroy amphibian egg masses.

Mammals

- Raccoons, beavers, and skunks are classified as furbearers under the BC *Wildlife Act* and may be trapped in-season by a registered trapper.
- Prevent raccoons from setting up dens in work areas; ensure areas are secure with no access to interior spaces.

- Prevent skunks from denning or digging under buildings by sealing off all foundation openings with heavy wire mesh, sheet metal or concrete.
- Do not disturb, molest, or destroy a beaver house, den or dam.
- Contact a licensed pest control company for assistance with exclusion.

Marine Mammals

- Do not disturb any marine mammal.
- Notify the BC Marine Mammal Response Network if any marine mammal is observed in distress. http://www.straitwatch.org/BCMMRN.html or 1-800-465-4336 (24 hours a day, 7 days a week).

Species Exempt under the BC *Wildlife Act*

- If capture or killing of a species exempted under the BC *Wildlife Act* is required, it shall abide by provincial laws regarding the humane treatment of animals, and be undertaken under the direction of a licensed pest control company or other qualified professional.

MANAGEMENT GUIDANCE

- If contravention of any of the guidance provided in this BMP is required or has occurred, or if abnormal wildlife interactions are reported, contact a qualified environmental professional for further information and guidance on potential permit requirements.

FURTHER INFORMATION

- BC Wildlife Rescue Association (Lower Mainland): http://www.wildliferescue.ca
- BC SPCA Wild Animal Rehabilitation Center (Vancouver Island): http://www.wildarc.com/
- Bird Exclusion Resources - Bird Barrier, Humane Bird Control Services: http://www.birdbarrier.com/
- Pest Control Services - Canadian Pest Control Ltd. (Lower Mainland and Vancouver Island): http://www.canadianpest.com/
- BC Ministry of Environment - Wildlife Management: http://www.env.gov.bc.ca/lower-mainland/wildlife/index.htm
- BC Ministry of Environment - Guidelines and Best Management Practices: http://www.env.gov.bc.ca/wld/BMP/bmpintro.html
- BC Conservation Officer Service: http://www.env.gov.bc.ca/cos/index.htm
- Species at Risk Public Registry: http://www.sararegistry.gc.ca/default_e.cfm
- Golder Associates Ltd. (for qualified environmental professionals – or other equivalent vendor): Vancouver (604-296-4200), Victoria (250-881-7372)

Appendix 3

Spill Response Plan

seaspan SHIPYARDS

BRITISH COLUMBIA

Environmental Management Act

SPILL REPORTING REGULATION

B.C. Reg. 187/2017

Deposited October 13, 2017 and effective October 30, 2017
Last amended December 5, 2017 by B.C. Reg. 221/2017

Consolidated Regulations of British Columbia

This is an unofficial consolidation.

Consolidation current to January 11, 2018

B.C. Reg. 187/2017 (M329/2017), deposited October 13, 2017 and effective October 30, 2017, is made under the *Environmental Management Act*, S.B.C. 2003, c. 53, ss. 92.1 and 139.

This consolidation includes any amendments deposited and in force as of the currency date at the bottom of each page. See the end of this regulation for any amendments deposited but not in force as of the currency date. Any amendments deposited after the currency date are listed in the B.C. Regulations Bulletins. All amendments to this regulation are listed in the *Index of B.C. Regulations*. Regulations Bulletins and the Index are available online at www.bclaws.ca.

See the User Guide for more information about the *Consolidated Regulations of British Columbia*. The User Guide and the *Consolidated Regulations of British Columbia* are available online at www.bclaws.ca.

Prepared by:
Office of Legislative Counsel
Ministry of Attorney General
Victoria, B.C.

Environmental Management Act

SPILL REPORTING REGULATION

B.C. Reg. 187/2017

Contents

Environmental Management Act

SPILL REPORTING REGULATION

B.C. Reg. 187/2017

Definitions

1 In this regulation:

"Act" means the *Environmental Management Act*;

"body of water" includes

(a) a stream, as defined in the *Water Sustainability Act*,

(b) an aquifer, as defined in the *Water Sustainability Act*,

(c) fish habitat, as defined in the Water Sustainability Regulation, B.C. Reg. 36/2016, and

(d) any of the following that could drain or empty directly into a body of water:

(i) a naturally formed pool of water other than one referred to in paragraph (a), (b) or (c);

(ii) a ditch;

"contact information", in relation to a person, means the address, telephone number and, if any, email address of the person;

"emergency response completion date", in relation to a spill, has the meaning given in section 8 *[emergency response completion date]*;

"listed quantity", in relation to a listed substance, means the quantity listed in Column 2 of the Schedule opposite the listed substance or, if more than one quantity is listed, the highest of those quantities;

"listed substance" means a substance listed in Column 1 of the Schedule;

"Provincial Emergency Program" has the same meaning as in the *Emergency Program Act*.

Reportable spills

2 This regulation applies for the purposes of section 91.2 (1) (a) *[responsible persons – spill response]* of the Act in relation to a spill of a listed substance, other than natural gas, if

(a) the spill enters, or is likely to enter, a body of water, or

(b) the quantity of the substance spilled is, or is likely to be, equal to or greater than the listed quantity for the listed substance.

Reportable spills of natural gas

3 This regulation applies for the purposes of section 91.2 (1) (a) *[responsible persons – spill response]* of the Act in relation to a spill of natural gas if

(a) the spill is caused by a break in a pipeline or fitting operated above 100 psi that results in a sudden and uncontrolled release of natural gas, and

(b) the quantity of natural gas spilled is, or is likely to be, equal to or greater than the listed quantity for natural gas.

Initial report

4 (1) If a spill occurs or is at imminent risk of occurring, a responsible person must ensure that the actual or potential spill is immediately reported to the Provincial Emergency Program by calling 1-800-663-3456.

(2) A report under this section must include, to the extent practicable, the following information:

(a) the contact information for

(i) the individual making the report,

(ii) the responsible person in relation to the spill, and

(iii) the owner of the substance spilled;

(b) the date and time of the spill;

(c) the location of the spill site;

(d) a description of the spill site and the surrounding area;

(e) a description of the source of the spill;

(f) the type and quantity of the substance spilled;

(g) a description of the circumstances, cause and adverse effects of the spill;

(h) details of action taken or proposed to comply with section 91.2 (2) *[responsible persons – spill response]* of the Act;

(i) the names of the government, federal government, local government and first nation government agencies at the spill site;

(j) the names of other persons or government, federal government, local government or first nation government agencies advised about the spill.

Updates to minister

5 (1) A responsible person for a spill that occurs on or after October 30, 2018 must, until the emergency response completion date, submit written reports on the spill to the minister in accordance with subsection (2).

(2) A report under subsection (1) must be made

(a) as soon as practicable on request of the minister,

(b) at least once every 30 days after the date the spill began, and

(c) at any time the responsible person has reason to believe that information previously reported by the responsible person under section 4 or this section was or has become inaccurate or incomplete.

(3) A report under this section must be made in the manner and form specified by the minister and must include, to the extent practicable, the information set out in section 6 (2).

End-of-spill report

6 (1) The responsible person for a spill that occurs on or after October 30, 2018 must submit a written report on the spill to the minister within 30 days after the emergency response completion date for that spill.

(2) A report under this section must be made in the manner and form specified by the minister and must include the following information:

(a) the contact information of

(i) the responsible person, and

(ii) the owner of the substance spilled;

(b) the date, time and duration of the spill;

(c) the location of the spill site, which must be specified by

(i) its address, if any, and

(ii) its latitude and longitude;

(d) a description of the spill site and sites affected by the spill;

(e) a description of the source of the spill;

(f) the type and quantity of the substance spilled;

(g) a description of the circumstances, cause and adverse effects of the spill, including, without limitation, a description of the following:

(i) the activity during which the spill occurred (e.g., transportation, transfer of cargo, fuelling, cleaning, maintenance);

(ii) the incident leading to the spill (e.g., tank rupture, overfill, collision, rollover, derailment, fire, explosion);

(iii) the underlying cause of the spill (e.g., human error, external conditions, organizational or management failure);

(iv) the adverse effects of the spill to human health, which must specify

(A) the number of injuries,

(B) the number of fatalities, and

(C) the number of evacuees;

(v) the adverse effects of the spill to the environment and infrastructure at the spill site and the area surrounding the spill, which description must specify

(A) the size of the area adversely affected by the spill,

(B) the biological and other resources adversely affected by the spill, including, without limitation,

(I) bodies of water,

(II) flora and fauna, and

(III) animal, fish and plant habitat;

(h) details of action taken to comply with section 91.2 *[responsible persons – spill response]* of the Act;

(i) how and where waste from the spill was disposed of;

(j) a copy of data from and reports of sampling, testing, monitoring and assessing carried out during spill response actions;

(k) a map of the spill site and the area surrounding the spill and photographs of the spill;

(l) the names of agencies on the scene;

(m) the names of other persons or agencies advised about the spill.

Lessons-learned report

7 (1) A director may order a responsible person in relation to a spill of a listed substance to submit a written report on the spill to the director.

(2) An order under subsection (1) must be made in writing and within 6 months after the emergency response completion date for the spill.

(3) A responsible person to whom an order under subsection (1) is directed must submit the report to the director in the manner and form specified by the director and must include

(a) a description of the effectiveness of the spill response actions,

(b) a description of actions taken to prevent future spills and improve response to future spills,

(c) if the responsible person is a regulated person,

(i) a description of any changes that the person intends to make to the person's spill contingency plan to improve response to future spills,

(ii) if the spill occurred in a geographic response area, a description of any changes that the person considers should be made to the related geographic response plan to improve response to future spills, and

(iii) if spill response actions were carried out by a PRO, a description of any changes that the person considers should be made to the PRO's area response plan to improve response to future spills, and

(d) responses to any specific questions the director asks in the order.

Emergency response completion date

8 For the purposes of this regulation, the emergency response completion date for a spill is the date on which all of the following criteria are met:

(a) the incident command post is disestablished;

(b) the source of the spill is under control and is neither spilling nor at imminent risk of spilling;

(c) emergency actions to stabilize, contain and remove the spill have been taken;

(d) the waste removed from the spill site has been

(i) received at a facility for disposal, or

(ii) received for transportation to a facility for disposal;

(e) if applicable, all notices respecting evacuation from the spill site have expired or been rescinded;

(f) all equipment, personnel and other resources used in emergency spill response actions have been removed from the spill site, other than equipment, personnel or other resources required for

(i) sampling, testing, monitoring or assessing at the spill site, or

(ii) recovery or restoration of the spill site.

Application to oil and gas permit holders

9 The following sections do not apply to a person who holds a permit to carry out an oil or gas activity to which the Emergency Management Regulation, B.C. Reg. 204/2013, applies:

(a) section 5 *[updates to minister]*;

(b) section 6 *[end-of-spill report]*;

(c) section 7 *[lessons-learned report]*.

SCHEDULE

[am. B.C. Reg. 221/2017.]

Definitions

1 In this Schedule, **"Federal Regulations"** means the Transportation of Dangerous Goods Regulations made under the *Transportation of Dangerous Goods Act, 1992* (Canada).

Item	Column 1 **Substances**	Column 2 **Quantity**
1	Class 1, Explosives as defined in section 2.9 of the Federal Regulations	50 kg, or less if the substance poses a danger to public safety
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

Item	Column 1 **Substances**	Column 2 **Quantity**
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, 2015 (Canada)
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 hydrocarbon 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 that contains a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
20	PCB wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L

Item	Column 1 **Substances**	Column 2 **Quantity**
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 to 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
25	natural gas	10 kg