HIGHLIGHTS OF

B.C. MINISTRY OF ENVIRONMENT'S WEST COAST SPILL RESPONSE STUDY, VOLUME 1: *ASSESSMENT OF BRITISH COLUMBIA MARINE OIL SPILL PREVENTION & RESPONSE REGIME*

Clear Seas is an independent, not-for-profit organization that provides impartial and evidence-based research to inform the public and policy makers about marine shipping in Canada.

We are providing this digest of the BC Ministry of Environment's West Coast Spill Response Study, Volume 1: *Assessment of British Columbia Marine Oil Spill Prevention & Response Regime.*

This short digest is not meant to be inclusive of all the Review's commentary and/or recommendations, nor are the items mentioned necessarily in the same order as the original report.

MESSAGE FROM THE EXECUTIVE DIRECTOR

As shipping volumes increase on Canada's west coast, and with further major marine transportation projects anticipated for BC ports, the government of British Columbia has a vested interest in better understanding the risks particularly associated with increased ship-based oil movements. To that end the British Columbia Ministry of Environment commissioned Nuka Research to conduct a three-part study to provide an assessment of the current oil spill prevention and response regime on the west coast. The study was completed in 2013.

For marine oil spill prevention, preparedness, response, and recovery - and the provincial government's aspiration for a world-leading system - it is important to note that it relies on initiatives that are largely beyond provincial jurisdiction – and on a network of international, federal, provincial, and local regulatory and response authorities. As such the recommendations for BC mentioned in the report must be considered in the context of these other jurisdictional realities.

Volume 1 of the West Coast Spill Response Study provides a baseline snapshot and gap analysis of the existing marine oil spill prevention, preparedness and response regime in British Columbia, including a description of the laws, regulations, programs, and plans that govern this regime.

While a focus on prevention of marine oil spills is of paramount importance, it is also critical to ensure that adequate capacity is made available to respond and mitigate the impacts of a spill, should one occur. To this end, the study also describes the results of a series of computer simulated oil spills used to estimate response capacity and highlights some of the key issues in moving forward with developing a system to best protect the province's environment and communities from the impacts of an oil spill, should one occur.

This digest covers some of the major observations of this volume and provides hotlinks to many of the agencies mentioned.

Subsequent volumes provide additional details to inform British Columbia and the Government of Canada's efforts in moving forward to best ensure that environmental, economic and social values of our coastlines and waterways are represented and protected.

This volume provides an assessment of the marine oil spill prevention and response regime in place in British Columbia. It describes the related laws, regulations, programs, and plans in place to prevent or respond to an oil spill. In addition, to provide the provincial government with an illustration how the current equipment and plans in place for the west coast might perform during an oil spill, the report contains a series of simulated oil spills to estimate current response capacity.

Regulatory and Planning Framework

Canada's regulatory framework for marine oil spills rests primarily with federal laws and the agencies charged with their implementation.

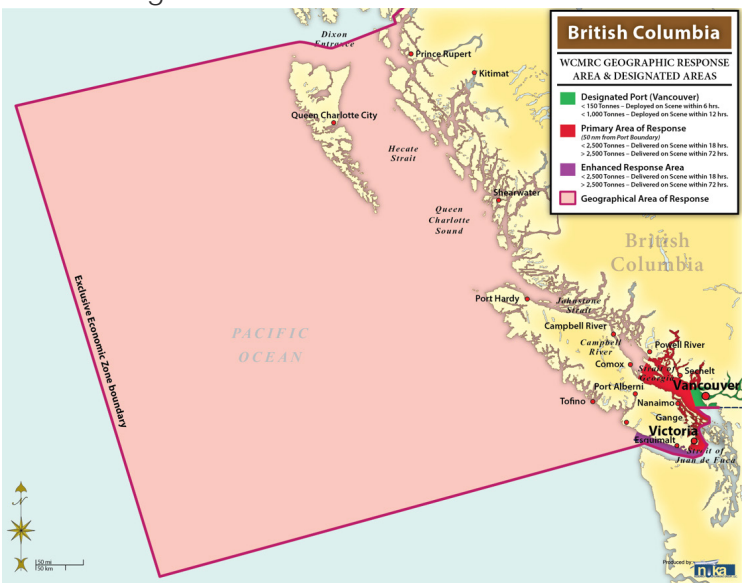
Transport Canada is the lead department responsible for ensuring preparedness for marine oil spills, while the Canadian Coast Guard (CCG) is the lead when implementing or overseeing a response. Environment and Climate Change Canada provides expertise related to meteorology, sensitive areas, and wildlife impacts.

At the provincial level, the BC Ministry of Environment is the lead coordinating agency in the event of oil or other hazardous spills, as per regulations under the province's *Emergency Program Act.*

The province will also regulate the management of oily waste under its Environmental Management Act regulations. It has contingency plans specific to marine oil spills which are summarized in the following Table.

PLAN	SUMMARY
BC Marine Oil Spill Pollution Plan (BC, 2007)[50]	• Describes roles played by provincial agencies in an oil spill response, with the Ministry of Environment as the lead provincial agency. • Describes the notification process and steps to establish an Incident Management Team (including contact information for both Canadian and US agencies and inter-agency teams) and/or Unified Command (with CCG and other federal agencies). • Explains that provincial resources will be made available to support a response as needed. • Establishes criteria for determining incident severity. • Describes how the spill response will integrate with the BC Emergency Response Management System and the establishment of the Ministry's operational center. • The Ministry may also support a response in US states under the States/BC Oil Spill Memorandum of Cooperation of 1989.

The overall framework for marine spill preparedness and response in Canada is that the "polluter pays". Accordingly, those who operate vessels of 400 GT[1] (or tank ships or barges of 150 GT) must pay fees to response organizations that are able to respond to a spill that is at least the size of the vessel's cargo and fuel (up to 10,000t), and serves the areas where the vessel navigates.



In British Columbia, the Western Canada Marine Response Corporation (WCMRC) is the industry funded response organization certified by Transport Canada. Its mandate is to ensure there is a state of preparedness in place and to mitigate the impact if an oil spill occurs.

This illustration shows the WCMRC Geographic Response Area and response time requirements.

As noted on the map, the fastest response times are required for a spill within the "designated port" area immediate to the Port of Vancouver.

1 Gross Tonnage (GTs) is a volumetric measurement of the enclosed space or internal volume in a ship. It is not directly related to the mass or weight of the ship. Gross Tonnage was defined by The International Convention on Tonnage Measurement of Ships, 1969, adopted by the International Maritime Organization, and is used to determine things such as a ship's manning regulations, safety rules, registration fees, and port dues.

Prevention Programs

There are a number of oil spill prevention programs and systems in place for vessels operating in Canadian waters, several of which are described in this report.

For example, Port State Control (PSC) is a ship inspection program that involves boarding and inspecting foreign vessels - including oil tankers - entering Canadian ports to ensure they comply with major international maritime conventions.

For its part the CCG operates the Marine Communications and Traffic Service (MCTS) program, which provides marine safety communications and co-ordination with rescue resources, vessel traffic services and waterway management, broadcast weather and safety information, and vessel planning support services. MCTS operates the Vessel Traffic Services (VTS). There are five MCTS stations (Vancouver, Victoria, Comox, Prince Rupert, and Tofino) and three VTS zones (Vancouver, Prince Rupert, and Tofino). All vessels over 20m in length operating in Canadian waters must receive VTS clearance before beginning a voyage or entering Canadian waters.

In addition, most large vessels operating in Canadian waters must also be fitted with an automatic identification system (AIS), a tracking system used for identifying and locating vessels by electronically exchanging data with other nearby ships, base stations, and satellites.

As the following map indicates, there are also measures in place through various jurisdictions to provide additional navigational safety by excluding or controlling vessel traffic, particularly laden oil tankers, through specific waterways.

Navigational restrictions currently in place for oil tanker traffic in western Canada include a Voluntary Tanker Exclusion Zone, Limitations to Tanker Movements in the West Coast Inside Passage, and the Vancouver Second Narrows Movement Restricted Area.

On another front, the use of **escort** and **rescue tugs** for oil tankers in transit are also a recognized spill prevention practice. In British Columbia, in Haro Strait and Boundary Pass, all laden tankers of over

40,000 Deadweight Tonnes (DWT)[1,2] must be escorted by an escort tug that meets minimum specifications. The Vancouver Fraser Port Authority requires a minimum of two escort tugs to accompany laden tankers in excess of 40,000 DWT while transiting the First and Second Narrows, both inbound and outbound.

That said, there are no escort tug systems currently in place in British Columbia waters north of the Vancouver area, and there are no federal or provincial statues or regulations that compel tanker escorts in BC waters.

Marine pilotage is yet another major component of the oil spill prevention process. Marine pilots have extensive knowledge of local waterways and board vessels to ensure they are safely navigated through the various passageways along the coast. Every ship over 350 GT (excepting pleasure craft) and every pleasure craft over 500 GT is subject to compulsory pilotage in coastal areas within roughly two nautical miles of shore.

The Pacific Pilotage Authority (PPA) has oversight responsibility for pilotage requirements, The PPA oversees licensing of marine pilots based on regulatory standards.

Additional information on Canada's spill prevention programs can be found via Transport Canada.

1 Deadweight Tonnage (DWT) is a measure of how much mass a ship is carrying or can safely carry; it does not include the mass of the ship. DWT is the sum of the masses of the cargo, fuel, fresh water, ballast water, provisions, passengers, and crew.

2 A ship of 40,000 DWT in size is classified within the "Handymax", or in Canada, as the "Seawaymax" size (the largest size of vessel that can fit through the canal locks of the St. Lawrence Seaway).

Response Capacity Analysis

Nuka Research ran a series of simulated oil spills at two locations to illustrate how much spilled oil could be collected using WCMRC's equipment resources as well as forces from nearby US states.

A total of seven simulations were run at two locations: two for spills occurring in Dixon Entrance and five for spills occurring in the Strait of Juan de Fuca. All spills were the same volume (10,000 metric tonnes[1]) and were modeled as instantaneous (vs. continual) releases, meaning the entire volume is spilled at one time.

Because the two spill locations are in international border regions, the analysis considered two tiers of response resources: the first from within Canada (WCMRC) and the second from US spill response organizations.

All mobilization and deployment times assumed favorable conditions.

Canadian forces were given a one-hour mobilization time. US forces were given a 12-hour mobilization time. All forces were given a one-hour on-scene setup time, which was added to their mobilization and transit time to determine when they commenced recovery operations.

The following table summarizes recovery system performance for the seven simulated oil spills. In six of the seven scenarios, more than 50% of the spill remained on the water at the end of the five-day simulation.

SCENARIO	TOTAL OIL RECOVERED (TONNES)			MASS BALANCE AT 120 HRS (PERCENTAGE OF 10,000 TONNES SPILL)		
	24 hrs	72 hrs	120 hrs	Oil recovered (%)	Oil remaining on-water (%)	Oil dispersed & evaporated (%)
Spill 1[89]	9	193	412	4%	68%	28%
Spill 2[90]	2	102	247	3%	71%	26%
Spill 3[91]	356	1440	1958	20%	55%	25%
Spill 4[92]	356	1928	2549	25%	49%	26%
Spill 5[93]	64	594	866	9%	65%	26%
Spill 6[94]	370	2166	3099	31%	56%	13%
Spill 7[95]	38	59	965	10%	64%	26%

Spill 4 represents the highest overall percentage of oil recovered, and Spill 2 the lowest.

1 A spill of size 10,000 metric tonnes is approximately equivalent to four times of the volume of an Olympic sized swimming pool (25m wide x 50m long x 2m deep).

It is critical to note that recovery percentages vary greatly depending on a number of factors including: evaporation rates, response time of recovery vessels, internal storage of recovery vessels, oil type and properties, slick thickness, change of oil characteristics over time, oil thickness and geographic dispersal, and oil viscosity ("stickiness") and emulsification (incorporating water). Other factors that can also impact oil recovery effectiveness include: spill location, season, sea state conditions, weather conditions, and availability of cascading resources.

These simulations were run for illustrative purposes only and were intended to put into context the manner in which certain variables can impact on-water recovery operations. The scenarios illustrate that a 10,000 tonnes response capacity does not necessarily equate to a guaranteed recovery of a 10,000 tonne spill.

Discussion/Conclusion

The analysis in this report provides a snapshot of the existing baseline for spill prevention and response in western Canada.

In recapping its findings, the report re-iterated and identified several areas where current practices may need to be augmented or improved in order to achieve the best possible protection for BC's coastal resources, including:

- The 10,000 tonne response planning standard;
- Transparency and diligence in government oversight;
- Verifying planning assumptions and operating procedures such as the number and availability of contract personnel and vessels of opportunity, movement of equipment across the international border, and 24-hour operations;
- Inter-governmental coordination; and
- The location of equipment and other resources to ensure adequate preparation for spills anywhere along the coast, rather than highly concentrated in the far south.

Key organizations with roles in oil spill prevention and response are aware of the need to keep pace with western Canada's new shipping projects, and the vision of a "world-class" system has been embraced by both industry and government.

The realization of this vision will require government and industry to continue to commit time, funding, and resources to enhance and improve the existing system.