PORT of vancouver | Vancouver Fraser Port Authority

2021 marine firefighting resource assessment study

Waterside fire incident resources

Vancouver Fraser Port Authority
Frank Dodich & Associates Ltd.

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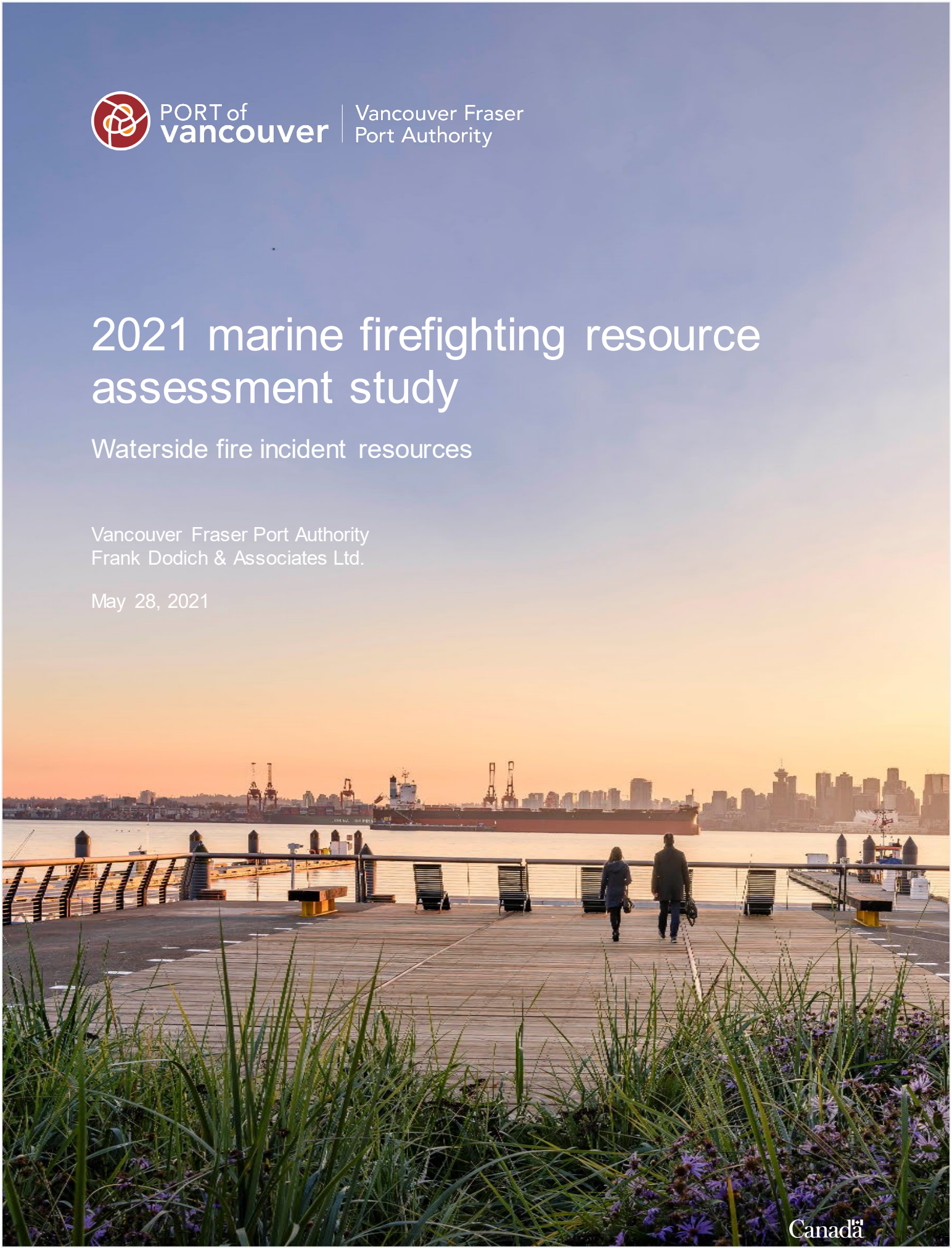

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Contents

Acknowledgements 1
Vancouver Fraser Port Authority 2
Who we are 2
What we do 2
Executive summary 2
Marine firefighting resource assessment study 3
Project scope 3
Research methodology 3
Key stakeholders 4
Marine fire hazards and risks 4
Types of hazards 4
Types of risks 4
Marine fire incident response 5
Types of fire incident resources 5
FiFi resource classifications[1] 5
FiFi classified vessels in port authority jurisdiction 6
Non-FiFi classified vessels in port authority jurisdiction 8
Vessel onboard firefighting tools and equipment 9
Wreck recovery/removal equipment 10
Demolition equipment 11
Environmental equipment 11
Stakeholder crew firefighting training 11
Future firefighting resource acquisition 12
Future opportunities for development, coordination, and collaboration 12
Final Summary 13
Appendix A – Key stakeholders 13
Appendix A2 – List of tug and barge stakeholders 17
Appendix B – Port authority marine firefighting resource assessment questionnaire 18
Appendix C – Port authority marine firefighting resource assessment 19
Appendix D – Resource mapping 20
Appendix D1 – Waypoint map 21
Appendix D2 – Burrard Inlet waypoints 22
Appendix D3 – English Bay waypoint 23
Appendix D4 – Fraser River waypoints 24
Appendix D5 – Fraser River, YVR north arm 25
Appendix D6 – Fraser River, New Westminster/Surrey 26
Appendix D7 – Fraser River, Port Coquitlam/Maple Ridge 27

Appendix D8 – Roberts Bank/Delta Port 28
Appendix E – Resource response times 29
Appendix F – Resource equipment by incident type 30
Appendix G – Resource equipment by stakeholder 31
Appendix H – FiFi classified vessels in the port authority jurisdiction 32
Appendix I – Marine firefighting and salvage response timeframes 41

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Vancouver Fraser Port Authority

We enable Canada's trade objectives, ensuring safety, environmental protection and consideration for local communities.

Who we are

The Vancouver Fraser Port Authority is the federal agency responsible for the stewardship of the Port of Vancouver. Like all Canada Port Authorities, the port authority is accountable to the federal minister of transport, and operates pursuant to the *Canada Marine Act* with a mandate to enable Canada's trade through the Port of Vancouver, while protecting the environment, and considering local communities. The port authority is structured as a non-share corporation, is financially self-sufficient, and does not rely on tax dollars for operations. Revenues come from the port terminals and tenants who lease port lands, and from port users who pay various fees, such as harbour dues. Profits are reinvested in port infrastructure.

The port authority has control over the use of port land and water, which includes more than 16,000 hectares of water, over 1,500 hectares of land, and approximately 350 kilometers of shoreline. Located on the southwest coast of British Columbia in Canada, the Port of Vancouver extends from Roberts Bank and the Fraser River up to an including Burrard Inlet, bordering 16 municipalities and intersecting the traditional territories of several Coast Salish First Nations.

What we do

The Port of Vancouver moves the most diverse range of cargo of any port in North America, operating across five business sectors: automobiles, bulk, breakbulk, container, and cruise. It is home to 30 major marine cargo terminals, three Class 1 railroads, and a full range of facilities and services for the international shipping community. In 2020, the port moved 145 million tonnes of cargo, up 1% from the previous year's 144 million tonnes. Of that cargo, 79% was classified as foreign cargo and 21% as domestic cargo. As Canada's largest port, and the third largest in North America in cargo volumes, the port enables the trade of approximately $240 billion in goods with more than 170 world economies. The port's activities sustain 115,300 jobs, $7 billion in wages, and $11.9 billion in GDP across Canada.

From an emergency management perspective, the port authority's role is to facilitate the safe and efficient movement of trade. As such, the port authority works closely with port community stakeholders as well as local, provincial, and federal partners to ensure measures are in place to respond appropriately to emergencies, in order to reduce the impact on the port authority's mandate.

Executive summary

Fires on the water, whether underway, at anchor, or at berth pose an immense risk to life, property, and the environment. Fire related marine incidents may be caused by, but not limited to, collisions, arson, workplace accidents, carelessness, terrorism, poor housekeeping, or poor loading/unloading practices. Modernization of vessels, new vessel construction methods, international and federal operating regulations, and an improved work culture has reduced the frequency of on-board fire incidents.

The port authority has undertaken a series of proactive initiatives to enhance emergency marine response within their jurisdiction. This study looks at marine firefighting capabilities to identify regional civilian resources available to respond to ship and marine infrastructure fires. Engaging vessels working within port authority jurisdiction to assist with fire incidents utilizing on-board equipment, may assist in minimizing potential loss of life, reduce property damage, and lessen environmental damage in the marine community. These vessels include barges equipped with ramps, grapples or cranes, large capacity commercial dewatering pumps, and other specialized equipment.

To minimize the effects of a marine based fire incident, external marine firefighting equipment has been developed and installed on a variety of vessels. These include specialized professional firefighting vessels, working vessels such as tugs, off shore supply vessels, and other types of work boats in accordance with classifying societies. The FiFi (Fire Fighting) classification system allows for easy identification of firefighting capabilities of vessels.

Professional marine firefighting vessels within port authority jurisdiction are limited to two non-classified FiFi fireboats belonging to Vancouver Fire Rescue Services (VFRS). These vessels provide immediate response protection in Burrard Inlet from the Second Narrows crossing to the Lions Gate Bridge, extending to English Bay and False Creek. Marine fire response to the Fraser River is slower and dependent on many factors including weather, vessel availability, and time of day in which the incident occurs. Many of the fire departments bordering on port authority jurisdiction have mutual aid response agreements in place, however, at the time of this study only the District of North Vancouver, the City of North Vancouver, and West Vancouver fire departments have a Marine Fire Response Agreement with VFRS. All other fire departments bordering the port authority jurisdiction pay a fee for marine fire response service.

Unifying non-professional firefighting merchant marine vessels with, and under the command and care of local fire departments, may bolster fire protection capabilities within the region and speed fire suppression response to areas deficient of a professional marine firefighting team. Utilizing the local marine industry will require organization, coordination, and training with land-based fire services and the port authority.

Developing a network of public, private and municipal partners, working together will enhance emergency marine response and infrastructure recovery while decreasing potential environmental impact.

Marine firefighting resource assessment study

Project scope

The purpose of this project is to research and provide an overview of water-based marine firefighting, salvage, and emergency towing resources available within the port authority jurisdiction (including Burrard Inlet, the Fraser River, and Roberts Bank). The scope of this project is limited to water-based resources such as tugs, marine firefighting, and salvage assets. Land-based fire incidents within the aforementioned facilities are beyond the scope of this report.

The secondary purpose of this project is to identify future emergency response development opportunities that evolve as a result of the primary research.

This research will create a stronger understanding of marine firefighting and emergency response capabilities, building safer working and living communities.

Research methodology

Stakeholders were contacted electronically by the port authority and captain Shri Madiwal, director, marine operations and safety, harbor master, requesting participation in the marine firefighting capacity study and introducing Frank Dodich & Associates as the research consultant.

An introductory email was sent to all stakeholders by the consultant, including a questionnaire containing seven resource queries relating to marine firefighting (see appendix A).

A 30-minute telephone interview was conducted between each stakeholder and the consultant reviewing the resource queries to determine firefighting capabilities. A fillable PDF asset form identifying all water-

based resources that may be used in a marine fire incident response was shared electronically with all shareholders.

Key stakeholders

Twenty-three (23) tug and barge operator stakeholders were identified, based or working within the port authority jurisdiction. The services offered by these companies ranged from towing, docking, construction, and transportation of people or equipment.

Stakeholder response to this study varied across the information spectrum as indicated below:

- 100% of Stakeholders were contacted via email and telephone
  - 61% (14/23) of stakeholders performed telephone interviews
    - 43% (6/14) of those surveyed via telephone provided factual fleet or equipment information regarding firefighting or incident capabilities
  - 4% (1/23) of stakeholders emailed a response to the survey questionnaire, but did not perform a telephone interview or provide factual fleet information
  - 4% (1/23) of stakeholders provided factual fleet information but did not perform a telephone interview or answer the survey
  - 31% (7/23) of stakeholders did not respond with information

Marine fire hazards and risks

Types of hazards

There are many lease holders operating on port authority lands, including four container terminals, 22 bulk terminals, two break-bulk terminals, two automobile terminals, and one cruise ship terminal. As such, the potential for marine-based fires on vessels navigating to or from, and berthed at these facilities exist.

Further entities presenting marine based fire risks are shipbuilders, vessel repairers and wooden wharf facilities operating within the port authority jurisdiction and an aggregate of small and large pleasure craft traversing the waterways.

The following are examples of marine based fires in the Lower Mainland where collective resources were called upon:

- March 6, 1945 – The “Greenhill Park” freighter caught fire whilst berthed in Burrard Inlet
- May 7, 1991 – Kitsilano Coast Guard dock fire, False Creek
- August 10, 2018 – Schnitzer Steel Recycling barge fire, Fraser River
- October 10, 2018 – Schnitzer Steel Recycling barge fire, Fraser River
- December 12, 2018 – Barge fire on Fraser River in Mission
- September 18, 2020 – Pier Park fire, New Westminster

Types of risks

Fires on the water, whether underway, at anchor, or at berth pose an immense risk to life, property, and the environment. These marine-related incidents may be caused by, but not limited to, poor unloading/loading practices, meager housekeeping practices, collisions, terrorism, arson, workplace accidents, or carelessness. New vessel construction methods, federal regulations, international operating

regulations[1], and an improved health and safety culture, has reduced the frequency of on-board fire incidents.

Marine fire incident response

Types of fire incident resources

Regardless of whether a non-professional fire response resource is FiFi classified or not, there are inherent problems sending untrained and under equipped resources to a fire related incident. Issues surrounding proper training, personal protective equipment (PPE) including self-contained breathing apparatus (SCBA), smoke filled environments limiting breathing and visibility, communication with the incident command post, and/or local fire departments and other responders may limit their participation and effectiveness supporting incident operations.

Preplanning, proper stakeholder/first responder coordination, communication and training can minimize the aforementioned problems, making the utilization of non-professional firefighting resources beneficial to all concerned.

FiFi resource classifications[1]

FiFi rules specify requirements for vessel capabilities of fighting fire onboard ships and both on and off shore structures. Requirements vary slightly between the issuing classification societies such as Det Norske Veritas (DNV), Lloyd's Register of Ships (Lloyd's), American Bureau of Shipping (ABS), China Classification Society (CCS), Russian Maritime Register of Shipping (RMRS), and Bureau Veritas (BV).

Non-classed FiFi vessels (FiFi 0)

Any type of vessel with an external FiFi system but without any formal classification will be covered under this heading. Normally capacities between 37 cubic meters per hour (m3/h) (136 imperial gallons per minute [gpm]) to 2399 m3/h (8795 gpm) are used. Fire water for the monitors may be supplied by one or more fire pumps, driven by dedicated diesel engines, PTO gearboxes, or electrically driven pumps. The monitors can be either remote controlled (recommended) or manual.

Fi-Fi I

The class notation FiFi I means that the vessel is equipped with a minimum of two fire monitors, able to throw water to a minimum distance of 120 meters from the vessel and to a minimum height of 45 meters. The total water capacity of the pump(s) shall not be less than 2400 m3/h (8799 gpm). The monitors are to be remote controlled from the wheelhouse. Since the fire pumps and related equipment are located in the engine room these are also normally remote controlled. FiFi I Systems are normally installed on escort tugs, firefighting vessels, etc.

Fi-Fi II

The class notation FiFi II means that the vessel is equipped with a minimum of two fire monitors, Det Norske Veritas (DNV) rules able to throw water to a minimum distance of 180 meters from the vessel and to a height of minimum 110 meters, or for other classification for the vessel (e.g., LRS, ABS, R.I.N.A, BV, GL), the vessel is to be equipped with three or four fire monitors, able to throw water to a minimum distance of 150 meters from the vessel and to a height of minimum 70 meters, Whatever configuration is chosen for the FIFI II vessel, the total water capacity shall be not less than 7200 m3/h (26,396 gpm). The monitors are to be remote controlled from the wheelhouse. Since the fire pumps and related equipment are located in the engine room these are also normally remote controlled. FiFi II systems are normally installed on offshore vessels like anchor-handling tug/supply vessels, or other specialized vessels.

[1] Inclusive of the International Maritime Organization (IMO) and the International Convention for the Safety of Life at Sea (SOLAS).

Fi-Fi III

The class notation FiFi III means that the vessel is to be equipped with minimum three fire monitors, (DNV rules) able to throw water to a minimum distance of 180 meters from the vessel and to a height of minimum 110 meters. Other classifications for the vessel (e.g., LRS, ABS, R.I.N.A, BV, GL), requires the vessel to be equipped with four fire monitors, able to throw water to a minimum distance of 150 meters from the vessel, and to a height of minimum 70 meters. Whatever configuration is chosen for the FIFI III vessel, the total water capacity shall be not less than 9600 m3/h (35,195 gpm). The monitors are to be remote controlled from the wheelhouse since the fire pumps and related equipment are located in the engine room these are also normally remote controlled. FiFi III systems are not so common, but are normally installed on larger offshore vessels, or other specialized vessels.

Classification	FiFi 0	FiFi 1	FiFi 2			FiFi 3	
No. of Monitors	1+	2	2 (DNV)	3	4	3	4
Monitor Capacity (m3/h)		1200	3600	2400	1800	3200	2400/2500
No. of Pumps	1+	1 - 2	2	2 - 4		2	2 - 4
Total Pump Capacity (m3/h)	<2399	2400	7200	7200		9600	9600/10000
Throw Length (m)		120	180	150		180 (From Bow)	150
Throw Height (m)		45	110 at 70m	70		110 at 70m	70

While FiFi classified vessels provide superior fire suppression capabilities, their effectiveness varies depending upon what type of fire incident they are responding to. Larger FiFi class II and III vessels will provide coverage for almost all applications including fully laden cargo vessels such as container ships, ro-ro's or tankers and major land-based incidents, whereas smaller FiFi class 0 and I may be better suited to smaller vessels and some land-based fires, and may have problems with fire streams reaching higher fire loads.

FiFi classified vessels in port authority jurisdiction

There are 12 FiFi classified vessels that were reported during this assessment study that may be relied upon to respond and assist during a marine-related fire incident within the port authority jurisdiction. Ten vessels are FiFi 1 classified and two are FiFi 0 classified. Eleven (11) vessels are based in Burrard Inlet and one (1) vessel is based in the Deltaport Tug Basin, Roberts Bank Way, Delta. The Seaspan Kestrel and the Seaspan Osprey are rotated very three months between Burrard Inlet and Roberts Bank.

No. Fifi classified vessels	FiFi 0	FiFi 1	FiFi 2	FiFi 3
Burrard Inlet (11)	2	9	0	0
Fraser River (0)	0	0	0	0
Roberts Bank (1)	0	1	0	0

The ability for these vessels to respond to an incident is dependent on but not limited to:

- vessel location
- crew availability
- vessel commitment at the time of the incident

Stakeholders voiced that due to company policy or insurance limitations and liability concerns, the deployment of their services would only be under the command and care of the fire department having jurisdiction. Exceptions to this would be where there was a scenario that included an immediate danger to life or health. Stakeholders surveyed varied on their opinion of whether professional firefighters were required onboard their vessels to direct firefighting operations or if the master of the vessel would conduct firefighting operations as directed via voice communication with on scene fire commanders. The

preference of most stakeholders was to have professional firefighters onboard both FiFi and non-FiFi classified vessels.

There were no reported FiFi classified vessels based in the Fraser River. Vessels working in Burrard Inlet would have an average response time of 3.5 hours to Fraser Surrrey Docks and 2.3 hours to Roberts Bank, providing they left thier home base without delay and traveled at their reported top cruising speed. Vessels working at Roberts Bank would have an average response time of 2.0 hours to Fraser Surrey Docks.

FiFi Vessels Travel Route	Average Travel Time
Burrard Inlet to Fraser Surrey Docks	3.0 Hours
Burrard Inlet to Roberts Bank	2.3 Hours
Roberts Bank to Fraser Surrey Docks	2.0 Hours

While the smaller vessels have a shallower draft making for better manouverabilty and stability in river currents, the smaller river vessels are not often equipped to fight marine-based fires due to the space required to house FiFi equipment, both above and below decks. Smaller vessels machine rooms do not have the space to house fire pumps, nor the deck space to install fire monitors. Fire hose manifolds are not available on the smaller vessels working in the river. Larger harbour tugs have adequate space that allows for the installation of pumps and firefighting equipment.

FiFi classified vessels in Port Authority Jurisdiction (see appendix G for Vessel Specifications):

- Ocean Group
  - Ocean Georgie Bain (FiFi 0)
  - Ocean Granville (FiFi 1)
  - Ocean Kitsilano (FiFi 1)
  - Ocean Stevns (FiFi 0)
- SAAM Towage
  - SST Grizzly (Foam capable) (FiFi 1)
  - SST Orca (Foam capable) (FiFi 1)
- Seaspan ULC
  - Seaspan Harrier (FiFi 1)
  - Seaspan Kestral (FiFi 1)
  - Seaspan Osprey (FiFi 1)
  - Seaspan Eagle (FiFi 1)
  - Seaspan Raptor (FiFi 1)
  - Seaspan Raven (FiFi 1)
- The Vancouver Fire Rescue Services (VFRS)
  - Fireboat 1 (2016) based in Burrard Inlet (FiFi 0)
  - Fireboat 2 (2018) based in False Creek (FiFi 0)
    - Both vessels have a pumping capacity of 2045.75 m3/h (7500 GPM). Both vessels are considered a FiFi 0 classification.
  - VFRS Fireboat 4 (1992) is in service as a spare boat
    - Fireboat 4 has a pumping capacity of 545 m3/h (2000 GPM)
    - Fireboat 4 would be classified as “Type IV” in accordance with NFPA 1925

While the VFRS fireboats are non-classifed FiFi 0 vessels but are classified as “Type III” by the National Fire Protection Association (NFPA) in accordance with NFPA1925, *Standard on Marine Fire-fighting Vessels*[2].

Non-FiFi classified vessels in port authority jurisdiction

Tugboats

There are 46 non-FiFi classified tugboats that were reported during this assessment study that may be relied upon to respond and assist during a marine-related fire incident.

The ability for these vessels to respond to an incident is dependent on, but not limited to:

- vessel location
- crew availability
- vessel commitment at the time of the incident

All tugboats are required by Transport Canada to be equipped with fire suppression equipment. The type, size, and quantity of fire related equipment is based on the size of the vessel. The size and types of vessels working within the jurisdiction of the port authority varies, and as such, the type of firefighting equipment also varies. Most stakeholders did not report dedicated fire pumps on their vessels. Those that did specified fire pumps ranging from 7400 gph (33.64 m3/h) to 9600 gph (43.64 m3/h). In accordance with FiFi classification tables, some of these vessels fall in the FiFi 0 classification with respect to pump capacity only.

All vessels carry 1.5” fire hoses of various types that may or may not be compatible with local fire departments. All stakeholder vessels carry either 2” or 3” portable pumps that may or may not be compatible with local fire department hose connections. Pumps are discussed further down in the report.

Non-classified FiFi tugboats may be relied upon to assist with fire suppression duties under the care and command of the fire department having jurisdiction. Fire suppression duties may include direct fire attack, boundary cooling, or exposure coverage. Other duties may include towing burning vessels away from dockside, securing burning or derelict vessels in a river current or tide flow, and transporting fire department staff or equipment to or from a fire incident. Tugboats may also be relied upon during an incident to tow or secure barges carrying firefighting apparatus, equipment or staff or otherwise performing fire suppression duties.

It was reported that vessels working within the port authority jurisdiction did not carry firefighting personal protective equipment (PPE) such as firefighter turnout gear (boots, pants, jacket, helmet) or self-contained breathing apparatus (SCBA). This poses a problem when deployed in a smoke laden environment. Breathing may become difficult and disorientation of staff or the vessel may occur due to poor or no visibility. Heavy smoke conditions may render this type of resource unusable, as staff may choose to vacate their position.

Stakeholders reported that all their staff carried Marine Emergency Duties (MED) and Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Basic Safety Training qualifications as required by Transport Canada, but none carried any qualifications relating to professional firefighting.

As mentioned, stakeholders prefer to have professional firefighter’s onboard non-FiFi classified vessels.

[2] This NFPA standard details the requirements for the construction of new marine fire-fighting vessels, the conversion of existing vessels for fire-fighting purposes, as well as testing and maintenance.

Stakeholders stated they should be remunerated, or in the least, compensated, for loss of revenue when assisting at a fire incident forces a stoppage in regular work. There was also mention of where there is compensation or remuneration in place, those work agreements should fall under the *UK Standard Conditions for Towage and Other Services (1986).*

Barges

There are a reported 58 barges that may be relied upon to respond and assist during a marine-related fire incident. Response may be limited due to various reasons including but not limited to location, crew availability, vessel commitment, or tug availability.

The barges were of varying sizes and types including flat, spud, crane, grapple, clamshell, dredge, and ramped barges. All barges reportedly carry 1.5” fire hose of various types that may or may not be compatible with local fire departments. All carry either 2” or 3” portable pumps, which may or may not be compatible with local fire departments.

These vessels may be utilized in various firefighting roles including but not limited to carrying fire department apparatus such as engines or ladder trucks (flat or ramped barges), fire suppression (spud or dredge barges), and fire salvage, overhaul and demolition (grapple, crane, or excavator equipped barges). All barges are equipped with Transport Canada required firefighting equipment to allow fire suppression duties including direct fire attack, boundary cooling, or exposure coverage.

While barges may play a key role during major firefighting incidents, there is reliance upon tug availability to get them to and from and possibly secured at the incident scene.

Crew boats

There are a reported 10 crew boats and water taxis available to assist at a fire incident. These vessels come in various configurations to allow for multi-deployment applications. Ferrying fire department staff or equipment, assisting with evacuation, and salvage or overhaul and deploying booms are all tasks that can be accomplished by crew boat type vessels.

Skiffs/landing craft

Skiffs and landing craft may play a critical role at a marine fire incident. There were four vessels of this type reported and all were staged in the Fraser River. These vessels may be called upon to ferry fire department staff and/or equipment to or from an incident location. These vessels are low on the water and may provide a suitable platform to support a remote pumping station. High-capacity portable pumps may be lifted onto the decks of these crafts and provide suppression support in low locations such as under docks.

Vessel onboard firefighting tools and equipment

Firefighting equipment appears to be universal in what is carried aboard each vessel. Universal equipment is held due to Transport Canada requirements related to firefighting and safety equipment.

Hose

Each vessel carries lengths of 1.5” firefighting hose. The number of lengths is determined by the size or length of the vessel. Enough hose is required to reach each area on the vessel. The type (single jacket/double or rubber/canvas jacket) or make of the hose is undetermined. The type of coupling is also undetermined. The coupling type may be continuous throughout the stakeholder’s organization but may not be compatible with other stakeholders or fire departments having jurisdiction. It is understood that

every vessel is required to have an international shore connection, as per the IMO SOLAS requirement, so as to have a hose attachment point to get water from shore or other vessels for use in shipboard firefighting, should the onboard fire pump(s) fail. Commonality of hose couplings throughout the jurisdiction would ensure compatibility between stakeholders should equipment need to be transferred from one vessel to another.

It should be noted that local fire departments will not use any equipment onboard a vessel other than their own or that of another professional fire department. This is of particular concern where connection to a portable pump is required.

Pumps

Onboard fire pumps

Minimal information was provided by stakeholders regarding dedicated onboard fire pumps. Research revealed that dedicated fire pumps aboard the size and types of non-FiFi vessels working in Burrard Inlet and the Fraser River provide approximately 200 to 300 gallons per minute (GPM). Output pressure was undetermined and it is impractical to assume a pressure given the nature of the need. However, if the output pressure is 150 pounds per square inch (PSI), it is reasonable to presume that this pump can supply one to two 50 foot 1.5” hose lines with a nozzle pressure of 70 PSI. This type of pump may assist with fire suppression, boundary cooling or exposure protection.

Portable Pumps

Portable or “scow” pumps of various sizes were reported onboard stakeholder vessels. The most common are 2” and 3” with some reports of 6”. The primary purpose of this type of pump is to remove unwanted water from barges. A primary task of marine firefighting is “dewatering” the vessel involved. During marine firefighting operations, removing water must occur as soon as fire suppression water flow begins. If water is not removed during suppression operations, the vessel may list or sink causing further concern regarding life safety, asset damage, or environmental harm. All stakeholders interviewed confirmed carrying dewatering pumps.

In an emergency, this type of pump may assist with fire suppression, boundary cooling, or exposure protection, however the water pressure is considered to be in the lower range in the firefighting industry. A 2” scow pump has a reported flow of 164 GPM at 45 PSI. A 3” scow pump has a reported flow of 290 GPM at 37 PSI. Typical 1.5” firefighting hose has a nozzle pressure of 100 PSI at 95 GPM however the National Fire Protection Association (NFPA) has recently changed firehose flow to 70 PSI at 150 GPM in accordance with NFPA 1710 (2020). Different pressures and flows may also depend on what type nozzle is utilized.

Some companies reported having 75 PSI fire pumps on board their vessels, however no specifications were provided for the pumps.

During telephone interviews, some stakeholders advised of larger volume pumps in the range of 7400 and 9600 GPM, however no specifications with respect to pressure were provided or available. Also discussed were 2” and 3” submersible pumps, however no specifications were available with respect to pressure.

Wreck recovery/removal equipment

There are four stakeholders with barges equipped with cranes of various sizes based in the Fraser River and Burrard Inlet. Capacities range from 25 to 200 tonnes (refer to Appendix G).

Demolition equipment

There are three stakeholders with barges equipped with clamshell and grapple cranes of various sizes based in the Fraser River and Burrard Inlet (refer to Appendix G). Demolition tools and equipment play a vital role during fire suppression and overhaul. "Opening up" a structure to gain access in, below, or above a fire may be necessary to assist in extinguishment. An example of "opening up" was performed during the 2020 New Westminster pier fire. Fraser River Pile and Dredge was engaged by New Westminster Fire & Rescue Services to tear (open up) up the dock, allowing suppression crews to extinguish burning supporting timber pilings and the smoldering creosote wood between and below the dock deck surface. The tactical operations plan called for cranes to deconstruct the dock and place debris on a walled flat barge. A second clamshell crane was deployed to assist in removing any debris from the river, protecting the marine community and the environment.

Environmental equipment

All stakeholders interviewed stated that vessels carry limited spill response equipment as required by Transport Canada.

One stakeholder advised that they have large boom kits at their home base dock and are available around the clock (refer to Appendix F).

The Canadian Coast Guard are the leading agency responsible for marine spill response, while Western Canada Marine Response Corporation (WCMRC) are an industry funded organization who ensure there is a state of preparedness and response to marine spills within the port authority's jurisdiction.

Formed in 1995, WCMRC responds to spills in all of western Canada's navigable waters. Their 4-tiered response model covers spill incidents up to 10,000 tonnes and is flexible to adapt to the characteristics of varied incidents. WCMRC initial response actions and mobilization strategies ensure a quick and timely response within the port authority jurisdiction.

WCMRC oil spill response plan[3]	**Response time**			
	Tier 1 (150T)	Tier 2 (1000T)	Tier 3 (2500T)	Tier 4 (10000T)
	6 hours	12 hours	18 hours	72 hours

Stakeholder crew firefighting training

Stakeholders were canvassed as to what level of firefighting their staff were trained. It was confirmed that none of the staff on stakeholder vessels had specialized firefighting training. The merchant marine industry working in port authority jurisdiction do not carry firefighting personal protective equipment such as turnout gear or SCBA's.

All staff were trained in accordance with Transport Canada or SOLAS regulations.

[3] https://wcmrc.com/

There were varying opinions between stakeholders regarding their participation during fire incidents. Most stated that they would require local fire department staff aboard their vessel to direct fire operations. Some stated that they would participate in fire suppression operations providing they had voice communication with the fire department incident commander.

All were in agreement that they would not put their staff in dangerous or life-threatening situations. This included working in a smoke laden location which may pose an immediately dangerous to life or health (IDLH), and/or safety compromised environment. Smoke is the gaseous byproduct of combustion made visible by carbon particulate which is hazardous to health and greatly decreases visibility.

Future firefighting resource acquisition

Stakeholders were queried if they plan on acquiring a firefighting equipped vessel or other firefighting resources to protect their organizations assets:

- 72% of stakeholders responded they are not
- 29% of stakeholders advised that they would consider purchasing FiFi classified vessels or other firefighting equipment in the future

Those that were considering FiFi classified vessels stated that their decision may be swayed should financial assistance for maintaining the FiFi equipment be available.

Future opportunities for development, coordination, and collaboration

In keeping with the core values of the port authority, there are several opportunities for collaboration, continuous improvement, and customer responsiveness. Stakeholders within the port authority jurisdiction have voiced their willingness to participate in a coordinated emergency response program and have offered their varied fleet to accomplish a wide range of incident response tasks.

The opportunity to establish an incident response network with the private marine community exists, however, requires a framework of prerequisites and tasks to accomplish a stable, reliable and sustainable partnership.

This framework may include but is not limited to:

- Training and exercising
- Establishing response guidelines and availability
- Establishing a reliable and secure communications system between the port authority, first responders, and the private marine community
- Establishing remuneration for deployment or compensation for loss of revenue
- Establishing liability limits

The need for coordinating resource response is paramount. At this time, there is no central or single regulatory response body responsible for marine firefighting, nor a standard mechanism for deployment when first responders request assistance. Coordination between first responders, the marine community, and the port authority is required to provide the best use of resources.

Additionally, further development of communications structures would benefit to accelerate responses and provide unfettered coordination and cooperation between all responding entities. This may mean a fan out of calls to all involved stakeholders, and where possible, the port authority reporting back to key resources to municipal fire. Mutual benefit may be gained from means of communications also needed to be developed between the port authority, first responder agencies, and the stakeholder community. There

may be benefit from a secure and dedicated VHF radio channel for all responding entities to communicate.

Consideration may wish to be provided for a marine response operation plan, developed in collaboration with municipal fire services, marine terminal owners, private marine stakeholders, Vancouver International Airport (YVR), and future development owners (LNG & aviation fuel storage facilities). With a broad board of stakeholders, this would allow for all voices to be heard with respect to individual needs, cost contribution and/or allocation, and a better understanding of overall requirements of keeping the port authority community safe when it comes to marine fires.

Through dedicated partnership and collaboration, we can build stronger marine firefighting and emergency response capabilities within port authority jurisdiction, building safer working and living communities.

Final Summary

There are many enthusiastic and cooperative stakeholders working within the port authority jurisdiction: likeminded corporate and municipal entities mindful of life safety, property preservation, and conservation of the environment. The gap of a professional marine firefighting response unit in the jurisdiction reinforces the need to capitalize on private, public, and municipal partnerships to maintain a state of operational readiness.

Utilizing identified port authority stakeholder resources will provide much needed assistance to minimize threats to life safety, loss of property, and potential damage to the environment. The ability to catalogue resources, organize resource training, coordinate communications, and develop a marine incident response plan should be a core competency of the port authority. Initial training of private stakeholders, in conjunction with first responders, should be a priority to determine the capabilities of their staff including emergency response and incident command knowledge.

As vessel size and traffic increases within the marine community – and future developments such as the proposed LNG and jet fuel storage facilities are established in the Fraser River – the need for professional fire service fireboat response becomes ever more paramount. Partnerships between the port authority and municipal fire departments to acquire and deploy a FiFi II or III classified vessel would greatly decrease potential negative impacts to both the Fraser River and the national economy. Realignment of, or coordination with, the current fireboat fleet with new larger fireboats would provide quick response for reconnaissance and smaller incidents and a formidable suppression attack apparatus for larger fires and disasters.

Moving forward, collaboration will be key for sustainable port operations and growth. Resources are available and willing in the private merchant marine community and opportunities exist for these to be explored when it comes to marine firefighting and the ensuring the safety, environmental protection, and consideration for local communities and Canada.

Appendix A – Key stakeholders

Amix Marine Salvage #425-625 Agnes Street New Westminster, B.C.	Dan Virtanen 604.529.2874	Amix Group is a diversified infrastructure, and industrial service company specializing in tug and barge marine services and transport, marine projects, marine salvage, and heavy lift operations.

Catherwood Towing Ltd. 32885 Mission Way Mission, B.C.	Trevor Sexton 604.826.9221	Catherwood Towing Ltd. provides tug and barge services for general freight, log boom towing, booming, marine construction equipment towing and tending, custom tug and towing services, and boom storage.
Forrest Marine Ltd 1620 Knappen Street Port Coquitlam, B.C.	Mike Forrest 604.942.6289	Forrest Marine Ltd. provides log and barge towing, log storage and sorting, ramp barge services, structure maintenance, and repair and marine contracting.
Fraser River Pile and Dredge 1830 River Drive, New West minster, B.C.	Mitch Hughes 604.522.7971	Fraser River Pile and Dredge is Canada's largest marine and infrastructure, land foundations and dredging contractor providing services for docks and wharves, seawalls and shoreline protection, board, sheet and pile driving, and environmental, maintenance and capital work dredging.
Harkin Towing 1990 Argue St. Port Coquitlam, B.C.	Ian Shandler 604.942.8511	Harken Towing provides towing services for log booms and barges, primarily along the Fraser River and local harbours.
Hodder Towing 16031 River Road Richmond, B.C.	Tony Fadyeyev 604.273.2821	Hodder Towing is a general marine towing company primarily transporting logs, lumber, pulp and paper to and from coastal mills. Other diversified industries served include construction, sand and gravel aggregate, and general cargo.
JJM Construction 8218 River Road Delta, B.C.	Josh Handley 604.952.5878	JJM Construction specialize in full scope construction services for civil, marine and combined civil/marine projects.
Ledcor Resources & Transportation 11171 River Road Richmond, B.C.	Michael Fong 778.988.4443	This division of Ledcor works in conjunction with their forestry operations division to provide closed loop supply chain services for the forestry industry. Marine services include ship assist, emergency marine services, barge, and marine towing services.
Mercury Launch & Tug Ltd. 65 Rogers Street Vancouver, B.C.	Rob Errington 604.878.8847	Mercury Launch and Tug provide barge and tug transportation services to partners along the B.C. coast.
North Arm Transportation 2582 Kent Street Vancouver, B.C.	John Scagel 604.321.9171	North Arm Transportation provides fuel supply, freight shipping, tugboat and barge services, towing services, loading and storage, marine services and project support to logging camps, First Nations communities, power stations, airports, fishing lodges and others.

Ocean Group 12 Orwell Street North Vancouver, B.C.	Miladin Gacic 1.877.694.1414 ext. 4354	Ocean Group's BC operations include Ocean BC Towing which provides towing services in the Port of Vancouver. Other services include dredging of waterways and barge rentals.
Pacific Custom Log Sorting Ltd 1950 Brigantine Drive Coquitlam, B.C.	Gordon Cawley 604-521-1714	Pacific Custom log sorting operates a water and dry land sorting facility on the Fraser River. The facility handles camp-run and bundle barges, various bundling services, de-watering, loading, towing, storage and recovery services.
Pacific Log Recovery Systems Ltd. 1950 Brigantine Drive Coquitlam, B.C.	Brad Vader 604.817.5647	Pacific Log Recovery Systems is available to salvage sunken logs from the Fraser River, recover sunken log bundles, as stand-bye for log recovery during dredging, log and debris cleanup, and other related applications.
Quadrant Towing 1950 Brigantine Drive Coquitlam, B.C.	Gord Cawley 604.521.1714	Quadrant Towing is a marine contract towing company based on the Fraser River with the ability to transport logs, products, materials and people.
Samson Tugboats Inc 9425 River Road Delta, B.C.	Gordon Yahn 604.582.5110	Samson Tugboats, based on the Fraser River, provide service in harbour towage to ships visiting B.C.
Seaspan ULC 10 Pemberton Avenue North Vancouver, B.C.	Paul Hilder 604.984.1686	Seaspan ULC provides marine-related services. Primarily involved in coastal marine transportation, ship building and ship repair, ship docking/ship escort services.
SAAM Towage Canada Inc. 2215 Commissioner Street Vancouver, B.C.	Mark Bingham 604.251.0203	SAAM Towage specializes in harbour towage and oil tanker escort.
Trident Navigation Ltd. 12 Orwell Street North Vancouver, B.C.	Alex Edwards 604.696.2992	Trident Navigation provides marine barge towing services specializing in the transportation of petroleum products.
Tymac Launch Services Ltd. N. Ft. Main Street Vancouver, B.C.	Drew Hemmingson 604.681.8628 ext. 102	Tymac Launch Services works with the cruise ship industry providing pilot boarding and disembarkation services, water taxi service, marine towage, barge service including the supply of fresh water, and cruise vessel waste removal.
Valley Marine Tug Boat Towing 1 Front Street New Westminster, B.C.	Kim Alipramdini 604.526.8515	Valley Marine is a tug boat and towing company.
Vancouver Pile Driving Ltd. 20 Brooksbank Ave. North Vancouver, B.C.	John Zuk 604.986.5911	Vancouver Pile Driving is a multi-discipline construction company serving the coastal marine industry. Their complete fleet of heavy equipment supports heavy civil, marine, deep foundations, remediation, and dredging projects.

Vancouver Fire Rescue Services (VFRS) 900 Heatley Avenue Vancouver, B.C.	Chris Herbert 604.665.6065	VFRS staffs and maintains two fireboats: • Coal Harbour, Ft of Main Street • False Creek, Burrard Civic Marina

Appendix A2 – List of tug and barge stakeholders

COMPANY	ADDRESS	BASE OF OPERATIONS	CONTACT	OFFICE LINE	MOBILE	EMERG CONTACT NUMBER	EMAIL
Amix Marine Salvage Group	#425 - 625 Agnes St. N/West	Duke Point. Nothing in Lower Mainland.	Dan Virtanen	604-529-2874	604-322-5400		dvirtanen@amixgroup.ca gmarks@amixgroup.ca
Catherwood Towing Ltd.	32885 Mission Way, Mission		Trevor Sexton	604-826-9221	604-302-1991	604-302-1991	trevor@catherwoodtowing.com
Colmor Marine Group	PO Box 20020, Comox	Naniamo	Bill Coltart	1-250-338-3219	1-604-322-5400	1-250-338-3219	response@colmormarine.com
Forrest Marine Ltd.	1620 Knappen St., PoCo	1101 Pitt River Road PoCo	Mike Forrest	604-942-6289	604-250-9614		mwcf@shaw.ca
Fraser River Pile and Dredge Inc.	1830 River Dr, N/West	Same	Mitch Hughes	604-522-7971			mhughes@frpd.com
Harken Towing Co. Ltd.	1990 Argue St, PoCo	Same	Ian Shandler	604-942-8511	604-996-8511	604-942-8511	Ian@harkentowing.com
Hodder Tugboat Co. Ltd.	16031 River Rd., Richmond	Same	Tony Fadyeyev	604-273-2821	778-888-1334	604-273-2821	tony@hoddertug.com
JJM Construction Ltd.	8218 River Rd., Delta	8850 River Rd, Delta	Josh Handley	604-952-5878	604-992-6349	604-946-0978	jhandley@jjmconstruction.com
Ledcor Resources & Transportation	11171 River Rd, Richmond	Same	Michael Fong		778-988-4443		Michael.Fong@ledcor.com
Mercury Launch & Tug Ltd.	65 Rogers St, Vancouver	Same	Rob Errington	604-878-8847	604-834-4037		rob@mltug.ca
North Arm Transportation	2582 Kent Ave., Van	2582 Kent Ave., Van 11580 Mitchell Rd., Rich	John Scagel Matt Stradiotti	604-321-9171	604-999-2786	604-321-9171	john@northarm.bc.ca matt.stradiotti@northarm.bc.ca
Ocean Group	12 Orwell Street, N/Van	Same	Miladin Gacic	1-877-694-1414 ext 4354	778-229-4721		Miladin.Gacic@groupocean.com
Pacific Towing Srvices Ltd.	14 Orwell Street, N/Van	Same	Jim Wilson	604-990-0591	604-968-2718		jwilson@pactow.com
Pacific Custom Log Sorting Ltd.	1950 Brigantine Dr. Coquitlam	Same	Gordon Cawley	604-521-1714			gord@pcls.bc.ca
Pacific Log Recovery Systems Ltd.	1950 Brigantine Dr. Coquitlam	Same	Brad Vader	604-817-5647			
Quadrant Towing	1950 Brigantine Dr. Coquitlam	Same	Gord Cawley	604-521-1714			gord@pcls.bc.ca
Quality Towing			Jerry Petrunia	604-946-2343	604-377-8996		ironhorse.tugboat@gmail.com
Samson Tugboats Inc	#390-5158 48th Ave., Delta	9425 River Rd., Delta	Gordon Yahn	604-582-5110	604-828-4408	604-582-5110	g.yahn@samsontugboats.com
Seaspan ULC	10 Pemberton Ave., N/Van	Same	Paul Hilder	604-984-1686	(604) 290-5528		PHilder@Seaspan.com
SAAM Towage Canada Inc.	#411 - 1930 Pandora Street	2215 Commissioner St., Va	Mark Bingham	604-251-0203	604-251-0203	604-252-2828	mbingham@saamtowage.com
Trident Navigation Ltd.	12 Orwell St., N/Van	Same	Alex Edwards	604-696-2992	778-994-2230	604-696-2992	alex@tridentnav.com
Tymac Launch Service Ltd.	N Ft Main Street, Van.	Same	Drew Hemmingson	604-681-8628 ext 102	604-351-9292		dhemmingson@tymac.ca
Valley Marine Tug Boat Towing	1 Front St., N/West	Same	Kim Alipramdini	604-526-8515	604-526-8515	604-526-8515	valleytowing@telus.net
Vancouver Pile Driving Ltd.	20 Brooksbank Ave., N/Van	Same	John Zuk	604-986-5911	604.805.7374	1-844-826-7453	jzuk@vanpile.com

Appendix B – Port authority marine firefighting resource assessment questionnaire

VFPA FIREFIGHTING PROJECT QUESTIONAIRE

1. What vessels or resources do you have to fight a vessel fire on the water, within your operating boundaries?

2. What vessels or resources do you have to fight a vessel fire berthed at a dock within your operating boundaries?

3. What vessels or resources do you have that possess dewatering capabilities?

4. What vessels or resources do you have that posses wreck recovery or removal capabilities?

5. What vessels or resources do you have that possess environmental disaster damage recovery or storage capabilities? (Spill containment, spill product recovery/storage capacity, disposal capacity)

6. Do you plan on acquiring a Firefighting equipped vessel or other firefighting resources to protect your Organization's assets?
    a. If yes, when?

7. Are your staff aware of, or trained to, any level of fire fighting and if so, are any of your staff trained to any Transport Canada, International Convention for the Safety of Life at Sea (SOLAS) or National Fire Protection Association (NFPA) Standards?

Appendix C – Port authority marine firefighting resource assessment

frank dodich & associates ltd.
CROWD / FIRE / EMERGENCY MANAGEMENT SOLUTIONS
604.788.9059 frank.dodich@gmail.com @frankdodich

VANCOUVER FRASER PORT AUTHORITY (VFPA) FIREFIGHTING CAPACITY STUDY

VFPA is conducting a capacity survey to identify and map resources along the water ways that may be able to provide support in the event of a Marine fire. Please submit completed forms to Frank Dodich & Associates by using the SUBMIT FORM button at the bottom right of this page.

Company Name:
Contact Person Name:
Title:
Contact #:
Emergency Dispatch #:
Vessel Name:
Moorage Address:
City:
Certification:
Type: ☐ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Click Here to Add Image of Vessel

Services
☐ Firefighting
Classification: ☐ Fi-Fi 0 ☐ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☐ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:		Metres
Draft:		Metres
Breadth:		Metres
GRT:		Tonnes

Engines, Propulsion & Performance

Main Engine:	
Total Power (HP):	
Propulsion:	
Bollard Pull:	
Propellers:	
Cruising Speed:	

Fire Equipment:	Qty.	Comment
☐ Hose		
☐ Monitor		
☐ Nozzles		
Environmental		
☐ Booms		
☐ Skimmers		
☐ Sorbents		
☐ Fire Pump		
Capacity:		

Deck Equipment:

☐ Hawser Winch:	
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	

Additional Notes:

Thank you for your support and for taking the time to participate in this study.
Participants will receive an electronic copy of the formal report of the finalized study.

SAVE FORM
CLEAR FORM
SUBMIT FORM

April 2021

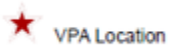
Appendix D – Resource mapping

The following set of appendices outline:

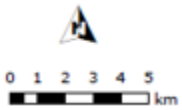
- The marine firefighting resource home base locations
- Key port authority locations
- Response time from resource locations to key port authority locations

The following legend has been used to support ease of reference for these maps:

Marine firefighting resource home base



Key port authority locations

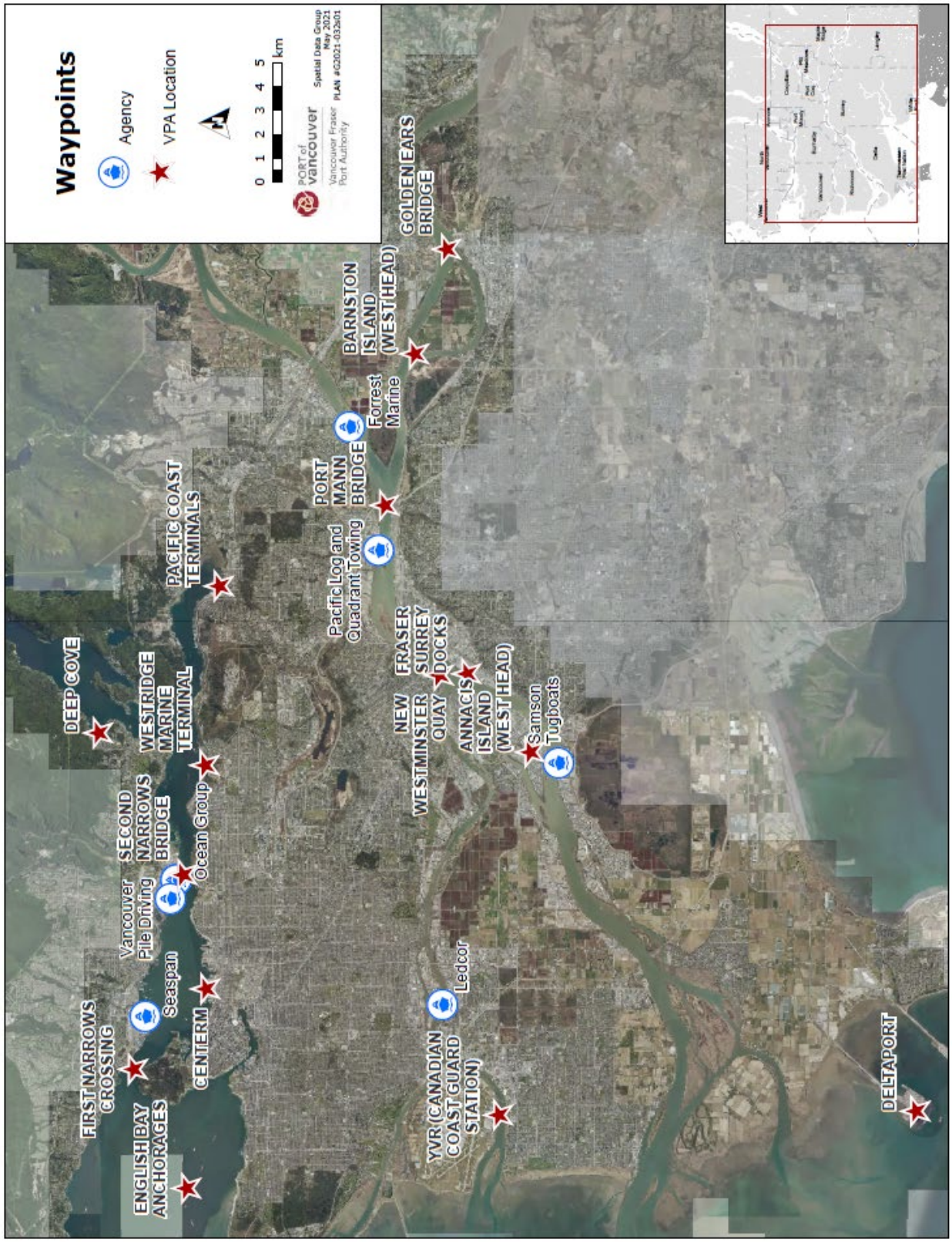


distance

Times to reach key port authority areas located on map:

Vessel Time (hours) to VFPA Location			
Vessel	Centennial Terminal	English Bay Anchorages	First Narrows
Ocean Granville	.20	.54	.36
SST Orca	.17	.76	.37
Seaspan Raven	.13	.37	.13

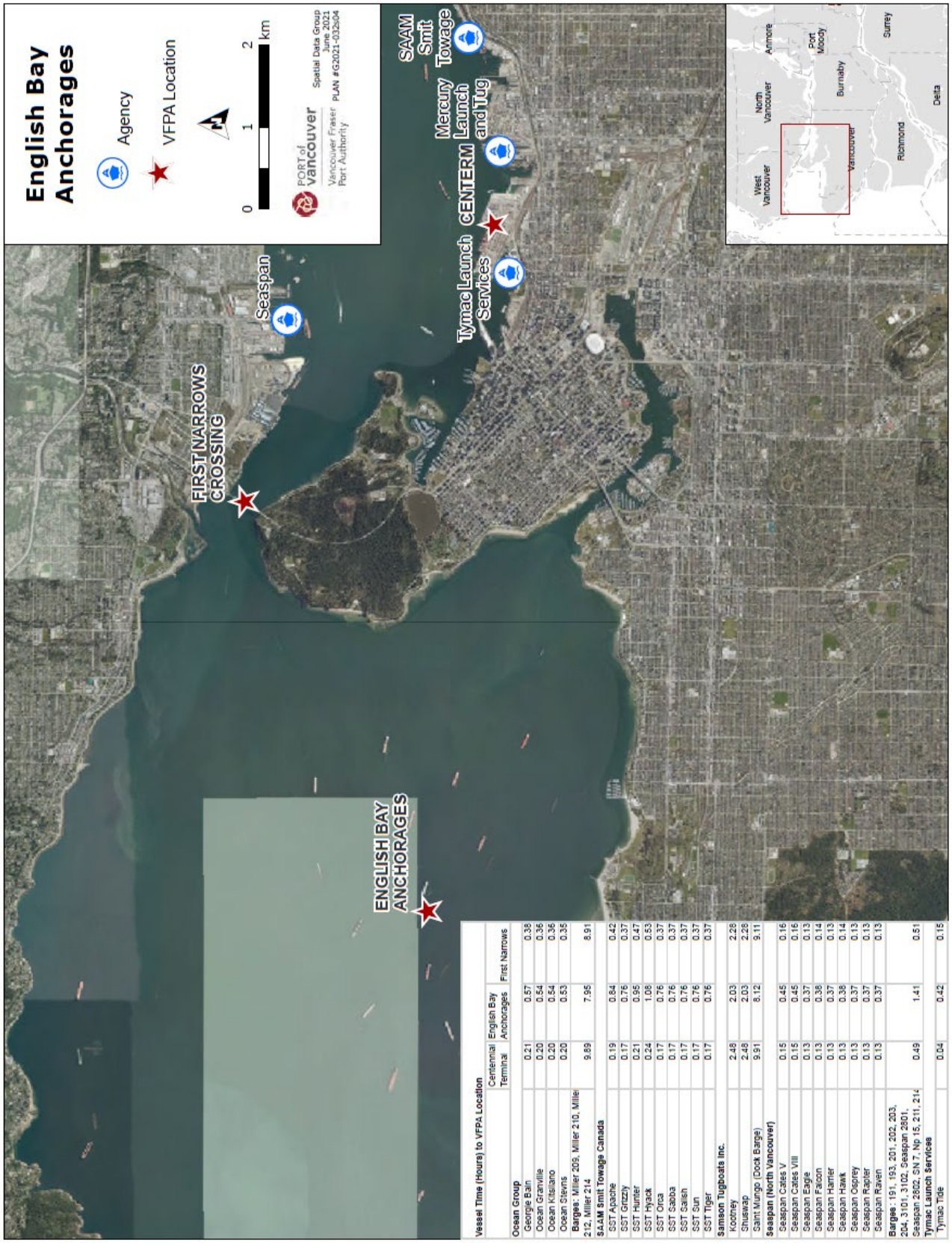
Appendix D1 – Waypoint map



Appendix D2 – Burrard Inlet waypoints

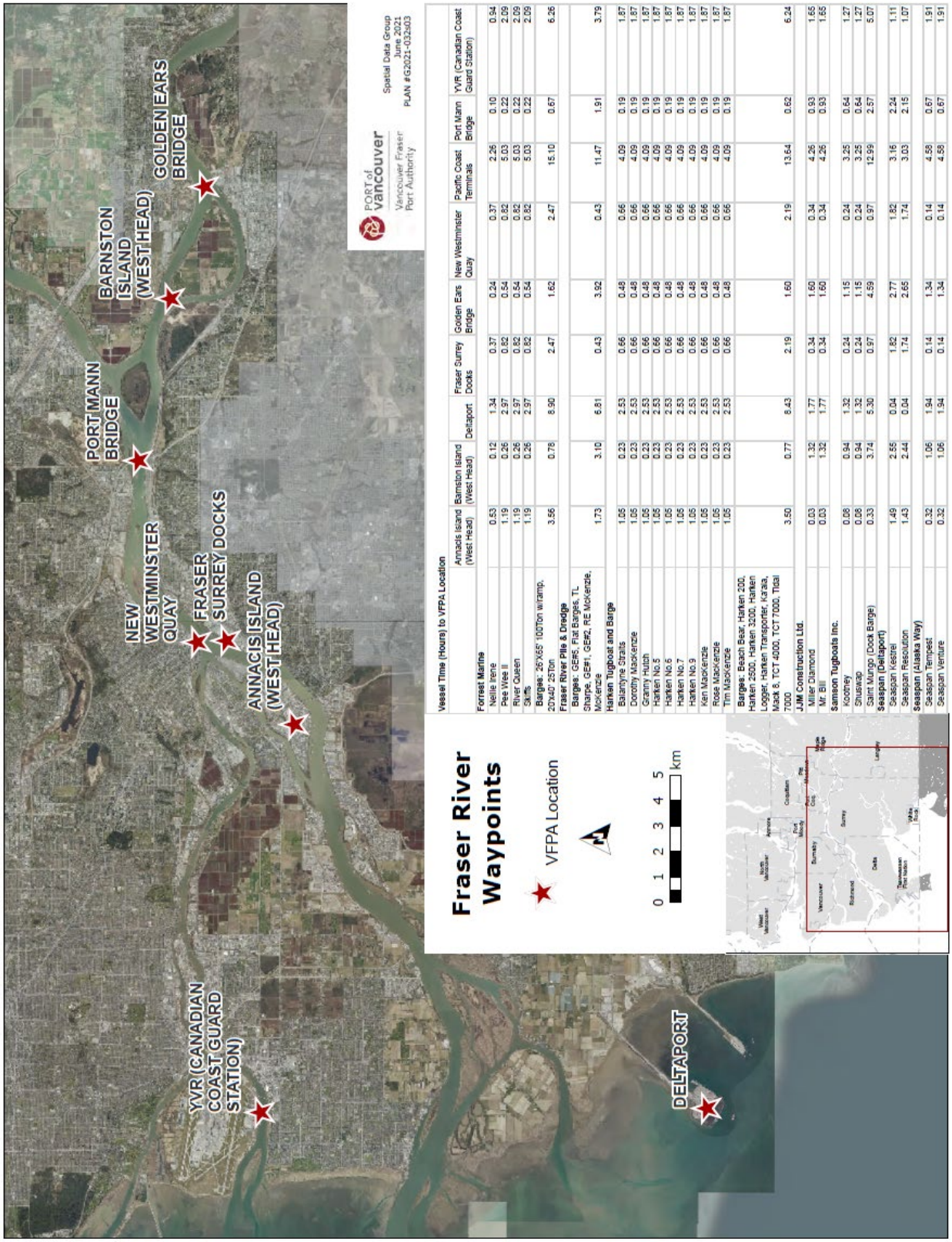
Vessel Time (Hours) to VFPA Location	Centennial Terminal	Deep Cove	English Bay Anchorages	First Narrows	Pacific Coast Terminals	Second Narrows Bridge	Westridge Marine Terminal
Ocean Group							
Georgie Bain	0.21	0.45	0.57	0.38	0.55	0.02	0.26
Ocean Granville	0.20	0.43	0.54	0.36	0.53	0.02	0.25
Ocean Kitsilano	0.20	0.43	0.54	0.36	0.53	0.02	0.25
Ocean Stevris	0.20	0.42	0.53	0.35	0.52	0.02	0.25
Barges: Miller 209, Miller 210, Miller 212, Miller 214	9.89	12.25	7.96	8.91	12.79	10.48	11.32
SAAM Smit Towage Canada							
SST Apache	0.19	0.74	0.84	0.42	0.84	0.06	0.48
SST Grizzly	0.17	0.67	0.76	0.37	0.76	0.05	0.43
SST Hunter	0.21	0.84	0.95	0.47	0.95	0.07	0.54
SST Hyack	0.24	0.95	1.08	0.53	1.08	0.08	0.62
SST Orca	0.17	0.67	0.76	0.37	0.76	0.05	0.43
SST Saboa	0.17	0.67	0.76	0.37	0.76	0.05	0.43
SST Salish	0.17	0.67	0.76	0.37	0.76	0.05	0.43
SST Sun	0.17	0.67	0.76	0.37	0.76	0.05	0.43
SST Tiger	0.17	0.67	0.76	0.37	0.76	0.05	0.43
Samson Tugboats Inc.							
Kootney	2.48	3.10	2.03	2.28	3.25	2.68	2.88
Shuswap	2.48	3.10	2.03	2.28	3.25	2.68	2.88
Saint Mungo (Dock Barge)	9.91	12.40	8.12	9.11	12.99	10.72	11.51
Seaspan (North Vancouver)							
Seaspan Cates V	0.15	0.69	0.45	0.16	1.09	0.35	0.62
Seaspan Cates VIII	0.15	0.69	0.45	0.16	1.09	0.35	0.62
Seaspan Eagle	0.13	0.74	0.37	0.13	0.90	0.29	0.51
Seaspan Falcon	0.13	0.77	0.38	0.14	0.94	0.30	0.54
Seaspan Harrier	0.13	0.74	0.37	0.13	0.90	0.29	0.51
Seaspan Hawk	0.13	0.77	0.38	0.14	0.94	0.30	0.54
Seaspan Osprey	0.13	0.74	0.37	0.13	0.90	0.29	0.51
Seaspan Raptor	0.13	0.74	0.37	0.13	0.90	0.29	0.51
Seaspan Raven	0.13	0.74	0.37	0.13	0.90	0.29	0.51
Barges: 191, 193, 201, 202, 203, 204, 3101, 3102, Seaspan 2601, Seaspan 2602, SN 7, Np 15, 211, 214	0.49	2.82	1.41	0.51	3.46	1.10	1.97
Tymac Launch Services							
Tymac Tide	0.04	0.85	0.42	0.15	1.04	0.33	0.59

Appendix D3 – English Bay waypoint



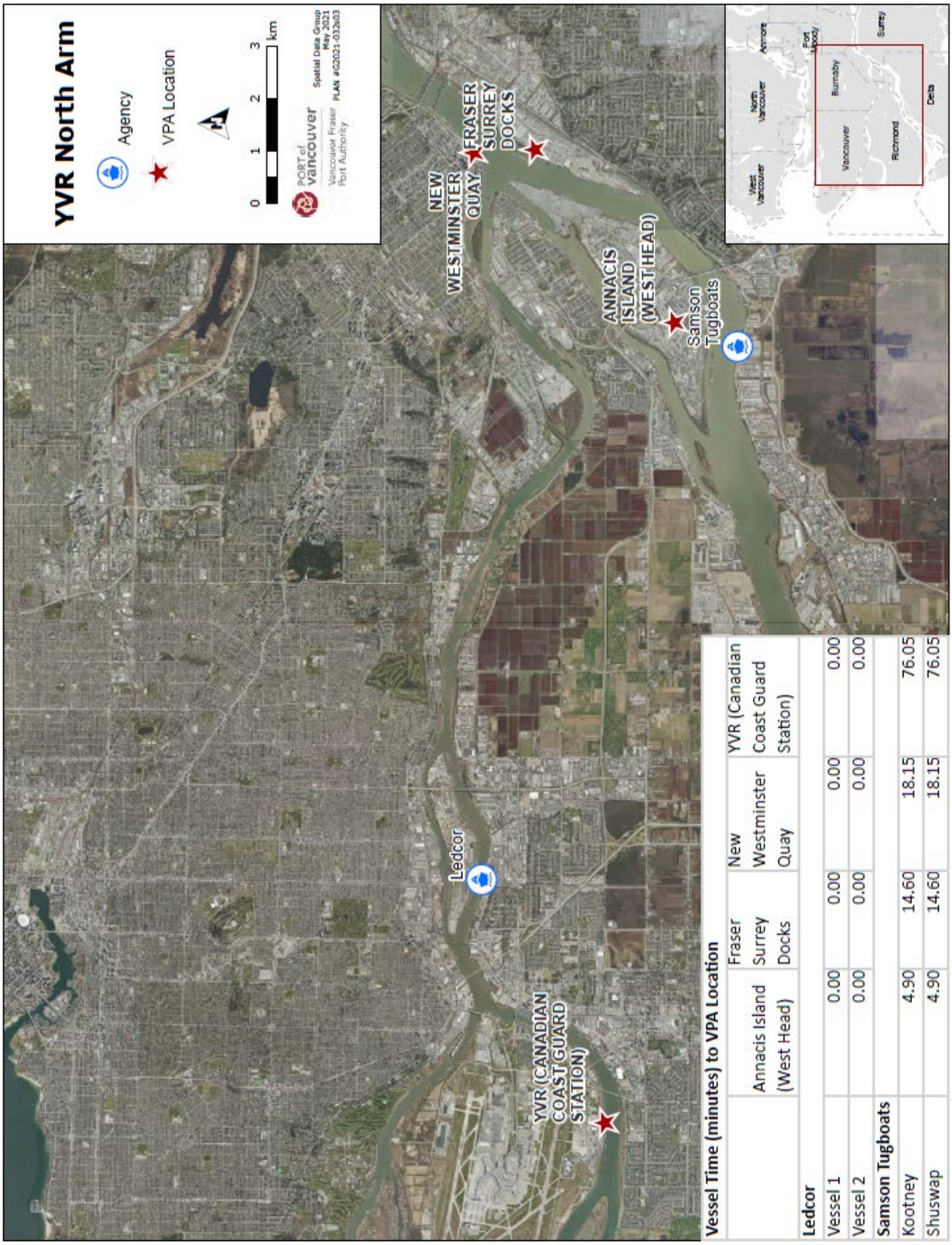
Vessel Time (Hours) to VFPA Location	Centennial Terminal	English Bay Anchorages	First Narrows
Ocean Group			
George Bain	0.21	0.57	0.38
Ocean Granville	0.20	0.54	0.36
Ocean Kitsilano	0.20	0.54	0.36
Ocean Stevns	0.20	0.53	0.35
Barges: Miller 209, Miller 210, Miller 212, Miller 214	9.89	7.95	8.91
SAAM Smit Towage Canada			
SST Apache	0.19	0.84	0.42
SST Grizzly	0.17	0.76	0.37
SST Hunter	0.21	0.95	0.47
SST Hyack	0.24	1.08	0.53
SST Orca	0.17	0.76	0.37
SST Saoba	0.17	0.76	0.37
SST Salish	0.17	0.76	0.37
SST Sun	0.17	0.76	0.37
SST Tiger	0.17	0.76	0.37
Samson Tugboats Inc.			
Kootney	2.48	2.03	2.26
Shuswap	2.48	2.03	2.26
Saint Mungo (Dock Barge)	9.91	8.12	9.11
Seaspan (North Vancouver)			
Seaspan Cates V	0.15	0.45	0.16
Seaspan Cates VIII	0.15	0.45	0.16
Seaspan Eagle	0.13	0.37	0.13
Seaspan Falcon	0.13	0.38	0.14
Seaspan Hamler	0.13	0.37	0.13
Seaspan Hawk	0.13	0.38	0.14
Seaspan Osprey	0.13	0.37	0.13
Seaspan Raptor	0.13	0.37	0.13
Seaspan Raven	0.13	0.37	0.13
Barges: 191, 193, 201, 202, 203, 204, 3101, 3102, Seaspan 2801, Seaspan 2802, SN 7, Np 15, 211, 214	0.49	1.41	0.51
Tymac Launch Services			
Tymac Tide	0.04	0.42	0.15

Appendix D4 – Fraser River waypoints



Vessel Time (Hours) to VFPA Location	Annacis Island (West Head)	Barnston Island (West Head)	Deltaport	Fraser Surrey Docks	Golden Ears Bridge	New Westminster Quay	Pacific Coast Terminals	Port Mann Bridge	YVR (Canadian Coast Guard Station)
Forrest Marine									
Nellie Irene	0.53	0.12	1.34	0.37	0.24	0.37	2.26	0.10	0.94
Pee Wee II	1.19	0.26	2.97	0.82	0.54	0.82	5.03	0.22	2.09
River Queen	1.19	0.26	2.97	0.82	0.54	0.82	5.03	0.22	2.09
Skiffs	1.19	0.26	2.97	0.82	0.54	0.82	5.03	0.22	2.09
Barges: 26'X55' 100Ton w/ramp, 20'x40' 25Ton	3.56	0.78	8.90	2.47	1.62	2.47	15.10	0.67	6.26
Fraser River Pile & Dredge									
Barges: GEP5, Flat Barges, TL Sharpe, GEP1, GEP2, RE McKenzie, McKenzie	1.73	3.10	6.81	0.43	3.92	0.43	11.47	1.91	3.79
Harken Tugboat and Barge									
Balamyne Straits	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Dorothy Mackenzie	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Granny Hutch	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Harken No.5	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Harken No.6	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Harken No.7	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Harken No.9	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Ken Mackenzie	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Rose Mackenzie	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Tim Mackenzie	1.05	0.23	2.53	0.66	0.48	0.66	4.09	0.19	1.87
Barges: Beach Bear, Harken 200, Harken 2500, Harken 3200, Harken Logger, Harken Transporter, Kalala, Mack 8, TCT 4000, TCT 7000, Tidal 7000	3.50	0.77	8.43	2.19	1.60	2.19	13.64	0.62	6.24
JJM Construction Ltd.									
Miller Diamond	0.03	1.32	1.77	0.34	1.60	0.34	4.26	0.93	1.65
Mr. Bill	0.03	1.32	1.77	0.34	1.60	0.34	4.26	0.93	1.65
Samson Tugboats Inc.									
Koomey	0.08	0.94	1.32	0.24	1.15	0.24	3.25	0.64	1.27
Shuswap	0.08	0.94	1.32	0.24	1.15	0.24	3.25	0.64	1.27
Saint Mungo (Dock Barge)	0.33	3.74	5.30	0.97	4.59	0.97	12.99	2.57	5.07
Seaspan (Deltaport)									
Seaspan Kestrel	1.49	2.55	0.04	1.82	2.77	1.82	3.16	2.24	1.11
Seaspan Resolution	1.43	2.44	0.04	1.74	2.65	1.74	3.03	2.15	1.07
Seaspan (Alaska Way)									
Seaspan Tempest	0.32	1.06	1.94	0.14	1.34	0.14	4.58	0.67	1.91
Seaspan Venture	0.32	1.06	1.94	0.14	1.34	0.14	4.58	0.67	1.91

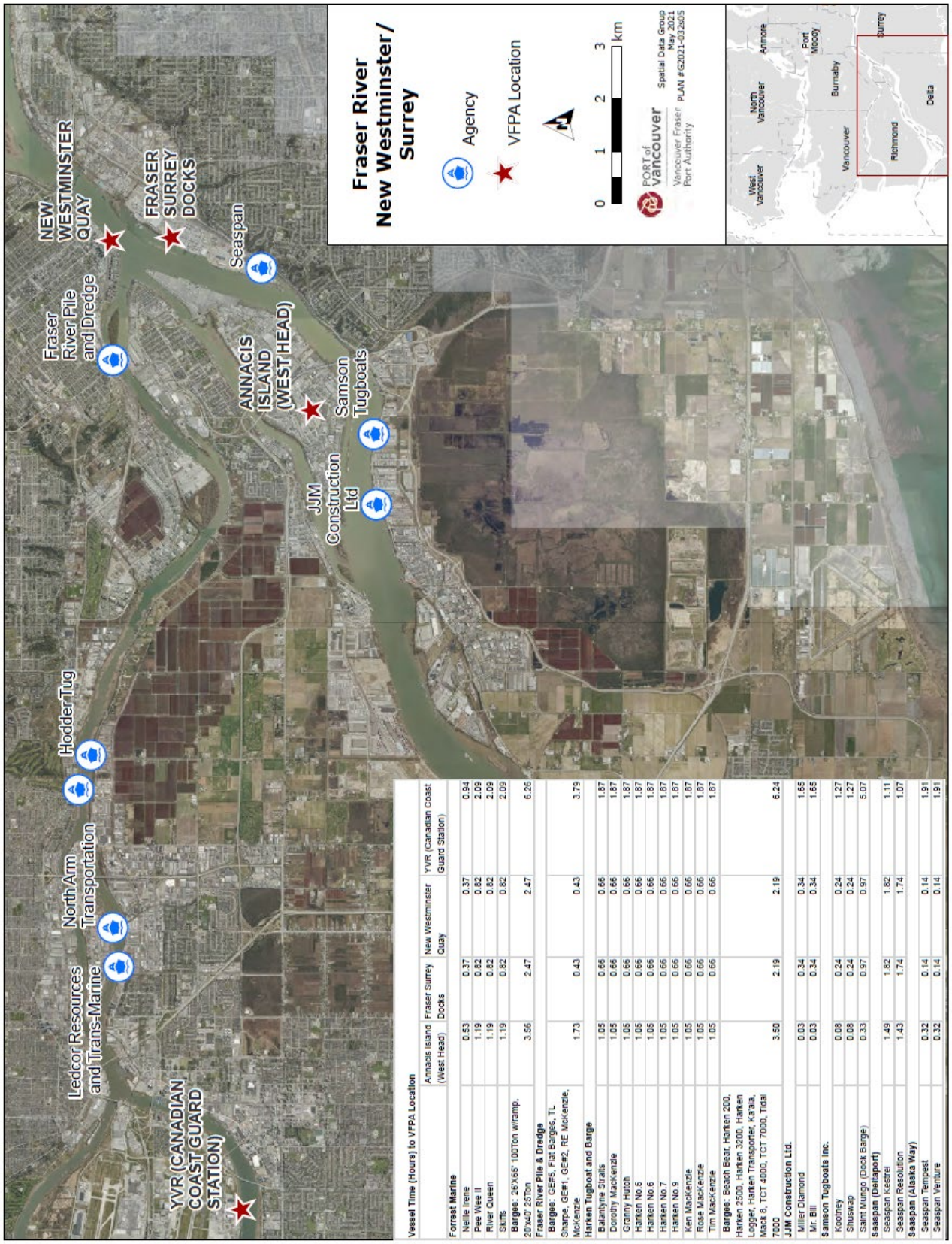
Appendix D5 – Fraser River, YVR north arm



Vessel Time (minutes) to VPA Location

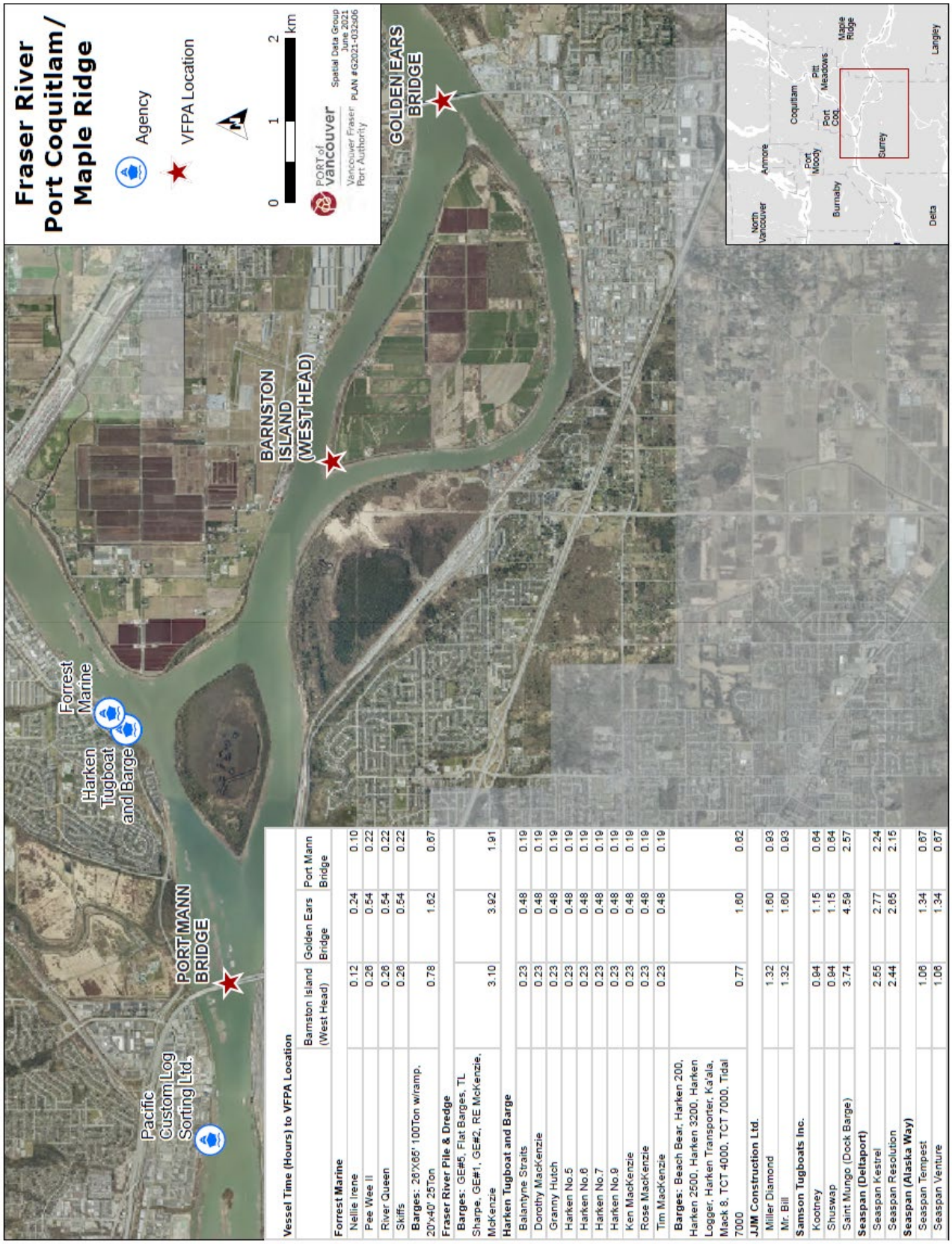
	Annacis Island (West Head)	Fraser Surrey Docks	New Westminster Quay	YVR (Canadian Coast Guard Station)
Ledcor				
Vessel 1	0.00	0.00	0.00	0.00
Vessel 2	0.00	0.00	0.00	0.00
Samson Tugboats				
Kootney	4.90	14.60	18.15	76.05
Shuswap	4.90	14.60	18.15	76.05

Appendix D6 – Fraser River, New Westminster/Surrey



Vessel Time (Hours) to VFPA Location	Annacis Island (West Head)	Fraser Surrey Docks	New Westminster Quay	YVR (Canadian Coast Guard Station)
Forreat Marine				
Nellie Irene	0.53	0.37	0.37	0.94
Pee Wee II	1.19	0.82	0.82	2.09
River Queen	1.19	0.82	0.82	2.09
Skiffs	1.19	0.82	0.82	2.09
Barges: 26'X65' 100Ton w/ramp, 20'x40' 25Ton	3.56	2.47	2.47	6.26
Fraser River Pile & Dredge				
Barges: GE#5, Flat Barges, TL Sharpe, GE#1, GE#2, RE McKenzie, McKenzie	1.73	0.43	0.43	3.79
Harken Tugboat and Barge				
Balantyne Straits	1.05	0.66	0.66	1.87
Dorothy Mackenzie	1.05	0.66	0.66	1.87
Granny Hutch	1.05	0.66	0.66	1.87
Harken No.5	1.05	0.66	0.66	1.87
Harken No.6	1.05	0.66	0.66	1.87
Harken No.7	1.05	0.66	0.66	1.87
Harken No.9	1.05	0.66	0.66	1.87
Ken Mackenzie	1.05	0.66	0.66	1.87
Rose Mackenzie	1.05	0.66	0.66	1.87
Tim Mackenzie	1.05	0.66	0.66	1.87
Barges: Beach Bear, Harken 200, Harken 2500, Harken 3200, Harken Logger, Harken Transporter, Kanla, Mack 8, TCT 4000, TCT 7000, Tidal 7000	3.50	2.19	2.19	6.24
JJM Construction Ltd.				
Miller Diamond	0.03	0.34	0.34	1.65
Mr. Bill	0.03	0.34	0.34	1.65
Samson Tugboats Inc.				
Kootney	0.08	0.24	0.24	1.27
Shuswap	0.08	0.24	0.24	1.27
Saint Mungo (Dock Barge)	0.33	0.97	0.97	5.07
Seaspan (Deltaport)				
Seaspan Kestrel	1.49	1.82	1.82	1.11
Seaspan Resolution	1.43	1.74	1.74	1.07
Seaspan (Alaska Way)				
Seaspan Tempest	0.32	0.14	0.14	1.91
Seaspan Venture	0.32	0.14	0.14	1.91

Appendix D7 – Fraser River, Port Coquitlam/Maple Ridge



Vessel Time (Hours) to VFPA Location	Barnston Island (West Head)	Golden Ears Bridge	Port Mann Bridge
Forrest Marine			
Nellie Irene	0.12	0.24	0.10
Pee Wee II	0.26	0.54	0.22
River Queen	0.26	0.54	0.22
Skiffs	0.26	0.54	0.22
Barges: 28'X85' 100Ton w/ramp, 20'x40' 25Ton	0.78	1.62	0.67
Fraser River Pile & Dredge			
Barges: GE#5, Flat Barges, TL Sharpe, GE#1, GE#2, RE McKenzie, McKenzie	3.10	3.92	1.91
Harken Tugboat and Barge			
Balantyne Straits	0.23	0.48	0.19
Dorothy MacKenzie	0.23	0.48	0.19
Granny Hutch	0.23	0.48	0.19
Harken No.5	0.23	0.48	0.19
Harken No.6	0.23	0.48	0.19
Harken No.7	0.23	0.48	0.19
Harken No.9	0.23	0.48	0.19
Ken MacKenzie	0.23	0.48	0.19
Rose MacKenzie	0.23	0.48	0.19
Tim MacKenzie	0.23	0.48	0.19
Barges: Beach Bear, Harken 200, Harken 2500, Harken 3200, Harken Logger, Harken Transporter, Ka'ala, Mack 8, TCT 4000, TCT 7000, Tidal 7000	0.77	1.60	0.62
JJM Construction Ltd.			
Miller Diamond	1.32	1.60	0.93
Mr. Bill	1.32	1.60	0.93
Samson Tugboats Inc.			
Kootney	0.94	1.15	0.64
Shuswap	0.94	1.15	0.64
Saint Mungo (Dock Barge)	3.74	4.59	2.57
Seaspan (Deltaport)			
Seaspan Kestrel	2.55	2.77	2.24
Seaspan Resolution	2.44	2.65	2.15
Seaspan (Alaska Way)			
Seaspan Tempest	1.06	1.34	0.67
Seaspan Venture	1.06	1.34	0.67

Appendix D8 – Roberts Bank/Delta Port

Vessel Time (Hours) to VFPA Location	Deltaport
Forrest Marine	
Nellie Irene	1.34
Pee Wee II	2.97
River Queen	2.97
Skiffs	2.97
Barges: 26'X65' 100Ton w/ramp, 20'x40' 25Ton	8.90
Fraser River Pile & Dredge	
Barges: GE#5, Flat Barges, TL Sharpe, GE#1, GE#2, RE McKenzie, McKenzie	6.81
Harken Tugboat and Barge	
Balantyne Straits	2.53
Dorothy MacKenzie	2.53
Granny Hutch	2.53
Harken No.5	2.53
Harken No.6	2.53
Harken No.7	2.53
Harken No.9	2.53
Ken MacKenzie	2.53
Rose MacKenzie	2.53
Tim MacKenzie	2.53
Barges: Beach Bear, Harken 200, Harken 2500, Harken 3200, Harken Logger, Harken Transporter, Ka'ala, Mack 8, TCT 4000, TCT 7000, Tidal 7000	8.43
JJM Construction Ltd.	
Miller Diamond	1.77
Mr. Bill	1.77
Samson Tugboats Inc.	
Kootney	1.32
Shuswap	1.32
Saint Mungo (Dock Barge)	5.30
Seaspan (Deltaport)	
Seaspan Kestrel	0.04
Seaspan Resolution	0.04
Seaspan (Alaska Way)	
Seaspan Tempest	1.94
Seaspan Venture	1.94

Appendix E – Resource response times

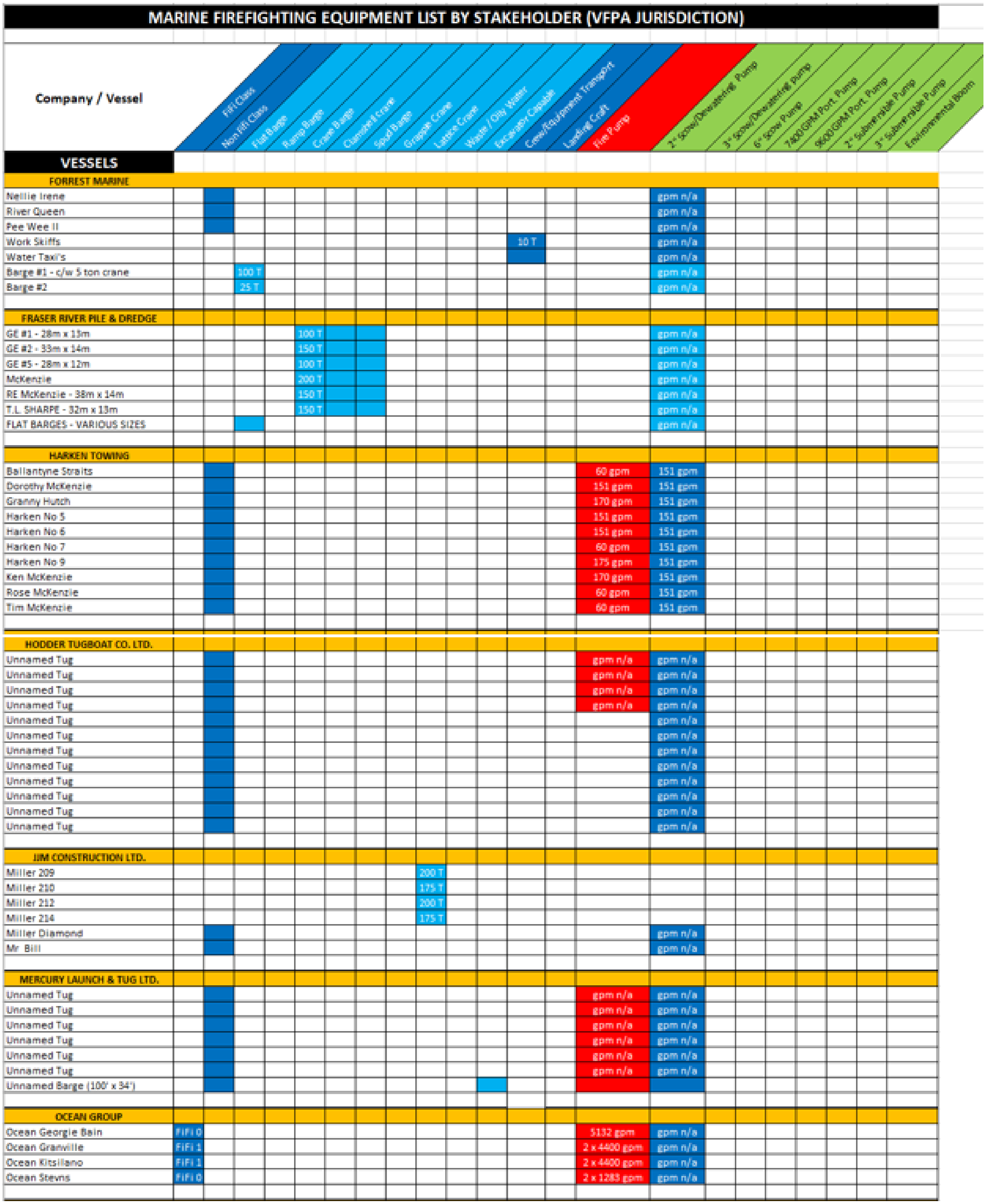
Agency	Agency Asset	Vessel's Crusing Speed	VPA location	Distance to VPA Location (NM)	Time to Reach VPA Location (minutes)	Time to Reach VPA Location (hours)
Seaspan	Seaspan Eagle	11.5	Pacific Coast Terminals, Port Moody	10.39	54.21	0.90
10 Pemberton, Avenue			Westridge Marine Terminal, Burnaby	5.91	30.83	0.51
North Vancouver, BC, Canada			Deep Cove, North Vancouver	8.47	44.19	0.74
			Second Narrows Bridge	3.31	17.27	0.29
			Centennial Terminal, Vancouver	1.46	7.62	0.13
			First Narrows	1.53	7.98	0.13
			English Bay Anchorages	4.23	22.07	0.37
			YVR (Canadian Coast Guard Station), Richmond	16.5	86.09	1.43
			Annisis Island (West Head), Delta	27.88	145.46	2.42
			Fraser Surrey Docks, Surrey	31.21	162.83	2.71
			New Westminster Quay, New Westminster	25.5	133.04	2.22
			Port Mann Bridge	29.24	152.56	2.54
			Barnston Island (West Head), Surrey	32.78	171.03	2.85
			Golden Ears Bridge	35.28	184.07	3.07
			Delta Port	24.98	130.33	2.17
	Seaspan Osprey	11.5	Pacific Coast Terminals, Port Moody	10.39	54.21	0.90
			Westridge Marine Terminal, Burnaby	5.91	30.83	0.51
			Deep Cove, North Vancouver	8.47	44.19	0.74
			Second Narrows Bridge	3.31	17.27	0.29
			Centennial Terminal, Vancouver	1.46	7.62	0.13
			First Narrows	1.53	7.98	0.13
			English Bay Anchorages	4.23	22.07	0.37
			YVR (Canadian Coast Guard Station), Richmond	16.5	86.09	1.43
			Annisis Island (West Head), Delta	27.88	145.46	2.42
			Fraser Surrey Docks, Surrey	31.21	162.83	2.71
			New Westminster Quay, New Westminster	25.5	133.04	2.22
			Port Mann Bridge	29.24	152.56	2.54
			Barnston Island (West Head), Surrey	32.78	171.03	2.85
			Golden Ears Bridge	35.28	184.07	3.07
			Delta Port	24.98	130.33	2.17
	Seaspan Raven	11.5	Pacific Coast Terminals, Port Moody	10.39	54.21	0.90
			Westridge Marine Terminal, Burnaby	5.91	30.83	0.51
			Deep Cove, North Vancouver	8.47	44.19	0.74
			Second Narrows Bridge	3.31	17.27	0.29
			Centennial Terminal, Vancouver	1.46	7.62	0.13
			First Narrows	1.53	7.98	0.13
			English Bay Anchorages	4.23	22.07	0.37
			YVR (Canadian Coast Guard Station), Richmond	16.5	86.09	1.43
			Annisis Island (West Head), Delta	27.88	145.46	2.42
			Fraser Surrey Docks, Surrey	31.21	162.83	2.71
			New Westminster Quay, New Westminster	25.5	133.04	2.22
			Port Mann Bridge	29.24	152.56	2.54
			Barnston Island (West Head), Surrey	32.78	171.03	2.85
			Golden Ears Bridge	35.28	184.07	3.07
			Delta Port	24.98	130.33	2.17
	Seaspan Raptor	11.5	Pacific Coast Terminals, Port Moody	10.39	54.21	0.90
			Westridge Marine Terminal, Burnaby	5.91	30.83	0.51
			Deep Cove, North Vancouver	8.47	44.19	0.74
			Second Narrows Bridge	3.31	17.27	0.29
			Centennial Terminal, Vancouver	1.46	7.62	0.13
			First Narrows	1.53	7.98	0.13
			English Bay Anchorages	4.23	22.07	0.37
			YVR (Canadian Coast Guard Station), Richmond	16.5	86.09	1.43
			Annisis Island (West Head), Delta	27.88	145.46	2.42
			Fraser Surrey Docks, Surrey	31.21	162.83	2.71
			New Westminster Quay, New Westminster	25.5	133.04	2.22
			Port Mann Bridge	29.24	152.56	2.54
			Barnston Island (West Head), Surrey	32.78	171.03	2.85
			Golden Ears Bridge	35.28	184.07	3.07
			Delta Port	24.98	130.33	2.17

Appendix F – Resource equipment by incident type

MARINE FIREFIGHTING EQUIPMENT LIST BY INCIDENT TYPE (VFPA JURISDICTION)

Company / Vessel	Forest Marine	Fraser River Pile & Dredge	Hirkin Towing Co. Ltd	Holder Tugboat Co. Ltd	J.M. Construction Ltd.	Mercury Launch & Tug Ltd.	Ocean Group	Pacific Custom Log Sorting Inc.	Pacific Log Recovery Systems	SAAM Towage Canada Inc.	Simson Tugboats Inc.	Stabilum LLC	Trident Navigation Ltd.	Tymac Launch Service Ltd.	Vancouver Pile Driving Ltd.
INCIDENT TYPE															
FIRE															
FiFi Class Vessel							■			■		■			
NON-FiFi Class Vessel	■		■	■	■	■		■		■	■	■	■	■	
Flat Barge	■	■				■						■			
Ramp Barge			■												
Crane Barge		■			■										
Clamshell Barge		■			■										
Spud Barge		■			■										
Grapple Crane					■			■	■						
Lattice Crane					■										
Excavator Capable Barge						■									
Crew/Equipment Transport	■		■	■	■			■					■		
Landing Craft															
2" (Scow) Dewatering Pump	■	■	■	■	■	■	■	■	■	■	■	■	■		
3" (Scow) Dewatering Pump													■		
6" (Scow) Dewatering Pump			■												
Environmental Boom													■		
TOWING/ASSIST															
Towing	■		■	■	■	■	■	■		■	■	■			
Dock Assist							■			■		■			
SALVAGE/RECOVERY															
Flat Barge	■														
Ramp Barge			■												
Crane Barge		■													
Clamshell Barge		■													
Spud Barge		■			■										
Grapple Crane		■						■	■						
Lattice Crane					■										
Excavator Capable Barge															
Crew/Equipment Transport	■		■		■										
Landing Craft															
2" (Scow) Dewatering Pump	■	■	■	■	■	■	■	■	■	■	■	■	■		
3" (Scow) Dewatering Pump															
6" (Scow) Dewatering Pump			■												
Environmental Boom															
ENVIRONMENTAL															
Water/Oily Water Barge											■				
Crew/Equipment Transport															
Landing Craft															
Environmental Boom				■									■	■	
Scow Pumps	■	■	■	■	■	■	■	■	■	■	■	■	■		

Appendix G – Resource equipment by stakeholder



MARINE FIREFIGHTING EQUIPMENT LIST BY STAKEHOLDER (VFPA JURISDICTION)

Company / Vessel	FiFi Class	Non FiFi Class	Flat Barge	Ramp Barge	Crane Barge	Clamshell crane	Spud Barge	Grapple Crane	Lattice Crane	Waste / Oily Water	Excavator Capable	Crew/Equipment Transport	Landing Craft	Fire Pump	2" 50hp/Dewatering Pump	3" 50hp/Dewatering pump	6" 50hp Pump	7400 GPM Port Pump	9600 GPM Port Pump	2" Submersible Pump	3" Submersible Pump	Environmental Boom
VESSELS																						
FORREST MARINE																						
Nellie Irene		■													gpm n/a							
River Queen		■													gpm n/a							
Pee Wee II		■													gpm n/a							
Work Skiffs												10 T			gpm n/a							
Water Taxi's												■			gpm n/a							
Barge #1 - c/w 5 ton crane			100 T												gpm n/a							
Barge #2			25 T												gpm n/a							
FRASER RIVER PILE & DREDGE																						
GE #1 - 28m x 13m					100 T	■	■								gpm n/a							
GE #2 - 33m x 14m					150 T	■	■								gpm n/a							
GE #5 - 28m x 12m					100 T	■	■								gpm n/a							
McKenzie					200 T	■	■								gpm n/a							
RE McKenzie - 38m x 14m					150 T	■	■								gpm n/a							
T.L. SHARPE - 32m x 13m					150 T	■	■								gpm n/a							
FLAT BARGES - VARIOUS SIZES			■												gpm n/a							
HARKEN TOWING																						
Ballantyne Straits		■												60 gpm	151 gpm							
Dorothy McKenzie		■												151 gpm	151 gpm							
Granny Hutch		■												170 gpm	151 gpm							
Harken No 5		■												151 gpm	151 gpm							
Harken No 6		■												151 gpm	151 gpm							
Harken No 7		■												60 gpm	151 gpm							
Harken No 9		■												175 gpm	151 gpm							
Ken McKenzie		■												170 gpm	151 gpm							
Rose McKenzie		■												60 gpm	151 gpm							
Tim McKenzie		■												60 gpm	151 gpm							
HODDER TUGBOAT CO. LTD.																						
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
Unnamed Tug		■													gpm n/a							
JJM CONSTRUCTION LTD.																						
Miller 209									200 T													
Miller 210									175 T													
Miller 212									200 T													
Miller 214									175 T													
Miller Diamond		■													gpm n/a							
Mr. Bill		■													gpm n/a							
MERCURY LAUNCH & TUG LTD.																						
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Tug		■												gpm n/a	gpm n/a							
Unnamed Barge (100' x 34')		■									■			■	■							
OCEAN GROUP																						
Ocean Georgie Bain	FiFi 0													5132 gpm	gpm n/a							
Ocean Granville	FiFi 1													2 x 4400 gpm	gpm n/a							
Ocean Kitsilano	FiFi 1													2 x 4400 gpm	gpm n/a							
Ocean Stevns	FiFi 0													2 x 1283 gpm	gpm n/a							

Appendix H – FiFi classified vessels in the port authority jurisdiction

frank dodich & associates ltd.
CROWD / FIRE / EMERGENCY MANAGEMENT SOLUTIONS
604.788.9059 frank.dodich@gmail.com @frankdodich

VANCOUVER FRASER PORT AUTHORITY (VFPA)
FIREFIGHTING CAPACITY STUDY

VFPA is conducting a capacity survey to identify and map resources along the water ways that may be able to provide support in the event of a Marine fire. Please submit completed forms to Frank Dodich & Associates by using the SUBMIT FORM button at the bottom right of this page.

Company Name:	Ocean Group
Contact Person Name:	Miladin Gacic
Title:	
Contact #:	778-229-4721
Emergency Dispatch #:	1-877-694-1414
Vessel Name:	Ocean Georgie Bain
Moorage Address:	12 Orwell Street
City:	North Vancouver
Certification:	FiFi 0, Bureau Veritas

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☐ Firefighting
Classification: ☒ Fi-Fi 0 ☐ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	24.40	Metres
Draft:	4.185	Metres
Breadth:	9.144	Metres
GRT:	204.21	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 X Cat 3512B HD
Total Power (HP):	3000 kw (4024 bhp) @ 1600 rpm
Propulsion:	
Bollard Pull:	40.6 metric tons
Propellers:	
Cruising Speed:	12.6

Fire Equipment:	Qty.	Comment
☒ Hose		
☒ Monitor	2	600 m3/h monitors each
☒ Nozzles		
Environmental		
☐ Booms		
☐ Skimmers		
☐ Sorbents		
☒ Fire Pump	1	1400 m3/h (6164 US GPM or 5132 UK gpm)
Capacity:		

Deck Equipment:

☐ Hawser Winch:	
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	

Additional Notes:

2 X 600 m3/h monitors (or 2 x 2641 GPM @ 140 PSI)

Thank you for your support and for taking the time to participate in this study.
Participants will receive an electronic copy of the formal report of the finalized study.

SAVE FORM
CLEAR FORM
SUBMIT FORM

April 2021

frank dodich & associates ltd.
CROWD / FIRE / EMERGENCY MANAGEMENT SOLUTIONS
604.788.9059 frank.dodich@gmail.com @frankdodich

VANCOUVER FRASER PORT AUTHORITY (VFPA) FIREFIGHTING CAPACITY STUDY

VFPA is conducting a capacity survey to identify and map resources along the water ways that may be able to provide support in the event of a Marine fire. Please submit completed forms to Frank Dodich & Associates by using the SUBMIT FORM button at the bottom right of this page.

Company Name:	Ocean Group
Contact Person Name:	Miladin Gacic
Title:	
Contact #:	778-229-4721
Emergency Dispatch #:	1-877-694-1414
Vessel Name:	Ocean Granville
Moorage Address:	12 Orwell Street
City:	North Vancouver
Certification:	

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☒ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	27.59	Metres
Draft:	6.15	Metres
Breadth:	12.93	Metres
GRT:	381	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 X Cat 3516C TA HD/D
Total Power (HP):	
Propulsion:	
Bollard Pull:	
Propellers:	
Cruising Speed:	13.2 knots

Fire Equipment:	Qty.	Comment
☒ Hose		
☒ Monitor	2	1200 m3/h or 5283 US GPM
☒ Nozzles		
Environmental		
☐ Booms		
☐ Skimmers		
☐ Sorbents		
☒ Fire Pump	2	1200 m3/h (5283 US GPM or 4400 UK GPM)
Capacity:		

Deck Equipment:

☐ Hawser Winch:	
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	

Additional Notes:

Monitors = 2 X 5283 US GPM @ 140 PSI

Thank you for your support and for taking the time to participate in this study.
Participants will receive an electronic copy of the formal report of the finalized study.

SAVE FORM CLEAR FORM SUBMIT FORM

April 2021

frank dodich & associates ltd.
CROWD / FIRE / EMERGENCY MANAGEMENT SOLUTIONS
604.788.9059 frank.dodich@gmail.com @frankdodich

VANCOUVER FRASER PORT AUTHORITY (VFPA) FIREFIGHTING CAPACITY STUDY

VFPA is conducting a capacity survey to identify and map resources along the water ways that may be able to provide support in the event of a Marine fire. Please submit completed forms to Frank Dodich & Associates by using the SUBMIT FORM button at the bottom right of this page.

Company Name:	Ocean Group
Contact Person Name:	Miladin Gacic
Title:	
Contact #:	778-229-4721
Emergency Dispatch #:	1-877-694-1414
Vessel Name:	Ocean Kitsilano
Moorage Address:	12 Orwell Street
City:	North Vancouver
Certification:	

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☒ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	27.59	Metres
Draft:	6.15	Metres
Breadth:	12.93	Metres
GRT:	381	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 X Cat 3516C TA HD/D
Total Power (HP):	
Propulsion:	
Bollard Pull:	
Propellers:	
Cruising Speed:	13.2 knots

Fire Equipment:	Qty.	Comment
☒ Hose		
☒ Monitor	2	1200 m3/h or 5283 US GPM @ 140 PSI
☒ Nozzles		
Environmental		
☐ Booms		
☐ Skimmers		
☐ Sorbents		
☒ Fire Pump	2	1200 m3/h (5283 US GPM or 4400 UK GPM)
Capacity:	2 x 5283 US GPM @ 140 PSI	

Deck Equipment:

☐ Hawser Winch:	
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	

Additional Notes:

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604.788.9059 frank.dodich@gmail.com @frankdodich

VANCOUVER FRASER PORT AUTHORITY (VFPA) FIREFIGHTING CAPACITY STUDY

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Company Name:	Ocean Group
Contact Person Name:	Miladin Gacic
Title:	
Contact #:	778-229-4721
Emergency Dispatch #:	1-877-694-1414
Vessel Name:	Ocean Stevns
Moorage Address:	12 Orwell Street
City:	North Vancouver
Certification:	FiFi 0, Bureau Veritas

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☐ Firefighting
Classification: ☒ Fi-Fi 0 ☐ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	33.50	Metres
Draft:	4.64	Metres
Breadth:	11.60	Metres
GRT:	512	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 X MAK 6M25
Total Power (HP):	3700 kw (5028 bhp)
Propulsion:	
Bollard Pull:	
Propellers:	
Cruising Speed:	13.4

Fire Equipment:	Qty.	Comment
☒ Hose		
☒ Monitor		
☒ Nozzles		
Environmental		
☐ Booms		
☐ Skimmers		
☐ Sorbents		
☒ Fire Pump	2	350 m3/h (1585 US gpm or 1283 UK GPM)
Capacity:	2 x1585 US GPM @ 140 PSI	

Deck Equipment:

☐ Hawser Winch:	
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	

Additional Notes:

2 X 350 m3/h monitors

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Company Name:	SAAM Smit Towage Canada
Contact Person Name:	Mark Bingham
Title:	VP, Operations
Contact #:	604-251-0203
Emergency Dispatch #:	604-252-2828
Vessel Name:	SST Grizzly
Moorage Address:	2215 Commissioner Street,
City:	Vancouver
Certification:	NC2, Limited HT III

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☐ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	32m	Metres
Draft:	5.52m	Metres
Breadth:	12.77	Metres
GRT:	492	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 X Caterpiller 3516C
Total Power (HP):	6700
Propulsion:	ASD
Bollard Pull:	80 mt
Propellers:	Variable Pitch
Cruising Speed:	8-11kts cruising, 13.5kts max

Fire Equipment:	Qty.	Comment
☒ Hose	4	15m each
☒ Monitor	2	
☒ Nozzles	4	
Environmental		
☐ Booms		
☐ Skimmers		
☒ Sorbents		SOPEP Kit
☒ Fire Pump	3	2xFire/Bilge pump, Portable
Capacity:	2400 m3/hr, 1200 m3/hr per side	

Deck Equipment:

☐ Hawser Winch:	Ibercisa Escort Winch
☒ Aft Towing Winch:	Ibercisa
☐ Deck Crane:	Palfinger PK11001M
☐ Dewatering Equip:	
Tow Line Length:	292m forward, ~400m aft

Additional Notes:

Portable Pump Information:
Suction and discharge ports = 2"
Total Head = 105'
Suction Head = 24'
Discharge Capacity = 620L per min

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Company Name:	SAAM Towage Canada
Contact Person Name:	Mark Bingham
Title:	VP Operations
Contact #:	604-803-7859
Emergency Dispatch #:	604-202-3220
Vessel Name:	SST Orca
Moorage Address:	Commissioner Street
City:	Vancouver
Certification:	ABS Class, Tier 2

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Click Here to Add Image of Vessel

Services

☒ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	30	Metres
Draft:	5.5	Metres
Breadth:	13	Metres
GRT:	492	Tonnes

Engines, Propulsion & Performance

Main Engine:	Diesel
Total Power (HP):	5050 kw
Propulsion:	ASD
Bollard Pull:	85T
Propellers:	2
Cruising Speed:	10

Fire Equipment:	Qty.	Comment
☒ Hose	7	2"
☒ Monitor	2	
☒ Nozzles	2	2 x FiFi, * Conventional
Environmental		
☐ Booms		
☐ Skimmers		
☒ Sorbents	3	Pads and Sausge
☒ Fire Pump	3	1 Fire, 1 Bilge/E-Fire, 1 Scow
Capacity:	2400 CM/HR, 1200CM/HR per side	

Deck Equipment:

☒ Hawser Winch:	Bow
☐ Aft Towing Winch:	
☒ Deck Crane:	Hiab
☒ Dewatering Equip:	Scow Pump
Tow Line Length:	311.6 M

Additional Notes:

2 1/2" Connection Hose, 2 Hydrants on Deck, 2 Hydrants in ER, * Hydrants Total, 4 deck hydrants per side, specifically for FiFi Foam system

This is alos the same for the SST Grizzly

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Company Name:	Seaspan ULC
Contact Person Name:	Harbour Dispatch Desk
Title:	Harbour Dispatch Desk
Contact #:	(604) 988-1144
Emergency Dispatch #:	(604) 988-1144
Vessel Name:	Seaspan Raven / Seaspan Eagle
Moorage Address:	10 Pemberton Ave.
City:	North Vancouver, B.C.
Certification:	ABS

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☒ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	28.20	Metres
Draft:	5.39	Metres
Breadth:	12.60	Metres
GRT:	441	Tonnes

Engines, Propulsion & Performance

Main Engine:	2 x Caterpillar 3516B
Total Power (HP):	3,728 kW / 5,000 BHP
Propulsion:	2x RRM azimuthing drives
Bollard Pull:	71T
Propellers:	2x 4-blade Kaplan 2400 mm dia. CP
Cruising Speed:	11.50 Knots

Fire Equipment:	Qty.	Comment
☒ Hose	5	In boxes next to vessel's fire hydrants
☒ Monitor	2	Make: FFS Systems
☐ Nozzles	4	On decks and mach. spaces
Environmental		
☐ Booms		
☐ Skimmers		
☒ Sorbents		Emergency Spill Response Kit
☒ Fire Pump	2	Fixed, PTO from M/E
Capacity:	Fi-Fi I spec.	

Deck Equipment:

☒ Hawser Winch:	RRM TW 2000/500 AW 24 U2 H
☒ Aft Towing Winch:	Rolls-Royce Marine single drum
☒ Deck Crane:	Palfinger folding-1.04T @ 10.3m
☐ Dewatering Equip:	
Tow Line Length:	152 m of synthetic & wire ropes

Additional Notes:

- Fi-Fi I equipped and capable
- 1x Fireman's Locker, with full outfit

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Company Name:	Seaspan ULC
Contact Person Name:	Harbour Dispatch Desk
Title:	Harbour Dispatch Desk
Contact #:	(604) 988-1144
Emergency Dispatch #:	(604) 988-1144
Vessel Name:	Seaspan Osprey / Kestrel
Moorage Address:	10 Pemberton Ave.
City:	North Vancouver, B.C.
Certification:	ABS

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

- ☒ Firefighting
  - Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
- ☐ Salvage
- ☒ Towing/Docking
- ☐ Environmental Response
- ☐ Wreck Recovery/Removal
- ☐ Refloating Grounded Vessels

Dimensions

Overall Length:	28.20	Metres
Draft:	5.39	Metres
Breadth:	12.60	Metres
GRT:	441	Tonnes

Engines, Propulsion & Performance

Main Engine:	2x Caterpillar 3516C
Total Power (HP):	4,698 kW / 6,300 BHP
Propulsion:	2x RRM azimuthing drives
Bollard Pull:	81T
Propellers:	2x 4-blade Kaplan 2400 mm dia. CP
Cruising Speed:	11.50 Knots

Fire Equipment:	Qty.	Comment
☒ Hose	5	In boxes next to vessel's fire hydrants
☒ Monitor	2	Make: FFS Systems
☒ Nozzles	4	On decks and mach. spaces
Environmental		
☐ Booms		
☐ Skimmers		
☒ Sorbents	1	Emergency Spill Response Kit
☒ Fire Pump	2	Fixed, PTO from M/E
Capacity:	Fi-Fi I spec.	

Deck Equipment:

☒ Hawser Winch:	RRM TW 2000/500 AW 24 U2 H
☐ Aft Towing Winch:	
☒ Deck Crane:	Palfinger folding-1.04T @ 10.3m
☐ Dewatering Equip:	
Tow Line Length:	152 m of synthetic rope

Additional Notes:

- Fi-Fi I equipped and capable
- - 1x Fireman's Locker, with full outfit

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Company Name:	Seaspan ULC
Contact Person Name:	Harbour Dispatch Desk
Title:	Harbour Dispatch Desk
Contact #:	(604) 988-1144
Emergency Dispatch #:	(604) 988-1144
Vessel Name:	Seaspan Raptor / Seaspan Harrier
Moorage Address:	10 Pemberton Ave.
City:	North Vancouver, B.C.
Certification:	ABS

Type: ☒ Towing/Tug ☐ Barge ☐ Dredge ☐ Crane ☐ Fire Boat ☐ Construction

Services

☒ Firefighting
Classification: ☐ Fi-Fi 0 ☒ Fi-Fi I ☐ Fi-Fi II ☐ Fi-Fi III
☐ Salvage
☒ Towing/Docking
☐ Environmental Response
☐ Wreck Recovery/Removal
☐ Refloating Grounded Vessels

Dimensions

Overall Length:	24.40	Metres
Draft:	3.05	Metres
Breadth:	11.250	Metres
GRT:	312	Tonnes

Engines, Propulsion & Performance

Main Engine:	2x Caterpillar 3516C-HD
Total Power (HP):	4,700kW / 6,390 BHP
Propulsion:	2x Rolls Royce Marine US255
Bollard Pull:	78T
Propellers:	2x 4-blade Kaplan 2400 mm dia. FP
Cruising Speed:	11.50 Knots

Fire Equipment:	Qty.	Comment
☒ Hose	4	In boxes near vessel's fire hydrants
☒ Monitor	2	Make: FFS Systems, foam-capable, remote electronic controls
☒ Nozzles	6	+ D/D-mounted self-deluge misting system
Environmental		
☐ Booms		
☐ Skimmers		
☒ Sorbents	1	Emergency Spill Response Kit
☒ Fire Pump	3	Main pump driven by dedicated diesel
Capacity:	2,800 m3/hr	

Deck Equipment:

☒ Hawser Winch:	DMT TW-E250kN dual-drum
☐ Aft Towing Winch:	
☐ Deck Crane:	
☐ Dewatering Equip:	
Tow Line Length:	347.00 m of synthetic rope

Additional Notes:

- Foam tank capacity: 6.60 m3
- 1x Fireman's Locker, with full outfit
- Aft static swiveling tow hook available

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Appendix I – Marine firefighting and salvage response timeframes

Service	Location of Incident Response Activity Timeframe (Hours)					
Marine Firefighting	**Burrard Inlet** (Centerm)		**Fraser River** (Port Mann)		**Roberts Bank** (Delta Port)	
	At Pier	On Water	At Pier	On Water	At Pier	On Water
Assessment & Planning:						
1. Remote assessment & Consultation	.25*	.25*	.25*	.50	.25*	.25*
2. On-site fire assessment	.25*	.25*	.25*	1.0*	.25*	1.0*
Fire Suppression:						
3. External/Municipal firefighting teams	.25*	.25*	.25*	N/A	.25*	N/A
4. External vessel firefighting systems	.25*	.25*	.25*	2.25**	.25**	.25**
5. External firefighting system on a barge		2.0		3.0		7.0
LEGEND * Responding Municipal Fire Department ** Responding FiFi Classified Vessel						

Salvage	**Burrard Inlet** (Centerm)	**Fraser River** (Port Mann)	**Roberts Bank** (Delta Port)
Assessment & Survey:			
6. Remote assessment & Consultation	4	4	4
7. Begin assessment of structural stability	48	48	48
8. On-site salvage assessment	48	48	48
9. Assessment of structural stability	48	48	48
10. Hull & Bottom survey	4*	4*	4*
Stabilization:			
11. Emergency Towing	2	2	2
12. Salvage Plan	16	16	16
13. External emergency transfer operations	24	24	24
14. Emergency lightering	24	24	24
15. Other refloating methods	18	18	18
16. Making temporary repairs	8	8	8
17. Diving services support	4	4	4
Specialized Operations:			
18. Special salvage operations plan	48	48	48
19. Subsurface product removal	120	120	120
20. Heavy lift 1	Estimated	Estimated	Estimated
LEGEND * Divers			