



# Risk Assessment of Transporting Canadian Oil Sands

Report to Congress  
*May 29, 2014*



*U. S. Coast Guard*

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# Forward

I am pleased to present the following report, “Risk Assessment of Transporting Canadian Oil Sands,” which has been prepared by the U.S. Coast Guard.

Section 722 of the Coast Guard and Maritime Transportation Act of 2012 (Pub. L. No. 112-213) requires the Commandant to assess the increased vessel traffic in the Salish Sea (including Puget Sound, the Strait of Georgia, Haro Strait, Rosario Strait, and the Strait of Juan de Fuca) that may occur from the transport of Canadian oil sands.



Pursuant to Congressional requirements, this report is being provided to the following members of Congress:

The Honorable Bill Shuster  
Chairman, House Committee on Transportation and Infrastructure

The Honorable Nick J. Rahall II  
Ranking Member, House Committee on Transportation and Infrastructure

The Honorable John D. Rockefeller IV  
Chairman, Senate Committee on Commerce, Science, and Transportation

The Honorable John Thune  
Ranking Member, Senate Committee on Commerce, Science, and Transportation.

I am happy to answer any further questions you may have, or your staff may contact my Senate Liaison Office at (202) 224-2913 or House Liaison Office at (202) 225-4775.

Sincerely,

A handwritten signature in blue ink, appearing to read "R. J. Papp, Jr.", written over a faint blue circular stamp.

R. J. PAPP, JR.  
Admiral U.S. Coast Guard  
Commandant



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# I. Legislative Language

This report responds to the language set forth in Section 722 of the Coast Guard and Maritime Transportation Act of 2012 (Pub. L. No. 112-213), per the following:

## **SEC. 722. RISK ASSESSMENT OF TRANSPORTING CANADIAN OIL SANDS.**

(a) In General. —The Commandant of the Coast Guard shall assess the increased vessel traffic in the Salish Sea (including Puget Sound, the Strait of Georgia, Haro Strait, Rosario Strait, and the Strait of Juan de Fuca) that may occur from the transport of Canadian oil sands oil.

(b) SCOPE. —The assessment required under subsection (a) shall, at a minimum, consider -

- (1) the extent to which vessel (including barge, tanker, and supertanker) traffic may increase due to Canadian oil sands development;
- (2) whether the transport of oil from Canadian oil sands within the Salish Sea is likely to require navigation through United States territorial waters;
- (3) the rules or regulations that restrict supertanker traffic in United States waters, including an assessment of whether there are methods to bypass those rules or regulations in such waters and adjacent Canadian waters;
- (4) the rules or regulations that restrict the amount of oil transported in tankers or barges in United States waters, including an assessment of whether there are methods to bypass those rules or regulations in such waters and adjacent Canadian waters;
- (5) the spill response capability throughout the shared waters of the United States and Canada, including oil spill response planning requirements for vessels bound for one nation transiting through the waters of the other nation;
- (6) the vessel emergency response towing capability at the entrance to the Strait of Juan de Fuca;
- (7) the agreement between the United States and Canada that outlines requirements for laden tank vessels to be escorted by tugboats;
- (8) whether oil extracted from oil sands has different properties from other types of oil, including toxicity and other properties, that may require different maritime clean up technologies;
- (9) a risk assessment of the increasing supertanker, tanker, and barge traffic associated with Canadian oil sands development or expected to be associated with Canadian oil sands development; and
- (10) the potential costs and benefits to the United States public and the private sector of maritime transportation of oil sands products.

(c) CONSULTATION REQUIREMENT.—In conducting the assessment required under this section, the Commandant shall consult with the State of Washington, affected tribal governments, and industry, including vessel operators, oil sands producers, and spill response experts. The Commandant may consult with the Secretary of State.

(d) DEADLINE FOR SUBMISSION.—Not later than 180 days after the date of enactment of this Act, the Commandant shall submit the assessment required under this section to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

## II. Report

### ***1. The extent to which vessel (including barge, tanker, and supertanker) traffic may increase due to Canadian oil sands development.***

Tank vessel traffic is expected to increase as a result of Canadian oil sands development. Indications of an increase in vessel traffic are found in federal and state databases as well as through details obtained through private company permits such as the Trans-Mountain ULC permit submission to the Canada National Energy Board<sup>1</sup>. An increase of up to 408 Aframax<sup>2</sup> size tankers per year in the Port of Vancouver area alone can be expected at peak production in 2017. The primary traffic route that these tankers are expected to transit is via the Haro Strait/Boundary Pass. No additional tank vessel traffic is anticipated via the Rosario Strait.

Collection of vessel traffic data in the Salish Sea region has historically been a challenge, largely due to the disparate identifiers used by United States and Canadian port officials and stakeholders to describe vessel traffic by ship type. Fortunately, the means to identify vessel traffic has changed substantially with the introduction of the Automatic Identification System (AIS). AIS is used principally by ships and Vessel Traffic Services (VTS) for identifying and locating vessels and to exchange navigation safety information such as vessel identification, course, and speed between nearby ships and VTS stations. Carriage of AIS on commercial vessels was adopted by the International Maritime Organization as an amendment to the Safety of Life at Sea Convention in December, 2000, and entered into force in July, 2002.

#### ***Historic Vessel Traffic Analysis***

In 1995, Congress directed the Coast Guard to submit a plan to implement an international, private-sector tug of opportunity system (ITOS) for vessels in distress within the Olympic Coast National Marine Sanctuary and Strait of Juan de Fuca under Title IV of the Alaska Power Administration Asset Sale and Termination Act (Pub. L. No. 104-58). As part of this implementation plan, the Coast Guard analyzed the commercial vessel traffic activity for vessels transiting through the Strait of Juan de Fuca. A key impediment in developing an accurate picture of the vessel traffic in the study area was the variety of sources of vessel traffic data. In 1995, at least five independent organizations tracked vessel traffic including the U.S. Coast Guard VTS Puget Sound, Canadian Coast Guard Maritime Communications and Traffic Services (MCTS), Marine Exchange of Puget Sound, Washington State Department of Ecology, and the Chamber of Shipping of British Columbia. The analysis indicated that “no one data source serves to adequately portray the nature and extent of the commercial maritime transportation activity in this region” and “a lack of standardization, different vessel category definitions and different data collection criteria characterize these sources.”<sup>3</sup> The Coast Guard concluded in its commercial vessel traffic analysis section to, “fully appreciate the complexity and magnitude of the maritime transportation system of this region, it is imperative to look at all pertinent vessel traffic data sources.”<sup>4</sup>

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<sup>1</sup> Trans Mountain Pipeline ULC - Trans Mountain Expansion Permit Application, Folder 2392873. Canada National Energy Board. Accessed 16 Jan 2014. <https://docs.neb-one.gc.ca/ll-eng/llisapi.dll?func=ll&objId=2392873&objAction=browse&viewType=1>

<sup>2</sup> Aframax – A tank vessel not greater than 120,000 deadweight tons (DWT) with a breadth of 32.1 meters and depth of 20 meters.

<sup>3</sup> U.S. Coast Guard. International, Private-Sector Tug-of-Opportunity System for the Waters of the Olympic Coast National Marine Sanctuary and the Strait of Juan de Fuca. Washington, D.C. p. 12. (1995). [http://ntl.bts.gov/lib/6000/6300/6310/itos\\_all.pdf](http://ntl.bts.gov/lib/6000/6300/6310/itos_all.pdf)

<sup>4</sup> Ibid.

### ***Vessel Traffic Risk Assessment (VTRA)***

The Makah Indian Tribal Council has funded a project to update the 2005 VTRA model originally developed by George Washington University and Virginia Commonwealth University (2006-2008)<sup>5</sup> to inform a U.S. Army Corps of Engineers' Environmental Impact Statement regarding British Petroleum's dock expansion at Cherry Point, WA. That project updated vessel traffic information to use 2010 Canadian Coast Guard Vessel Traffic Operational Support System (VTOSS) data as the base case year for the dataset to more closely approximate present-day patterns in commercial traffic. Most recently, the Puget Sound Partnership funded a project to use the model to review potential changes to risk that might result if vessel traffic patterns changed as a result of three, planned expansion and construction projects that are in various stages of the permitting process. One of these projects included the transportation of Canadian Oil Sands via pipeline, which is the focus of this report. The model uses traffic data to illustrate risk of oil spills and other incidents due to the changes in traffic that may result from the three expansion projects. This VTRA report is expected to be complete in February 2014 and the results may assist in the discussion regarding additional incident prevention and navigation safety mitigating strategies if deemed necessary.

### ***Trans-Mountain LLC Permit***

Vessel traffic associated with Canadian oil sands production is expected to increase by up to 408 Aframax size tankers per year when the Trans Mountain, Westridge Marine and Burnaby Terminals located in Burnaby, B.C. reach peak productivity in 2017.<sup>6</sup> Accordingly, crude carriers, product tankers, tank barges and bulk cargo ship traffic supporting production facilities and supertankers are expected to increase during the same period.

### ***Tank Ships bound for Canadian Ports***

Tank ship transits for vessels bound for Canadian ports via the Strait of Juan de Fuca have increased substantially since 2002 as indicated in the Washington State, Department of Ecology, Vessel Entries and Transits (VEAT) data as shown in Table (1), although transits have leveled off to some degree over the past few years. Tank ships include all types of tank vessels including chemical, crude/oil, gasoline, etc. A transit in the table is defined as a round-trip transit, i.e., one inbound and one outbound passage, whereas individual refers to an inter port movement from one location to another. The vast majority of tank vessels currently transiting through Haro Strait and Boundary Pass are chemical tankers, not crude/oil tankers.

### ***Projections of Increase in Vessel Traffic***

Based on an analysis of joint U.S. - Canadian VTS/MCTS data, the projected increase in Aframax tankers may increase overall deep draft vessel traffic within the primary tank vessel transit route of Haro Strait/Boundary Pass by only 10 percent from an average of 17.8 deep draft vessels per day to 19.5 deep draft vessels transits per day; still less than one deep draft vessel per hour. An increase in vessel traffic may not directly relate to a commensurate increase in risk of groundings or collisions due to myriad mitigating strategies already in place. Deep draft vessels include all commercial merchant vessels such as bulk cargo ships, container vessels, auto carriers, general cargo ships as well as tank vessels. Tank vessels presently comprise only approximately 6 percent of overall deep draft traffic through Haro Strait and Boundary Pass.

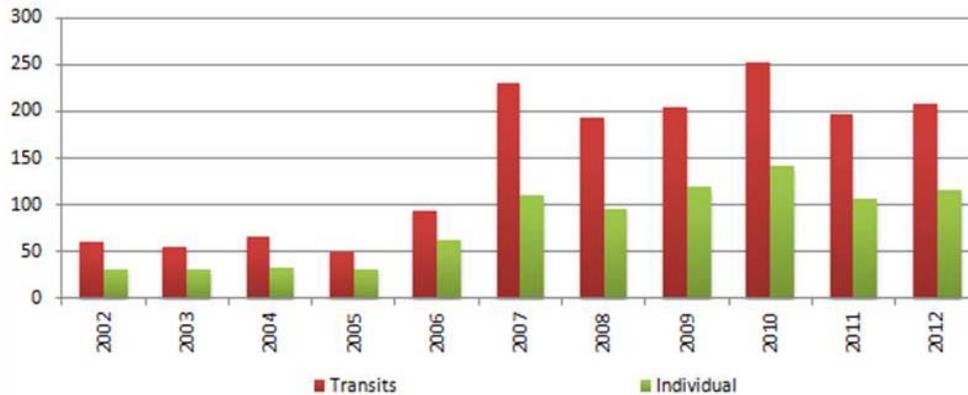
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<sup>5</sup> George Washington University and Virginia Commonwealth University. *Assessment of Oil Spill Risk due to Potential Increased Vessel Traffic at Cherry Point, Washington*. (August 2008).

<http://www.seas.gwu.edu/~dorpjr/VTRA/FINAL%20REPORT/083108/VTRA%20REPORT%20-%20Main%20Report%20083108.pdf>

<sup>6</sup> Ibid. Trans Mountain Pipeline ULC.

**Table 1: Tank ships bound for Canadian ports via Strait of Juan de Fuca**



**2. Whether the transport of oil from Canadian oil sands within the Salish Sea is likely to require navigation through United States territorial waters.**

A Traffic Separation Scheme (TSS) in the Strait of Juan de Fuca dictates that vessels making round trips to United States or Canadian ports through the Strait transit the territorial waters of both nations. Transport of oil from Canadian oil sands within the Salish Sea does require oil tanker navigation through United States territorial waters due to location of the United States / Canada international boundary<sup>7</sup>. The Straits of Juan de Fuca, Haro Strait and Boundary Pass are considered “international straits” bisected by the United States / Canada international boundary along their entirety. The international boundary follows generally parallel and central to the Strait of Juan de Fuca and Strait of Georgia, vessel traffic separation zones(see Figure 1).

Vessels transiting the inbound portion of the Strait of Juan de Fuca TSS destined to Canadian ports navigate in U.S. territorial waters for approximately 54 nautical miles in the Strait of Juan de Fuca TSS and 19 nautical miles along the inbound leg of the Strait of Georgia TSS. Both inbound and outbound traffic lanes passing through the Haro Strait and Boundary Pass, a distance of approximately 24 miles, cross the United States and Canada international boundary irregularly through their entire distance.

The opposite holds true for vessels transiting outbound from Vancouver to the Straits of Juan de Fuca entrance. The outbound traffic lanes in the Strait of Georgia and Strait of Juan de Fuca are located in Canada’s territorial waters. Outbound traffic lanes through Boundary Pass and Haro Strait frequently cross the United States and Canada international boundary.

National Oceanic and Atmospheric Administration (NOAA) Chart 18400, Strait of Georgia and Strait of Juan de Fuca provides an overall display of the entire geographic and maritime region including the United States and Canada international boundary and the internationally recognized vessel traffic separation scheme.

***Force Majeure / Places of Refuge***

Vessels engaged in innocent passage through U.S. territorial waters, which includes vessels destined to Canadian ports while transiting the Strait of Juan de Fuca and Strait of Georgia, may encounter an overwhelming force or condition of such severity that it threatens loss of the vessel, cargo or crew

<sup>7</sup> Coordinates for the U.S./Canada boundary in the Salish Sea area may be found at the US/Canada International Boundary Commission website, [www.internationalboundarycommission.org](http://www.internationalboundarycommission.org).

unless immediate corrective action is taken. The master may declare “*Force Majeure*” and seek a “*Place of Refuge*” to address the emergency condition and to affect vessel repairs.

The Northwest Area Contingency Plan, Section 9410<sup>8</sup> recognizes the severe nature of a force majeure declaration and addresses the need to establish “*Places of Refuge*”. A place of refuge may be located in U.S. territorial waters as decided by the Coast Guard COTP after consultation with Federal, State and Tribal agencies, local governments and stakeholders and after activation of the Unified Command under the Incident Command System if time allows. When a Place of Refuge incident occurs that involves, or may involve, the international border, a response will be activated as per the Joint Canada / US Pacific Response Plan.<sup>9</sup>

**3. The rules or regulations that restrict supertanker traffic in United States waters, including an assessment of whether there are methods to bypass those rules or regulations in such waters and adjacent Canadian waters.**

International conventions, as well as federal and state regulations, provide a comprehensive regime of rules for both commercial and private vessel traffic, which includes tank vessel traffic, in the Salish Sea area. Key regulations affecting tanker traffic in the United States and adjacent Canadian waters are provided in Table (2). Additionally, brief explanations of these regulations are provided in various tables to further delineate these regulations, application and prohibitions as related to vessel traffic in designated areas. Additionally the Puget Sound Harbor Safety Committee and the Canadian Pacific Pilotage Authority have published Harbor Safety Plan Standards of Care<sup>10</sup> and Notices to Industry<sup>11</sup>, respectively, which provide substantive and robust operating rules for tank vessel operations and include requirements for extra pilots, extra bridge manning, escort tug operating standards including horsepower and tethering requirements, tidal current transit restrictions, speed limits, and master-pilot pre-escort exchange conferences among others. Both U.S. Coast Guard Vessel Traffic Service Puget Sound and Canadian Coast Guard Victoria Maritime Communications and Traffic Services Centre provide an oversight role in ensuring compliance with these operating rules.

**Table 2: Regulations restricting tanker traffic in U.S. and Canadian waters**

Body	Authority	Regulation
International	International Maritime Organization	<ul style="list-style-type: none"> <li>• International Regulations for Preventing Collisions at Sea, 1972</li> <li>• COLREGS, Rule 10, Traffic Separation Schemes</li> </ul>
United States	Coast Guard	<ul style="list-style-type: none"> <li>• Regulated Navigation Areas and Limited Access Areas 33 CFR 165, Subpart B</li> <li>• Safety Zones 33 CFR 165, Subpart C</li> <li>• Security Zones 33 CFR 165, Subpart D</li> <li>• Deepwater Port Operations, 33 CFR 150</li> <li>• Restricted Waterfront Areas 33 CFR 165, Subpart E</li> <li>• Speed and Wake Control Shipping - 46 USC Sec. 2302</li> <li>• General Anchorage Regulations, 33 CFR 110</li> </ul>

<sup>8</sup> Northwest Area Contingency Plan. Change 15. (January 1, 2014). Section 9410. Places of Refuge. Accessed on 16 Jan 2014. <http://www.rrt10nwac.com/Files/NWACP/2014/Section%209410.pdf>.

<sup>9</sup> Canadian Coast Guard – United States Coast Guard. *Joint Marine Pollution Contingency Plan (CANUS)*. (2013). <http://www.uscg.mil/d1/response/jrt/documents/2013%20CANUS%20JCP.pdf>.

<sup>10</sup> Puget Sound Harbor Safety Committee. *Harbor Safety Plan*. Section C, Standards of Care. (April 2013). [http://cdn2.assets.sites.launchrocketship.com/3ce74667-d320-4623-8287-04eee9a9f4f8/files/4e85b0e3-d04d-41e0-921d-bc71c9f37b49/hsp\\_2013\\_final\\_4-3-2013\\_section\\_c.pdf](http://cdn2.assets.sites.launchrocketship.com/3ce74667-d320-4623-8287-04eee9a9f4f8/files/4e85b0e3-d04d-41e0-921d-bc71c9f37b49/hsp_2013_final_4-3-2013_section_c.pdf)

<sup>11</sup> Pacific Pilotage Authority, Industry Publications and Notices. [http://www.ppa.gc.ca/text/notice\\_to\\_industry-e.html](http://www.ppa.gc.ca/text/notice_to_industry-e.html)

Body	Authority	Regulation
	NOAA	<ul style="list-style-type: none"> <li>National Marine Sanctuaries Program Regulations, 15 CFR 922</li> <li>Areas to be Avoided (ATBA)</li> </ul>
	Washington State	<ul style="list-style-type: none"> <li>Washington State (RCW 88.16.190) Oil Tankers, Restricted Waters – Standard Safety Features Required, Washington State</li> </ul>
Canada	Canadian Coast Guard	<ul style="list-style-type: none"> <li>Voluntary Tanker Exclusion Zone (TEZ)</li> </ul>

**Regulated Navigation & Limited Access Areas (33 CFR 165, Subpart B)**

Regulated Navigation Areas (RNA) and Limited Access Areas<sup>12</sup> are water areas within a defined boundary for which regulations for vessels navigating within the area have been established. Each Coast Guard District Commander may control vessel traffic including parameters of vessel movement, vessel size, speed and draft limitations and operating conditions. The District Commander may also restrict vessel operations to vessels, which have particular operating characteristics or capabilities, which are considered necessary for safe operation under the circumstances. Table (3) provides an overview of select major RNAs affecting tanker traffic in U.S. navigable waters within the Coast Guard’s Thirteenth District. Naval Vessel Protection Zones established and regulated per 33 CFR 165.2010, Subpart G are effective in all U.S. navigable waters.

**Table 3: Thirteenth Coast Guard District Regulated Navigation Areas affecting tanker traffic in U.S. waters**

33 CFR	RNA Location	Application	Regulation(s) (Abbreviated)
165.1301	Puget Sound and Adjacent Waters in Northwestern Washington.	Vessels following the Puget Sound VTS Traffic Separation Scheme system.	Congested traffic regulations imposed by VTS to enhance vessel traffic safety during periods of hazardous levels of vessel traffic congestion.
165.1303	Puget Sound and adjacent waters, WA. Specifically, the waters of the United States east of a line extending from Discovery Island Light to New Dungeness Light and all points in the Puget Sound area north and south of these lights. <sup>13</sup>	Tank vessels greater than 125,000 deadweight tons (DWT).	Tank vessel navigation restrictions. Operation in RNA prohibited.
165.1310	Strait of Juan de Fuca and adjacent coastal waters of Northwest Washington; Makah Whale Hunting.	Any vessel or person.	Vessels to maintain a radius of 500 yards centered on the Makah whale hunt vessel displaying international numeral pennant five (5).

<sup>12</sup> Regulated Navigation Areas and Limited Access Areas.” Title 33 Code of Federal Regulations. Navigation and Navigable Waters, Part 165. e-CFR current as of December 17, 2013. <http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=1457f97fa4db65222c8480162b07c75c&ty=HTML&h=L&r=PART&n=33y2.0.1.6.34#33:2.0.1.6.34.7>

<sup>13</sup> Washington State Legislature. Revised Code of Washington (RCW) 88.16.190. Oil Tankers, Restricted Waters. Prohibits any oil tanker, whether enrolled or registered, of greater than one hundred and twenty-five thousand deadweight tons shall be prohibited from proceeding beyond a point east of a line extending from Discovery Island light south to New Dungeness light. Accessed on 16 Jan 2014 from <http://apps.leg.wa.gov/rcw/default.aspx?cite=88.16.190>

33 CFR	RNA Location	Application	Regulation(s) (Abbreviated)
165.2010	Pacific / Atlantic areas navigable waters	Any vessel or person.	When within a naval vessel protection zone, no vessel or person is allowed within 100 yards of a large U.S. naval vessel unless authorized by the Coast Guard, the senior naval officer present in command or official patrol.

***Safety Zones (33 CFR 165, Subpart C)***

A Safety Zone is a water area, shore area, or water and shore area to which, for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion. No person may enter a safety zone, or cause to be brought into a safety zone any vehicle, vessel or object or to remain in a safety zone unless authorized by the COTP or District Commander.

The District Commander may also establish Outer Continental Shelf (OCS) safety zones around facilities being constructed, maintained, or operated on the OCS to promote the safety of life and property on the facilities, their appurtenances and attending vessels per 33 CFR 147. An OCS safety zone may extend to a maximum distance of 500 meters around the OCS facility; however, it may not interfere with recognized sea lanes essential to navigation. There are a total of 39 OCS safety zones established in U.S. navigable waters, 24 in the Eighth Coast Guard District and 15 in the Eleventh Coast Guard District.

Safety zones that further restrict tanker vessel operations and traffic in deepwater ports, such as the Louisiana Offshore Oil Port, are contained in 33 CFR 150.

***Security Zones (33 CFR 165, Subpart D)***

A security zone is an area of land, water, or land and water which is so designated by the COTP or District Commander for such time as is necessary to prevent damage or injury to any vessel or waterfront facility, to safeguard ports, harbors, territories, or waters of the United States or to secure the observance of the rights and obligations of the United States. Regulations prohibit any person or vessel to remain in a security zone without COTP permission. The COTP may remove any person, vessel, article or thing from a security zone or take possession and control of any vessel in a security zone. Table (4) is a summary of the security zones in Coast Guard District Thirteen that may affect tanker traffic.

**Table 4: Thirteenth Coast Guard District Security Zones affecting tanker traffic in the Puget Sound area.**

33 CFR	Security Zone Area	Regulation or Activity
165.1313	Puget Sound and adjacent waters, Washington. Tanker Security Zone.	When ordered by the COTP, there is established around a tank ship, a security zone extending for a 500-yard radius around all tank ships located in the navigable waters of the United States in Puget Sound, WA, east of 123 degrees, 30 minutes West Longitude. [Datum: NAD 1983]
165.1321	Captain of the Port Zone Puget Sound, WA. Protection of Military Cargo.	Vessels 20 meters or greater in length should seek permission from the COTP or a Designated Representative at least 4 hours in advance.

***National Marine Sanctuaries (15 CFR 922)***

The National Marine Sanctuary program identifies, designates and manages areas of the marine environment as special national, and in some cases international, significance due to their conservation, recreational, ecological, historical, research, educational, or aesthetic qualities. Regulations controlling certain vessel activities by requiring avoidance of areas, and prohibiting anchoring and vessel discharges in the thirteen national marine sanctuaries and the Northwestern Hawaiian Islands Marine National Monument are contained in 15 CFR 922 and provided in abbreviated form in Table (5).

**Table 5: Thirteenth Coast Guard District National Marine Sanctuaries which may affect tanker traffic in U.S. waters.**

<b>15 CFR</b>	<b>National Marine Sanctuary</b>	<b>Prohibition Activity or Regulation (abbreviated)</b>
922.152	Olympic Coast	Area to be Avoided (ATBA): All ships and barges that carry oil or hazardous materials in bulk as cargo or cargo residue and all ships 400 gross tonnage and above solely in transit should avoid area. (Reduce the risk of marine casualty and resulting pollution and damage to the marine environment).

***Washington State Tanker Traffic Regulation (R.C.W. 88.16.190)***

RCW Section 88.16.190, prohibits oil tanker traffic greater than 125,000 DWT from proceeding beyond a point east of a line extending from Discovery Island light south to New Dungeness light.

***Cooperative Vessel Traffic Services (CVTS)***

The Canadian and the United States Coast Guards established the CVTS for the Strait of Juan de Fuca region in 1979 through a bi-national Agreement. Since then, it has been a model for international cooperation. The CVTS provides for the safe and efficient movement of vessel traffic within the CVTS Area of Operations while minimizing the risk of pollution by preventing collisions and groundings. As part of the Agreement, Canadian Traffic Centres provide traffic services for a portion of U.S. waters, while VTS Puget Sound provides traffic services for a portion of Canadian waters, which includes virtually all of the Strait of Juan de Fuca. Victoria Traffic is responsible for traffic services in the primary tank vessel transit route via the lower Georgia Straits, Boundary Pass and Haro Strait, half of which are U.S. waters. CVTS “Areas of Operation” are shown in Figure (1).

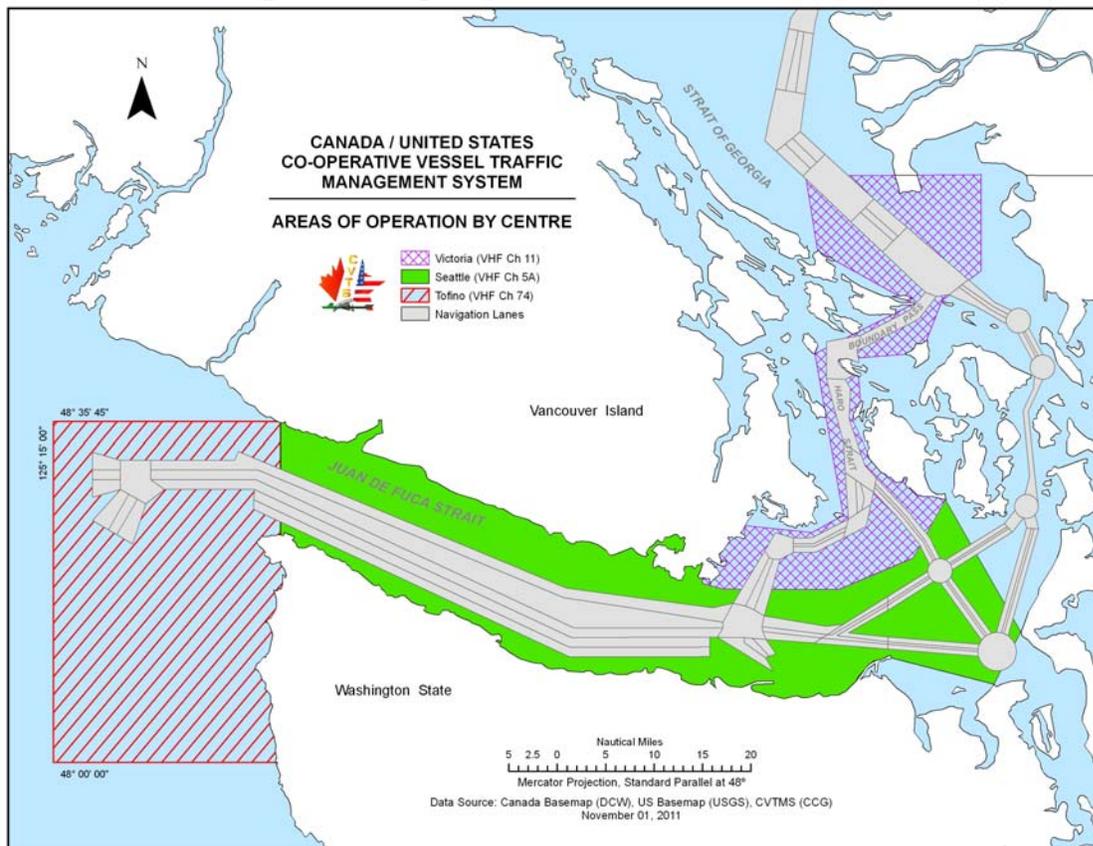
In addition to VTS and MCTS operators providing continuous, year-round monitoring of vessel movements within the applicable waterways using a sophisticated array of surveillance sensors, a Vessel Movement Reporting System using a VHF-FM communications network is in place to exchange navigation safety information with VTS/MCTS Users.

A Joint Coordinating Group co-chaired by the Thirteenth Coast Guard District and Canadian Coast Guard Western Region provides oversight of the CVTS. A CVTS Procedures Committee ensures operational, communications, systems/equipment and training responsibilities are kept up to date. A Vessel Traffic Management Information System includes an electronic data sharing handoff tool for vessels passing through each nation’s respective CVTS zone, and a Near Real Time display of vessel tracks is shared between adjacent centers.

Finally, a TSS adopted by the International Maritime Organization exists within the Salish Sea, is depicted on all nautical charts, and provides order and predictability of traffic flow through the designated tank vessel transit routes. The TSS is based on a U.S. Coast Guard Ports Access Route Study (PARS)<sup>14</sup> announced in January 1999<sup>15</sup> and completed in November 2000<sup>16</sup>. The study evaluated the need for modifications to vessel routing measures in the Strait of Juan de Fuca and adjacent waters including Admiralty Inlet, Rosario Strait, Haro Strait, Boundary Pass, and the Strait of Georgia. The goal of the study was to help reduce the risk of marine casualties and increase vessel traffic management efficiency in the study area. The study condensed 28 recommendations into 18 significant actions including mandatory use of the TSS for certain classes of vessels and reconfiguration and extension of existing TSS's in the study areas.

PARS are not regularly updated, rather they are undertaken when significant changes in vessel traffic volume or traffic patterns necessitates a review of the waterway configuration. Accordingly, there is no perceived need to conduct a new study at this time as the orientation of the existing TSS's within the Salish Sea and Puget Sound areas are expected to adequately serve the traffic volume and routing needs of vessel traffic identified in this report. Should the Coast Guard need to adjust the TSS in the future, it will be carried out in accordance with PARS requirements and the federal rulemaking process.

**Figure 1: Cooperative Vessel Traffic Services (CVTS) zones**



<sup>14</sup> "Ports and Waterways Safety Program." Title 33 *Code of Federal Regulations*, Navigation and Navigable Waters", Chapter 25. Section 1224, Considerations by Secretary. <http://www.gpo.gov/fdsys/pkg/USCODE-2010-title33/html/USCODE-2010-title33-chap25-sec1224.htm>

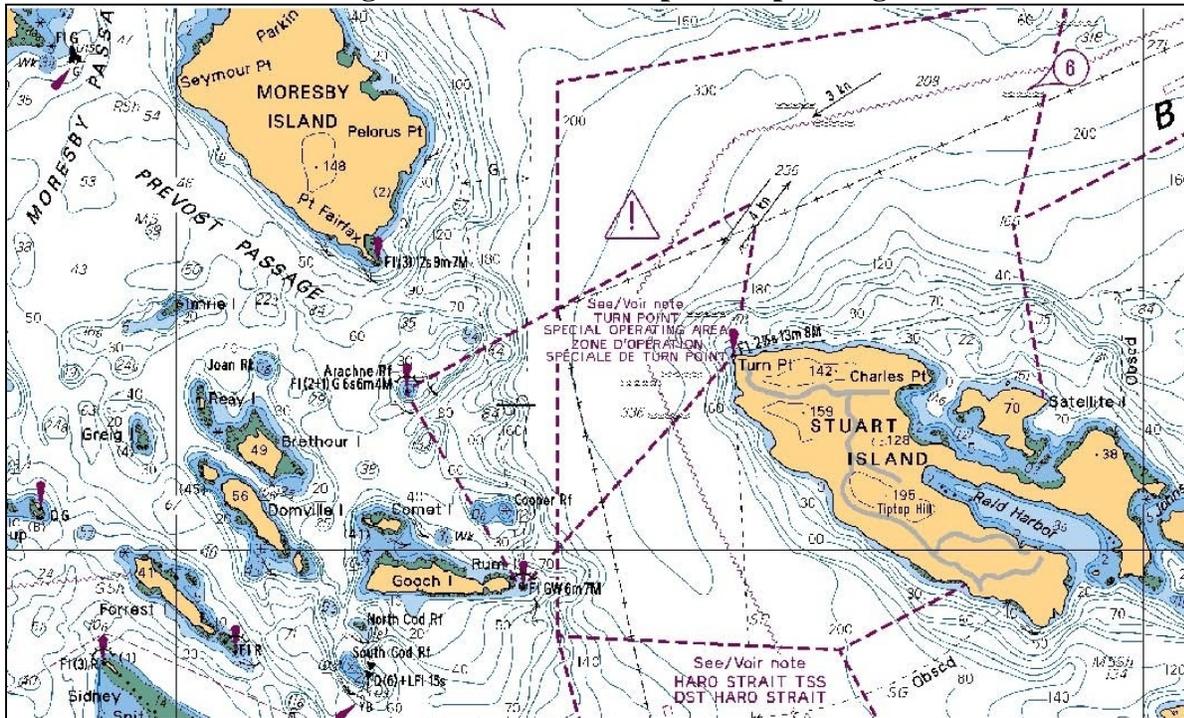
<sup>15</sup> Federal Register, January 20, 1999 (64 FR 3145).

<sup>16</sup> Notice of Study Results. Published 22 Jan 2001 (64 FR 6514). <https://www.federalregister.gov/articles/2001/01/22/01-1847/port-access-routes-strait-of-juan-de-fuca-and-adjacent-waters>. Additionally, discussion of NPRM comments may be found in the TSS Interim Rule, Docket USCG-2002-12702. <http://www.gpo.gov/fdsys/pkg/FR-2010-11-19/pdf/2010-29165.pdf>

### **Turn Point - Special Operating Area (SOA)**

The Turn Point - Special Operating Area<sup>17</sup> (SOA) was established to reduce the risk of accidents by vessels transiting the boundary waters of Haro Strait and Boundary Pass in the vicinity of Turn Point on Stuart Island, Washington (Figure 2). These procedures apply to all VTS participant vessels within or approaching the Turn Point SOA from Boundary Pass, southbound for Haro Strait; and from Haro Strait, northbound for Boundary Pass or Swanson Channel. However, they do not apply to vessels southbound out of Swanson Channel. The SOA includes provisions to ensure vessels maintain adequate separation from each other as well as Turn Point. The SOA is monitored and enforced by Victoria Traffic.

**Figure 2: Turn Point - Special Operating Area**



### **Rosario Strait Special Area**

The VTS Puget Sound Special Area<sup>18</sup> includes the waters of Rosario Strait, Guemes Channel, Bellingham Channel, Padilla Bay, and the Saddlebag route east of Guemes Island. Vessels of 40,000 Dead Weight Tons or more and vessels of 100 meters in length or greater are prohibited from meeting, overtaking, crossing, or operating within 2,000 yards of each other (except when crossing astern) within this VTS Special Area.

### **Voluntary Tanker Exclusion Zone (TEZ)**

A voluntary TEZ<sup>19</sup> exists off Canada's Pacific Coast (Figure 3). The TEZ was established in 1988 as a result of a 1985 Tanker Drift Study, which recommended navigational boundary limits. The U.S. Coast Guard, Canadian Coast Guard, and industry stakeholders accepted these navigational boundary limits. The TEZ is an area where a disabled tanker would likely drift ashore prior to the

<sup>17</sup> U.S. Coast Guard. Turn Point - Special Operating Area (SOA). Accessed on 16 Jan 2014. <http://www.uscg.mil/d13/cvts/turn.asp>

<sup>18</sup> "Rosario Strait VTS Special Area". Title 33 Code of Federal Regulations. Part 161.55(b). Accessed on 15 Jan 2014.

<http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=72dd2b28614391a354f4461de9cf63f1&r=PART&n=33y2.0.1.6.30#33:2.0.1.6.30.3.201.7>

<sup>19</sup> Transport Canada. Tanker Safety and Spill Prevention. Voluntary Tanker Exclusion Zone. Accessed on 15 Jan 2014.

<http://www.tc.gc.ca/eng/marinesafety/menu-4100.htm#f>

arrival of salvage tugs in unfavorable conditions. The TEZ, by its distance offshore, provides additional time for response resources to come to the aid of a disabled vessel. This zone's eastern limits are 77 miles to the west of Cape St. James, 60 miles from Triangle Island and 40 miles from Estevan Point.

**Figure 3: Voluntary Tanker Exclusion Zone (TEZ) (Canadian Coast Guard).**



#### ***Methods to Bypass Rules or Regulations***

The entire Salish Sea area is covered by Vessel Traffic Services operated by the Canadian Coast Guard or the U.S. Coast Guard. These services use 100 percent AIS coverage, extensive radar networks and closed circuit television to monitor and react to vessel activity. They take a proactive law enforcement stance with any vessel that moves contrary to the TSS or enters an exclusion area. Attempts to bypass rules or regulations result in immediate intervention by an empowered VTS official or other law enforcement officer. The potential for a VTS intervention and subsequent Port State Control enforcement has proven to be an effective deterrent. Pilots embarked aboard tank vessels would not willfully violate rules or regulations set in place to enhance navigation safety.

#### ***4. The rules or regulations that restrict the amount of oil transported in tankers or barges in United States waters, including an assessment of whether there are methods to bypass those rules or regulations in such waters and adjacent Canadian waters.***

The amount of oil transported in tankers and barges in United States and Canadian waters is generally unrestricted, with the exception of the Federal and State regulations that limit tanker size in Puget Sound to tankers not greater than 125,000 deadweight tonnage when bound for a port or place in the U.S. Other matters that have the potential to affect the amount of oil transported on tankers and barges are ship Classification Society restrictions and physical waterway limitations, such as depth of water, breadth of channel, bridge height, and port receiving facility capability. While there may be attempts to bypass regulatory control, Coast Guard VTS and MCTS oversight and Port State Control enforcement serve as a deterrent.

**5. *The spill response capability throughout the shared waters of the United States and Canada, including oil spill response planning requirements for vessels bound for one nation transiting through the waters of another nation.***

Coordinated spill response between the United States and Canada is accomplished through the Joint Response Team and the Pacific States/British Columbia Oil Spill Task Force. The United States and Canada rely on private sector response organizations to supply the majority of oil spill response equipment required in order to address a tank vessel spill. The assets required and timeframe for delivery are defined in Guidelines for the U.S. Coast Guard Oil Spill Removal Organization (OSRO) Classification Program<sup>20</sup> and in Canada as the Response Organizations (RO) Standards (TP 12401).<sup>21</sup> When one compares capability throughout shared waters, the U.S. Guidelines and Canadian Standards are the foundation of the intent of the respective governments. Throughout the shared waters, the U.S. has two resident Open Ocean OSROs, the Marine Spill Response Corporation and the National Response Corporation. The Canadians have one certified response agency on boundary waters near British Columbia, the Western Canada Marine Response Corporation.

Both the U.S. and Canadian Coast Guards have buoy tenders homeported in the geographical area that can be equipped with spilled oil recovery equipment, portable recovery equipment and caches of spill boom. Additionally, there are significant U.S. Navy oil recovery assets staged throughout the many Naval bases in the Salish Sea region. These Navy assets are available in the event of a spill through Memorandums of Understanding between the U.S. Navy and U.S. Coast Guard. In Canada, Department of National Defense oil recovery assets are also available from bases on Vancouver Island. For comparison's sake, these federal assets are fairly equal. Both nations espouse the doctrine that the Responsible Party (RP) (the spiller) pays for cleanup, and that the RP in both countries will have pre-existing agreements in place with OSROs or ROs capable of responding along the routes used by their ships.

### ***Comparison of Vessel Plans***

**U.S.** - Section 4202 of the Oil Pollution Act of 1990 (OPA 90), amended section 311(j) of the Federal Water Pollution Control Act (FWPCA) of 1972 to require the preparation and submission of response plans by the owners or operators of all vessels defined as “tank vessels” under 46 United States Code 2101.

Plan holders are required to submit a response plan that identifies and ensures by contract or other approved means (i.e., Letter of Intent) the availability of private personnel and equipment necessary to remove, to the maximum extent practicable, a worst-case discharge (WCD), including a discharge resulting from fire or explosion, and to mitigate or prevent a substantial threat of such a discharge. The response resources include OSROs, salvors, marine firefighters, aerial dispersant and observation providers, and other shore based response personnel.

The system for assembling, mobilizing, and controlling response resources is extremely complex and specific to a particular vessel, cargo and operating area. In order to meet the statutory requirements, each response plan holder must identify the means for accomplishing these tasks. Plan holders that

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<sup>20</sup> U.S. Coast Guard. *Guidelines for the U.S. Coast Guard Oil Spill Removal Organization (OSRO) Classification Program*. (April 2013). [http://www.uscg.mil/hq/nswfweb/nswf/nswfcc/ops/ResponseSupport/RRAB/osro\\_files/0313Classification%20Guidelines.pdf](http://www.uscg.mil/hq/nswfweb/nswf/nswfcc/ops/ResponseSupport/RRAB/osro_files/0313Classification%20Guidelines.pdf)

<sup>21</sup> Transport Canada. *Response Organizations Standards (1995) - TP 12401 E*. 1995. <http://www.tc.gc.ca/eng/marinesafety/tp-tp12401-menu-2162.htm>

arrange for the services of a Coast Guard-classified OSRO do not have to list that OSRO's specific response resources in their plans. Vessels are also required to obtain a Certificate of Financial Responsibility prior to trading in U.S. waters.

**Canada** - The relevant Canadian law regarding spill response planning is titled the Canada Shipping Act 2001 (CSA 2001) and came into effect in 2007. Under CSA 2001 a regulated vessel must have an arrangement with a response organization capable of responding to maximum potential cargo or fuel spills in waters the vessel will transit, have on board proof of insurance, and have on board the contact information for response organizations and shore personnel responsible for carrying out a response.

### *Comparison of Spill Organizations*

**U.S. - Oil Spill Removal Organization** – An OSRO is any person or persons who own or otherwise control oil spill removal resources that are designed for, or are capable of, removing oil from the water or shoreline. Control of such resources through means other than ownership includes leasing or subcontracting of equipment or, in the case of trained personnel, by having contracts, evidence of employment, or consulting agreements. OSROs provide response equipment and services individually or in combination with subcontractors or associated contractors under contract or other means approved by the President directly to an owner or operator of a facility or tank vessel required to have a response plan under 33 USC 1321(j)(5). OSROs must be able to mobilize and deploy equipment or trained personnel and remove, store, and transfer recovered oil. Persons such as sales and marketing organizations (e.g., distributorships and manufacturer's representatives) that warehouse or store equipment for sale are not OSROs. Other response resources required include salvors, marine firefighters, and aerial dispersant and observation providers. The U.S. Coast Guard maintains a listing of approved OSROs able to respond in a specific operating and geographic area through its "*Coast Guard Response Resource Inventory System*".<sup>22</sup> Within this inventory system, OSROs demonstrate the ability to respond with equipment, but it does not capture the capacity of that equipment to respond to Group V oils.

**Canada - Response Organization (RO)** – The Canadian government issues a certificate of designation as a response organization to a "qualified person"<sup>23</sup> for a specified geographic area. The certificate includes a description of the quantity of oil discharge that the response organization is capable of responding to. Each of Canada's four ROs has acquired a mix of specialized oil spill response equipment to meet the response capability for which it is certified. This equipment includes boom, skimmers, boats, barges and other storage units for recovered product, shoreline cleanup treatment equipment, communication equipment, etc. The amount of equipment is dependent on the response organization's geographic area of response, ability to cascade equipment from other locations and mutual aid arrangements with other ROs.

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<sup>22</sup> U.S. Coast Guard. *United States Coast Guard Response Resource Inventory System*. <https://cgri.uscg.mil/UserReports/WebClassificationReport.aspx>

<sup>23</sup>A "qualified person" as defined by the Canada Shipping Act, SC 2001, c.26, Part 8, s 165 is (a) a Canadian citizen or a permanent resident within the meaning of subsection 2(1) of the Immigration and Refugee Protection Act, or (b) a corporation incorporated under the laws of Canada or a province. [Http://laws-lois.justice.gc.ca/eng/acts/c-10.15/FullText.html](http://laws-lois.justice.gc.ca/eng/acts/c-10.15/FullText.html)

### *Comparison of Tiered Response Systems*

**U.S.** - OSRO classification uses a three-tier response system. Each sets out the combination of response resources and the times within which the resources must be capable of arriving on-scene to meet WCD resource requirements. This system is focused on equipment capacity and floating oil response technology. Regulations identify types of equipment needed for non-floating oil response, however tiers and required capacity are not specifically established.

**Canada** - Canada uses a four-tier response system. The standards require a tiered response within a specific time frame with resources appropriate to the operating environments. The equipment for use with respect to an oil spill in a geographic area includes oil recovery units necessary for the operational requirements in that geographical area in addition to: (a) a sufficient primary temporary storage capacity to maintain recovery operations of oil or oily-water waste continuously during a 24-hour period and a sufficient secondary temporary storage capacity to store at least twice the total quantity of oil or oily-water waste collected by the response organization's oil recovery units that are used in a 24-hour period; or (b) a primary temporary storage capacity and a secondary temporary storage capacity that are less than those referred to in paragraph (a), where the efficiency of the oil recovery devices or the capability to decant water reduces the volume of storage required, or alternative temporary storage or disposal locations are available within the geographical area.

### *Comparison of Response Planning Times*

Response resources sufficient to meet the tiers above must be identified using these planning speeds when evaluating their ability to reach an incident within the prescribed timeframes:

**U.S.** - Average travel speed for planning purposes is 35 mph (56 km/hour) by land, 100 knots by air and 5 knots by sea.

**Canada** - Average travel speed for planning purposes is 65 km/hour by land, 100 knots by air and 6 knots by sea.

### *Comparison of Shoreline Standards*

**U.S.** - Regulations rely on planning standards. Vessel Response Plan regulations require that a plan holder have a specific amount of boom available for shoreline protection purposes for spill volumes likely to be encountered during operational conditions (fueling, cargo transfer) and WCD<sup>24</sup> scenarios.

**Canada** - Canada has two performance standards that require a minimum of 500 meters of affected shoreline be cleaned or protected each day. On-water recovery operations for oil spills in sheltered waters and unsheltered waters are to be completed within 10 operational days after the day on which the equipment is first deployed in the affected operating environments.

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<sup>24</sup> Worst Case Discharge (WCD) is the complete discharge of a tanker's oil cargo along with its bunker fuel or, for a non-tanker vessel, the complete release of its bunker fuel.

## ***Comparison of Dispersant Requirements***

**U.S.** - Regulations require a plan holder operating in any offshore area with pre-authorization for dispersant use to contract with a resource provider capable of providing sufficient dispersants and aerial application capability to meet the planning standards for that vessel. The dispersant identified must be of a type listed on the National Oil and Hazardous Substances Pollution Contingency Plan Product Schedule.<sup>25</sup> The plan must identify: specific dispersant application platforms and payloads, the primary dispersant staging site for each dispersant application platform, the platform type, resource provider, location, dispersant stockpiles and location, and trained personnel necessary to continue operation of the equipment and staff the oil spill removal organization and spill management team for the first seven days of the response.

**Canada** - Canada does not have a dispersant requirement.

### ***Canada-United States Joint Contingency Planning (OPRC & CANUSPAC)***

The need for a joint Canada-U.S. pollution contingency plan for the Great Lakes was pointed out by the International Joint Commission (IJC) in their report in April 1970.<sup>26</sup> This report recommended that “(11) *The Governments of Canada and the United States enter into agreement to develop coordinated international contingency plan so that both countries may quickly and effectively respond to major accidental spills of oil or other hazardous materials in the boundary waters of the Great Lakes system.*”(IJC. 91)

On June 23, 1970, a Joint Working Group on Great Lakes Pollution was created to coordinate various Canada-U.S. pollution control programs. The original Plan and Annex One were developed by a contingency planning sub-group with representatives from Canada and the United States consistent with the intent of the 1970 IJC recommendation above.

This Plan was incorporated into *The Agreement between Canada and United States on Great Lakes Water Quality, 1972*, which was signed by the Prime Minister and the President on 15 April 1972. This Agreement was renewed in 1978, supplemented in 1983, amended in 1987 and again in 2012.

The Canada-United States Joint Marine Pollution Contingency Plan (JCP) was promulgated in 1974 under the Canada-United States Great Lakes Water Quality Agreement of 1972. The JCP provides a coordinated system for planning, preparedness, and responding to harmful substance incidents in the contiguous waters of Canada and the U.S. In 1983, the joint plan was expanded to include the Atlantic coast, the Pacific coast, the Beaufort Sea area, and the Dixon Entrance area. The JCP is supported by five geographic annexes. The annexes supplement the JCP and provide the basic information necessary to execute an efficient and effective response in adjacent waters. The joint contingency plan for the Strait of Juan de Fuca is known as CANUSPAC. The CANUS JCP 2013<sup>27</sup> was updated in May 2013.

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<sup>25</sup> U.S. Environmental Protection Agency. *National Oil and Hazardous Substances Pollution Contingency Plan Product Schedule*. (Nov. 2013). <http://www.epa.gov/ceppo/web/docs/oil/ncp/schedule.pdf>

<sup>26</sup> International Joint Commission (IJC) (Canada and United States), *Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River*. (1970). <http://www.ijc.org/files/publications/ID364.pdf>

<sup>27</sup> Ibid. Canadian Coast Guard – United States Coast Guard. *Joint Marine Pollution Contingency Plan (CANUS)*.

Both the Government of Canada and the Government of the United States are also parties to the *International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990*,<sup>28</sup> (OPRC Convention). Under the OPRC, either the U.S. or Canada is able to request public or private-sector resources from the other country, or other signatory countries to assist in a response.

## **6. Vessel emergency response towing capability at the entrance to the Strait of Juan de Fuca.**

**U.S.** - The U.S. Coast Guard published a final rule establishing 33 CFR 155 Subpart I<sup>29</sup> in 2010. These regulations establish prescriptive planning standards for salvage and marine firefighting services, including emergency towing resources. Before transiting U.S. waters, vessel owners and operators must identify and contract with emergency towing vessels capable of responding to a distressed ship within 12 hours in the nearshore area and inland waters and within 18 hours in offshore areas. The area within 12 nautical miles of Cape Flattery is included in the nearshore area. The approaches to the entrance of the Strait of Juan de Fuca near Cape Flattery, WA, more than 12 miles offshore, are included in the offshore area.

In addition, it should be noted that Washington State laws, as a condition of legal entry to state waters, require certain cargo, passenger, commercial fish processing and other commercial vessels of 300 or more gross tons and all tank vessels and tank barges (“Covered Vessels”) bound for Washington State ports to file and maintain with the Washington State Department of Ecology, an approved oil spill contingency plan for the containment and cleanup of oil spills. In 2009, the Washington State legislature passed a separate law that became effective 1 July 2010, requiring these covered vessels to maintain an Emergency Response Towing Vessel at Neah Bay, WA, near the entrance to the Strait of Juan de Fuca at Cape Flattery. This towing vessel is arranged and contracted for through the Washington State Maritime Cooperative (WSMC), a cooperative non-profit corporation created to develop, provide and maintain, with the Washington State Department of Ecology, an oil spill response plan covering the operations of various classes of vessels calling in Washington State waters.

**Canada** - Canada does not maintain a dedicated, permanently stationed emergency response rescue tug as is the situation with the emergency response towing vessel at Neah Bay. Canada relies primarily on the International Tug of Opportunity System (ITOS)<sup>30</sup> for emergency tug response. ITOS is a joint U.S./Canada effort to monitor the location, identification, activity and performance capability of tugs in and around the Strait of Juan de Fuca using AIS technologies so they may quickly respond to a vessel in distress. Additionally, an existing Canadian Reciprocal Arrangement Agreement<sup>31</sup> between WSMC in the U.S. and the Western Canada Marine Response Corporation in Canada (WCMRC) provides that each organization will provide resource response coverage to vessels transiting U.S. or Canadian waters regardless of the eventual destination in Washington State or British Columbia.

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<sup>28</sup> International Maritime Organization. *International Convention on Oil Pollution Preparedness, Response and Co-operation*. Adopted 30 Nov. 1990; Entry into force 13 May 1995.

[http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Oil-Pollution-Preparedness.-Response-and-Co-operation-\(OPRC\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Oil-Pollution-Preparedness.-Response-and-Co-operation-(OPRC).aspx)

<sup>29</sup> “Salvage and Marine Firefighting Requirements; Vessel Response Plans for Oil.” Title 33 Code of Federal Regulation, Part 155 Subpart I. (USCG-1998-3417). <https://www.federalregister.gov/articles/2010/09/03/2010-22022/salvage-and-marine-firefighting-requirements-vessel-response-plans-for-oil>

<sup>30</sup> *International Tug of Opportunity System (ITOS)*. U.S. Coast Guard. [http://www.uscg.mil/d13/dep/news/international\\_tug\\_of\\_opportunity.htm](http://www.uscg.mil/d13/dep/news/international_tug_of_opportunity.htm)

<sup>31</sup> Washington State Maritime Cooperative (WSMC). *Canadian Reciprocal Arrangement Agreement*. Accessed on 21 Mar 14.

## 7. *The agreement between the United States and Canada that outline requirements for laden tank vessels to be escorted by tug boats.*

**U.S.** - At the federal level under OPA 90, single hull tank vessels greater than 5,000 GT are required to use tug escorts in certain prescribed waters of Puget Sound per 33 CFR 168, Escort Requirements for Certain Tankers.<sup>32</sup> Under State of Washington RCW 88.16.190<sup>33</sup> and WAC 363-116-500<sup>34</sup> for vessels in state waters, tug escorts are required for single and double-hulled tank vessels 40,000 DWT and over. These collective requirements are implemented through recommendations established by the Puget Sound Harbor Safety Plan<sup>35</sup> that were developed by the Puget Sound Harbor Safety Committee and are endorsed by the local U.S. Coast Guard Captain of the Port.

**Canada** - The PPA has established escort tug requirements for crude oil tankers “in product”<sup>36</sup> and for vessels carrying liquids in bulk, whether fully or partially loaded with a summer dead weight tonnage (SDWT) of 40,000 or greater transiting Haro Strait and Boundary Pass per Industry Notices 03/2013<sup>37</sup> and 07/2013<sup>38</sup> respectively. These tug escort requirements are established in lieu of formal agreements and apply equally to all vessels to which these restrictions are imposed.

Canadian pilotage regulations dictate specific voyage planning standards and detailed maneuverability, horsepower and bollard pull requirements for the tugs. They also detail tidal conditions during which transits may occur (i.e. “must sail with sufficient time to reach certain locations during slack tide”), contain comparable limitations on speed to those found in Washington State waters, and dictate manning for additional navigation personnel on the bridge of oil tankers during transits of Puget Sound waters that exceed Coast Guard manning requirements and Washington state pilotage rules.

Transport Canada completed a review of Canada’s Marine Oil Spill Preparedness and Response Regime via its Tanker Safety Expert Panel on November 15, 2013. The report, *A Review of Canada’s Ship-source Oil Spill Preparedness and Response Regime — Setting the Course for the Future*<sup>39</sup>, makes 45 recommendations to increase Canada’s overall preparedness and response regime; however, no recommendations pertain specifically to changing Canada’s current tug escort regulations.

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<sup>32</sup> “Escort Requirements for Certain Tankers.” Title 33 *Code of Federal Regulations*, Part 168, Dec. 2013. [http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title33/33cfr168\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title33/33cfr168_main_02.tpl)

<sup>33</sup> State of Washington. R.C.W 88.16.190, Oil tankers - Restricted Waters - Standard safety features required – Exemptions. Accessed on 16 Jan 2014. <http://apps.leg.wa.gov/rcw/default.aspx?cite=88.16.190>

<sup>34</sup> State of Washington. WAC 363-116-500, Tug escort requirements for oil tankers. Accessed on 16 Jan 2014. <http://apps.leg.wa.gov/wac/default.aspx?cite=363-116-500>

<sup>35</sup> Puget Sound Harbor Safety Committee. *Harbor Safety Plan*. (April 2013).

[http://www.state.co.us/gov\\_dir/leg\\_dir/olls/PDF/LEGISLATIVE%20HISTORY.pdf](http://www.state.co.us/gov_dir/leg_dir/olls/PDF/LEGISLATIVE%20HISTORY.pdf)

<sup>36</sup> “In product” means that the tanker has cargo on board regardless of amount. Pacific Pilotage Authority. Industry Notice 03/2013.

<sup>37</sup> Pacific Pilotage Authority. Notice to Industry 03/2013 - Operating Rules for Crude Oil Tankers in product with a Summer Dead Weight Tonnage (SDWT) of 40,000 or greater. Operating rules for vessels carrying liquids in bulk, fully or partially loaded, with a Summer Dead Weight Tonnage (SDWT) of 40,000 or greater. 19 Feb 2013.

[http://www.ppa.gc.ca/text/notice/Notice\\_to\\_Industry\\_2013-03\\_Rules\\_for\\_Crude\\_Oil\\_Tankers\\_Boundary\\_Pass\\_Haro\\_Strait.pdf](http://www.ppa.gc.ca/text/notice/Notice_to_Industry_2013-03_Rules_for_Crude_Oil_Tankers_Boundary_Pass_Haro_Strait.pdf)

<sup>37</sup> Pacific Pilotage Authority. Notice to Industry 07/2013 - Operating rules for vessels carrying liquids in bulk, fully or partially loaded, with a Summer Dead Weight Tonnage (SDWT) of 40,000 or greater. 11 Oct 2013.

[http://www.ppa.gc.ca/text/notice/Notice\\_to\\_Industry\\_2013-07\\_Rules\\_for\\_vessels\\_carrying\\_liquids\\_in\\_bulk\(2\).pdf](http://www.ppa.gc.ca/text/notice/Notice_to_Industry_2013-07_Rules_for_vessels_carrying_liquids_in_bulk(2).pdf)

<sup>39</sup> Transport Canada. *A Review of Canada’s Ship-source Oil Spill Preparedness and Response Regime — Setting the Course for the Future*. (Nov. 15, 2013). [http://www.tc.gc.ca/media/documents/mospr/transport\\_canada\\_tanker\\_report\\_accessible\\_eng.pdf](http://www.tc.gc.ca/media/documents/mospr/transport_canada_tanker_report_accessible_eng.pdf)

**8. Whether oil extracted from oil sands has different properties from other types of oil, including toxicity and other properties, that may require different maritime clean up technologies.**

Currently, response to Canadian oil sands products relies on the same basic technologies and strategies that are used to respond to spills of other types of oil. The key to effective Canadian oil sands products response is to ensure that response planning accurately captures their properties and prescribes the appropriate existing response technologies and strategies to be applied. The transportation of Canadian oil sands products does, however, present new challenges for the maritime spill response community. While Canadian oil sands products appear at first glance to have similar physical properties as other types of oil, response challenges can stem from uncertainties about the fate and behavior of Canadian oil sands products spilled into aquatic environments. Preparedness and response planning for spills of Canadian oil sands products can be improved and these challenges can be reduced by advancing the state of the knowledge on their fate and behavior and by ensuring their accurate characterization when reported to the Coast Guard's National Response Center.<sup>40</sup> The Canadian oil sands products themselves are derived from bitumen, which is differentiated from traditional crude oils by its higher density, viscosity, carbon-to-hydrogen ratio, and metal concentrations.<sup>41</sup>

To facilitate transport over long distances, bitumen may be heated or mixed with very low viscosity natural or synthetic oil products (commonly referred to as diluents) that are typically high in volatile organic compounds (VOCs) including benzene, toluene, ethyl benzene and xylene (collectively referred to as BTEX).

From an oil spill response perspective, it is important to have awareness of the environmental fate and behavior of Canadian oil sands products once they are released into the aquatic environment. Currently, there is scientific uncertainty about how Canadian oil sands products would weather and behave in aquatic environments at different ranges of temperatures, salinity, and sedimentation.<sup>42</sup> There is also uncertainty about the extent that the diluent will separate from Canadian oil sands products under different spill conditions. These uncertainties can pose a major challenge to oil spill responders. Typically, oil sands products are classified as Group IV oil for contingency planning, but during a spill may not behave as such. Additionally, the evaporation of volatile components of the diluents in Canadian oil sands products results in potentially toxic and/or flammable VOCs in the atmosphere above the spill. The initial portion of an oil sand product response would emphasize minimizing public and responder hazards from light VOCs that would volatilize in the first several hours/days of the event. During this initial response phase, existing Group I<sup>43</sup> oil response methods would be used to address floating diluent. Overtime, the dilbit will have an increased concentration of bitumen and a resulting decrease in American Petroleum Institute (API) gravity.<sup>44</sup> This will increase the likelihood of the dilbit sinking or remaining suspended in the water column, which would require use of existing Group V<sup>45</sup> oil technologies and procedures.

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<sup>40</sup> U.S. Coast Guard's National Response Center's primary function is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

<sup>41</sup> Canada National Energy Board. *Canada's Oil Sands Opportunities and Challenges to 2015, an Energy Market Assessment*. (May 2004). <http://www.neb-one.gc.ca/clf-nsi/rnrgynfmitn/nrgyrprt/lnd/pprtntsndchllngs20152006/pprtntsndchllngs20152006-eng.pdf>

<sup>42</sup> Crosby, S., et. al. 2013. *Transporting Alberta Oil Sands Products: Defining the Issues and Assessing the Risks*. U.S. Dept. of Commerce, NOAA Technical Memorandum NOS OR&R 43. Seattle, WA: Emergency Response Division, NOAA. 153 pp.

<sup>43</sup> As outlined in 33 CFR § 155.1020, non-persistent or Group I oil means a petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions — (1) At least 50% of which by volume, distill at a temperature of 340 degrees C (645 degrees F); and (2) At least 95% of which by volume, distill at a temperature of 370 degrees C (700 degrees F).

<sup>44</sup> API gravity is American Petroleum Institute's (API) inverted scale for denoting the 'lightness' or 'heaviness' of crude oils and other liquid hydrocarbons.

<sup>45</sup> As outlined in 33 CFR § 155.1020, persistent oil means a petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. For the purposes of this subpart, persistent oils are further classified based on specific gravity as follows:(1) Group II—

This phenomenon of diluent separating out from Canadian oil sands products was encountered in 2010 when a reported 20,000 barrels of Canadian oil sands products spilled into the Kalamazoo River from the Enbridge pipeline. The diluent quickly evaporated creating elevated levels of benzene in the air and, in addition to surface recovery, bitumen sank to the bottom of the river mixing with the sediment and making the oil difficult to find and recover.<sup>46</sup> During this spill, elevated levels of benzene required additional personal protective equipment for the oil spill responders and prompted voluntary evacuations for surrounding communities. Initially, the product spilled into the Kalamazoo River was not reported as a Canadian oils sands product but only as a crude oil, and the Materials Safety Data Sheet (MSDS) also only noted “crude oil” was being carried in the pipeline. As a result, initial spill responders were not properly equipped with additional personal protective equipment until air monitoring revealed increased benzene levels in the vicinity of the spill site. Currently, MSDS reporting requirements do not distinguish between oil sands products and other petroleum products. This resulted in increased exposure risk to first responders and the public. Reporting spills of oil sand products to the U.S. Coast Guard’s National Response Center (NRC) by their technical name (DilBit, SynBit, DilSynBit, or Bitumen) rather than simply as crude oil could reduce oil spill responder and public exposure to VOCs in future spills. However, without the inclusion of these details in MSDS sheets, individuals making the NRC report may not have this information available. Currently, the Washington Department of Ecology requires more detail on the type of oil handled to be included in a MSDS or Shipboard Oil Pollution Plans. In addition, the specificity and detail of reports of spilled oil sand product to the National Response Center can be improved through outreach to educate industry on the impact these reports have on subsequent response activities. Two examples of actions that can be taken to accomplish this education are: Coast Guard engagement with industry leadership at American Petroleum Institute semiannual Spill Advisory Group Meetings and Area Committee engagement with local industry representatives at regular Area Committee Meetings.

The key to effective response is to ensure that response planning captures Canadian oil sands product behavior when spilled so proper response protocols, strategies and technologies are planned and arranged. Spills such as the Kalamazoo River discharge demonstrate the potential for fractionation of the spilled product, warranting response plans that address the combination of equipment and techniques for Group I and Group V oils that will be employed to contain and collect floating and/or submerged or suspended oil in the same response. Response to a submerged oil spill in the Salish sea would likely be very different than Kalamazoo, with strong tidal currents and

depths of over 100 fathoms in much of the region. Detailed reporting regarding the type and composition of spilled oil sand products can inform responders and help ensure that they arrive on scene with the most appropriate response equipment.

In addition to the challenges described above, response to spills of Canadian oil sands products may also present environmental toxicity challenges. . During response, toxicity would be a concern in managing any fishery closures and advisories. Environmental toxicology is more comprehensively addressed through the Natural Resource Damage Assessment Process executed in U.S. waters by the Natural Resource Trustees. There is limited toxicology information available specifically for Canadian oil sands products; however, it may be possible to extrapolate this information from existing knowledge on related petroleum products. One way to increase

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specific gravity of less than .85; (2) Group III—specific gravity equal to or greater than .85 and less than .95;(3) Group IV—specific gravity equal to or greater than .95 and less than or equal to 1.0; (4) Group V—specific gravity greater than 1.0.

<sup>46</sup> United States Environmental Protection Agency letter dated April 22, 2013 from Cynthia Giles to the US Department of State.

knowledge about oil sand products and decrease uncertainty would be to encourage and conduct additional research. Research could be encouraged by requesting that industry provide and make available to the research community a standard sample of common oil sand products (DilBit, SynBit, DilSynBit, and Bitumen).

As described, the development and transportation of Canadian oil sands products presents new challenges for the maritime oil spill response community. While effective responses to Canadian oil sands products would use existing capabilities and technologies, the response is dependent upon informed response planning to direct the use of appropriate technologies and strategies. Response planning can be further improved and uncertainties can be minimized through increased research into Canadian oil sands products fate, behavior in aquatic environments, and potential impacts to aquatic species.

***9. A risk assessment of the increasing supertanker, tanker, and barge traffic associated with Canadian oil sands development or expected to be associated with Canadian oil sands development.***

A risk assessment of the scope and complexity required addressing the question of increased supertanker, tanker, and barge traffic associated with Canadian oil sand development both comprehensively and accurately is estimated to cost at least \$1 million and require up to a year to complete after a contract is awarded. For comparison, the Coast Guard Authorization Act of 2010 directed the Coast Guard to complete a risk assessment for Cook Inlet, Alaska, similar, yet smaller in scope, to the Risk Assessment for Transporting Canadian Oil Sands. In September 2012 the Coast Guard initiated a cooperative project with Cook Inlet Regional Citizens, Advisory Council to conduct this risk assessment. Through joint funding from the State of Alaska and the Coast Guard, this contracted effort has cost over \$750,000 to date. The expected completion date of the risk assessment is September 2014.

The Coast Guard does not have in-house resources or expertise to conduct comprehensive risk assessments. These assessments have been previously contracted out to qualified research organizations. Absent a specific appropriation, the Coast Guard cannot undertake a comprehensive risk assessment as detailed in the statute.

***10. The potential costs and benefits to the United States public and the private sector of maritime transportation of oil sands products.***

Preparation of a cost-benefit analysis as prescribed above is beyond Coast Guard in-house capability and funding. The cost of a comprehensive and high-quality cost-benefit analysis of the entire transportation system infrastructure prepared by a contractor which addresses transport of oil sands in the navigable federal and state waters may very well exceed \$5 million due to its complexity. Additionally, a contracted cost-benefit analysis will require substantial time to complete given the diverse group of transportation infrastructure stakeholders and their interests, both public and private. Therefore, absent a specific appropriation, the Coast Guard cannot undertake a cost benefit analysis as has been directed.

### III. List of Acronyms

<b>Acronym</b>	<b>Definition</b>
AIS	Automatic Identification System
CANUSPAC	Joint Contingency Plan for the Strait of Juan de Fuca
COTP	Captain of the Port
CSA 2001	Canada Shipping Act 2001
CVTS	Cooperative Vessel Traffic Service
DWT	Deadweight Tons
IJC	International Joint Commission
ITOS	International, Private-Sector Tug of Opportunity System
JCP	Joint Marine Pollution Contingency Plan
MCTS	Maritime Communications and Traffic Services
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
OCS	Outer Continental Shelf
OPA 90	Oil Pollution Act of 1990
OPRC	Oil Pollution Preparedness, Response and Co-operation
OSRO	Oil Spill Removal Organization (U.S.)
PPA	Pacific Pilotage Authority
RNA	Regulated Navigation Areas
RO	Response Organizations (Canada)
RP	Responsible Party
SDWT	Summer Deadweight Tons
SOA	Special Operating Area
TEZ	Tanker Exclusion Zone
TSS	Traffic Separation Scheme
VEAT	Vessel Entries and Transits
VTOSS	Vessel Traffic Operational Support System
VTRA	Vessel Traffic Risk Assessment
VTS	Vessel Traffic Services
WSMC	Washington State Maritime Cooperative