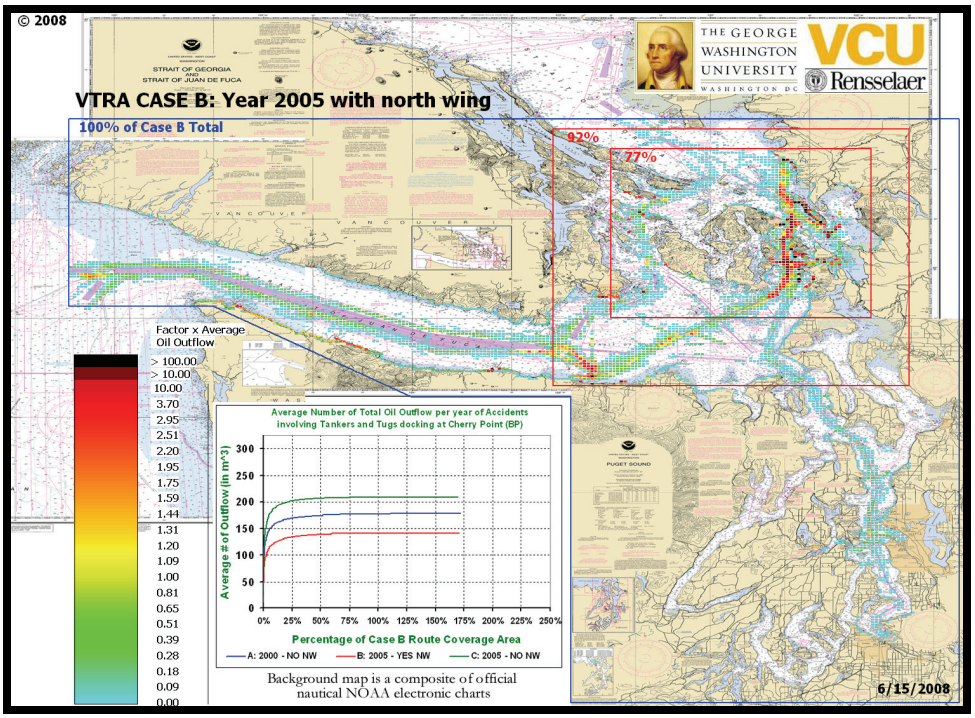
TECHNICAL APPENDIX B: SYSTEM DESCRIPTION



Assessment of Oil Spill Risk due to Potential Increased Vessel Traffic at Cherry Point, Washington

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August 31, 2008

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B-1. Introduction

This system description has four primary purposes: 1) define the waters of the Vessel Traffic Risk Assessment (VTRA) study area, 2) describe the climate, geology and topography of the VTRA study area, 3) describe vessel traffic operation in the VTRA study area, and define segments of this traffic considering in the VTRA, 4) describe the management policy and technological infrastructure governing the operations of vessel traffic considered n the VTRA.

B-2. Waters of the Vessel Traffic Risk Assessment

For the purposes of the VTRA, this system description considers the waters of: Puget Sound, Strait of Juan de Fuca, San Juan Islands, and the Strait of Georgia. In the aggregate these waters are referred to as *"the waters of the VTRA"*. The waters of the VTRA are defined within the context, and for the purposes, of data collection for the VTRA, and may not directly correlate with commonly cited maritime lexicon or taxonomy. For the purposes of the VTRA these waters are further delineated into the following sub-systems (see Figure 1, pg 3 for illustration of region):

B-2.1. Juan de Fuca-West:

These waters encompass the western portion of the Strait of Juan de Fuca, and are bounded to the east by a line running south from a point on the northern shore at 48 18.764 N Latitude, 123 33.505 W Longitude. These waters extent west of this eastern boundary through the Juan de Fuca and beyond Cape Flattery to a point approximately 8-miles west of the "J" buoy. The western boundary is intended to encompass the beginning of the traffic separation zone at the entrance of the Strait of Juan de Fuca, and is defined as bounded by a line running north-south 8 nm west of the "J" buoy, as well as by a line running east-west at a point 8nm south of the "J" Buoy. The "J" Buoy is located at 48 29.610 N Latitude, 124 59.973 W Longitude. The waters of Juan de Fuca-West that are west of Cape Flattery are coastal waters with no notable natural restrictions to navigation. The waters of Juan de Fuca-West east of Cape Flattery are inland waters. This eastern portion of Juan de Fuca-West averages 10-miles wide between two parallel shorelines for 45 miles, transiting Cape

Flattery to the eastern boundary. There are no notable restrictions to navigation in these waters.

B-2.2. Juan de Fuca-East:

These waters encompass the eastern region of Strait of Juan de Fuca not defined as Strait of Juan de Fuca-West. These waters are roughly elliptical in shape, with major and minor axes measuring 31-miles (east-west) and 16-miles (north-south), respectively. Within these waters there are multiple submerged and partially submerged shoals and islands. To the north is the San Juan Island Archipelago. To the south is the Puget Sound. To the east is Whidbey Island.

B-2.3. Puget Sound

For the purposes of the VTRA the waters of Puget Sound are delineated as Puget-North, and Puget Sound-South.

Puget Sound-North: The waters of Puget Sound-North encompass all of Admiralty Inlet and those portions of Puget Sound to a southern boundary running west from Meadow Point (47 41.771 N 122 24.588 W) to the shore of Bainbridge Island, and Possession Sound south of the lighthouse at 48 00.951 N 122 16.210 W. Excluded are the waters of Hood Canal, Port Orchard, Sinclair Inlet and Rich Passage, Agate Passage. Within the Puget Sound-North there are multiple bays, inlets, shoals, greater and lesser islands and multiple major and minor towns, cities and ports, including the Ports of Everett, Edmonds and Townsend. The waters are, in general, open to navigation with limited natural restrictions in or near the traffic separation lanes.

Puget Sound-South: The wasters of Puget Sound-South extend from the southern boundary of Puget Sound-North, encompassing the waters of Commencement Bay and Dalco Pass. Excluded are the waters of Colvos Pass. Within the waters of Puget Sound-South there are multiple bays, inlets, shoals, greater and lesser islands and multiple major and minor towns, cities and ports, including: Ports of Seattle, Tacoma, and Ballard. The waters of Puget Sound-South are, in general, a relatively wide, deep sinuous body of water with few restrictions to navigation in the main shipping lanes.

B-2.4. Haro Strait-Boundary Pass

The waters of Haro Strait and Boundary Pass connect the waters of Strait of Juan de Fuca-East and the Strait of Georgia, transiting along the eastern shore of Victoria Island and the western most extend of the San Juan Islands archipelago. These waters are delineated as Haro Straight and Boundary Pass. Geographically and bathymetrically Boundary Pass and Haro Strait are similar, with multiple shoals and islands restricting navigation to channels three quarters of a mile wide at some locations.

Haro Strait: The waters of Haro Strait transit approximately 16-miles in a north-northwesterly direction from Juan de Fuca-East at an average width of 2-miles and depth ranging between 100 and 1000 feet.

Boundary Pass: The waters of Boundary Pass begin at the northern most point of Haro Strait, transiting in a north-northwest for approximately 13-miles.

B-2.5. Rosario Strait

The waters of Rosario Strait transit between the waters of the Strait of Juan de Fuca-East and Georgia Strait along the eastern edge of the San Juan Island archipelago. These waters are bounded to the north and south by the lines of latitude: 48 24.5 N, and 48 41.2 N. The approximant distance between the north and south boundaries is 21 nm. Depths in Rosaria Strait are typically greater than 200 feet. There are multiple shoals and lesser islands restricting navigation to channels three quarters of a mile wide at some locations.

B-2.6. Cherry Point

The waters of Cherry Point are wholly contained within the Strait of Georgia, bounded to the south by the San Juan Island Archipelago, and to the north by Pt Whitehorn (at latitude 48 53.5 N). Depths are commonly 250 to 600 feet, with one notable exception of Alden Bank where depth contours rapidly shallow to less than 50-feet. The Cherry Point British Petroleum refinery facility is located on the eastern shore of these waters. There are multiple docking facilities associated with this facility spread across the shoreline between 48 51.879 N 122 45.264 W and 48 49.628 N 122 42.764 W.

B-2.7. SaddleBag

The waters of SaddleBag transit in a southeasterly directly between Lummi Island (to the north) and St Clair and Guemes Islands (to the south). Bellingham Bay is included in these waters. Depths generally range between 80 and 200 feet with open and wide navigable channels, though lesser islands and shoals do restrict the width of navigable channels to one quarter mile at SaddleBag Island.

B-2.8. Guemes Channel

The waters of Guemes Channel transit between Guemes Island and Fidalgo Island, connecting Saddlebag and Rosario Straits. Depths range between 40 and 100 feet. Independent of the shallow depth, there are no shoals or islands in the shipping lanes to further restrict navigation. These waters encompass the Port of Anacortes and the Shell-Tesoro facilities off-shore of March Point.

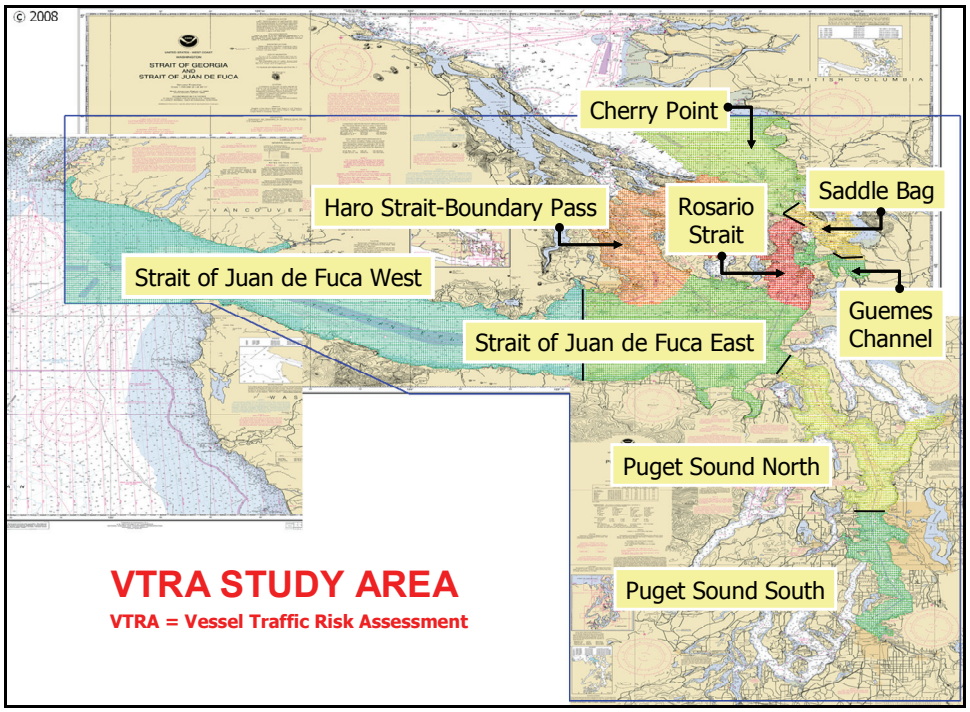

Figure B-1. A map defining the named areas used in the study.

Figure B.1 shows the defined locations.

B-3. Weather, Climate, Topography and Geology

The waters defined in this system description are generally deep throughout, until closer to the shore where elevations can change rapidly from sea level to mountainous terrain. Because the VTRA study area spans a geographic area of approximately 16,000 square miles, prevailing weather characteristics can vary from area to area. In general, the weather and climate is driven by the proximity to the Pacific Ocean (to the west) and the Cascade Mountain Range (to the east). The climate is divided by two seasons: the winter season spans between October and March, and is considered the rainy season with annual rainfall ranging between 40 and 80 inches. The winter climate is largely driven by the winter lows traveling easterly from the Pacific Ocean. The summer season spans March to October when winds and rains are tempered but sea fog can be prevalent (US DOC pg 475).

B-3.1. Wind

B-3.1.1. Straits of Juan de Fuca and Georgia and the San Juan Islands

Winds tend to be strongest during the winter season when they are driven by numerous winter storms that move through the region. As low pressure systems approach the coast winds tend to strengthen, sometimes reaching gale force from the southeast. After storms pass, winds tend to veer to the southwest or northwest. Gale force winds usually last for less than 1 day. Intervals between storms normally range from 1 to 5 days but might extend up to 2 weeks if a strong high-pressure system centers on the region. (US DOC pg 475).

During the summer season (October through March) winds at the Pacific entrance to the Strait of Juan de Fuca are generally out of the southeast to southwest. Gales force winds typically blow for 4 to 6 days per month. The strong southeasterly winds can interact with westerly seas, causing state of confused seas off Cape Flattery. The frequent storm winds from the south make the Vancouver Island coast between Cape Cook and Port San Juan a dangerous lee shore. Winds are generally strongest and gales more frequent in the west end of the Juan de Fuca. In the east end of Juan de Fuca gales occur about 2 to 4 days per month. An approaching storm will often drive strong easterly winds in the central part of the Strait. This condition can drive a "…drainage of air from the Georgia Strait, so that winds near…" the boundaries of Juan de Fuca East and West entrance are frequently from

the north or northeast. Winds near the Cape Flattery can reach 65 knots, gusting 90 knots. Throughout Juan de Fuca East and West, winds can be 50 knots with gusts reach 80. (US DOC pg 475)

B-3.1.2. Puget Sound

Puget Sound is open to the north and south, but protected to the west and east by mountains. This geography drives prevailing winds in these waters to be typically southeast or southwest in the summer season, and northeast or northwest in the winter season. Intense storms can generate sustained winds of 40 knots (gusting 50). Winds are strongest in winter season. During the summer season winds are light and variable at night, picking up to 8 to 15 knots during the afternoon. (USDOC pg 513)

B-3.2. Visibility

B-3.2.1. Straits of Juan de Fuca and Georgia and the San Juan Islands

Sea fog is common and dense in the Strait of Juan de Fuca East and West during the later part of the summer season. Land fog causes poor visibility during the winter season. Visibility can be reduced to less than 1-mile for 55 days a year in Juan de Fuca-West, and 35-days in Juan de Fuca-East. Dense fog can remain stationary at the west entrance of Juan de Fuca for days at a time if no winds force it to dissipate. A westerly breeze can push banks of fog towards the southern shore of the eastern end of the strait. (US DOC pg 511)

B-3.2.2. Puget Sound

Poor visibility caused by land fog in Puget Sound is common for 25 or 40 days during the winter season. Generally this fog forms at night and dissipates during the day, though the fog may remain for several days during periods of calm winds. These conditions exist in Puget Sound-North more than Puget Sound-South. (US DOC pg 511)

B-3.3. Tides and Currents

B-3.3.1. Straits of Juan de Fuca and Georgia and the San Juan Islands

The currents may attain velocities of 2 to 4 knots, varying with the range of tide, and are influenced by strong winds. E of Race Rocks, in the wider portion of the strait, the velocity is considerably less. At Race Rocks and Discovery Island the velocity may be 6 knots or

more. The flood current entering the Strait of Juan de Fuca sets with considerable velocity over Duncan and Duntze Rocks, but, instead of running in the direction of the channel, it has a continued set toward the Vancouver Island shore which is experienced as far as Race Rocks. The flood current velocity is greater on the N shore of the strait than on the S. The ebb current is felt most along the S shore of the strait, and between New Dungeness Light and Crescent Bay there is a decided set S and W, especially during large tides. With the wind and swell against the current, a short choppy sea is raised near the entrance to the strait.

In Haro Strait and Boundary Pass, the flood current sets N; the ebb current sets in the opposite direction. The ebb usually runs longer and has a greater velocity. At the N entrance to Boundary Pass, the flood sets E along the N and S sides of Sucia Islands and across Alden Bank; the velocity is about 1 to 2 knots. The Current has moderate velocity between Sucia and Orcas Islands. There is a large, daily inequality in the current (see Tidal current Tables for predicted times and velocities). Heavy, dangerous tide rips occur between East Point on Saturna Island and Patos Island, and for two miles N in the Strait of Georgia. Tide rips also occur on the ebb between Henry Island and Turn Point, as well as around Turn Point where the ebb may attain a velocity of 6 knots during large tides. The flood current sets E from Discovery Island across the S end of Haro Strait until close to San Juan Island. This E set especially noticeable during the first half of the flood. Heavy tide rips occur N of Middle Bank as well as on the Bank and around Discovery Island.

B-3.3.2. Puget Sound

In Admiralty Inlet and Puget Sound, the tidal currents are subjected to daily inequalities similar to those of the tides. Velocities of 2 to 7 knots occur from Point Wilson to Point No Point. In the more open waters of the sound S of Point No Point the velocities are much less. At Point Wilson and at Marrowstone Point, slack water occurs from one-half to 1 hour earlier near shore than in midchannel.

In the winter, when S winds prevail, there is generally a N surface drift which increases the ebb current and decreases the flood current. This effect is about 0.5 knot between Nodule and Bush Points. The tidal currents in the S entrance of Possession Sound are weak and variable. Between Foulweather Bluff and Misery Point, the tidal currents have a velocity of

about 0.8 knot, while in the S part of Hood Canal, the velocity is only about 0.5 knot; at times of tropic tides, however, the greater ebbs may attain velocities more than double these values. The tidal currents have velocities up to about 6 knots or more in Agate Passage and in The Narrows.

Tides at Seattle have a mean range of 7.7 feet and a diurnal range of 11.4 feet. A range of about 18 feet may occur at the time of maximum tides. (See Tide Tables for daily predictions.) As a rule, the tidal currents in the harbor have little velocity. At times, however, with a falling tide an appreciable current will be found setting NW along the waterfront.

B-4. Maritime Vessel Traffic

The scope of the VTRA is specific to potential impacts of traffic inbound and outbound of the Cherry Point Facility. Within the context of this system description this traffic is referred to as "*Cherry Point Oriented Traffic" (CPO Traffic).* During standard operations in the VTRA study area, CPO Traffic interacts with other traffic that may or may not be inbound to, or outbound from, the Cherry Point Facility. This secondary traffic is referred to in this system description as *"General Traffic*". Because of interactions between these two classifications of traffic, CPO Traffic and General Traffic are both within the scope of this system description. This section of the system description defines and quantifies CPO Traffic, and describes General Traffic that has been approximated in the VTRA exposure study.

B-4.1. Cherry Point Oriented Traffic

For the purposes of the VTRA CPO Traffic is defined as: traffic navigating, at anchor or berthed within the waters of the VTRA study area, whether the traffic is inbound or outbound of the Cherry Point Facility (laden or unladen), independent of wherein the VTRA study area this traffic may be. Such traffic may include tanker vessels, tug-tow-barge, articulated tug-barges and tanker escort vessels. This traffic ceases to be CPO Traffic once this traffic leaves the waters of the VTRA study area as these waters are defined in Section 2.2 of this system description. CPO Traffic is delineated as US-Flagged and Foreign-Flagged vessels for the purposes of modeling and forecasting vessel traffic.

All CPO Traffic is compelled to participate in the Vessel Traffic System Puget Sound (VTSPS). The preponderance of CPO Traffic is compelled to participate in the Vessel Movement Reporting System (VMRS) (these systems are defined in Section 2.5). It is highly likely that all CPO Traffic voluntarily participates in the VMRS, if not compelled. Therefore, no CPO Traffic will be considered General Traffic.

B-4.2. General Traffic

The scope and scale of General Traffic operating within the VTRA Study Area ranges between large US Naval vessels and small personal watercraft. Not all General Traffic is required to participate in the VTS or VMRS systems. Therefore, not all General Traffic is quantifiable as objective data. General Traffic that is compelled to participate in the VMRS will be noted and quantified. General Traffic that is not compelled to participate in VMRS and VTS systems will be estimated through data gathering by direct query of available data sources, including inquiry of individuals with expert knowledge of specific segments of General Traffic.

General Traffic operating within the VTRA study area is delineated by the requirement to participate in the VMRS or VTS systems. There are thee primary sub-categories of General Traffic based on VMRS and VTS participation requirements:

- Vessels over 40-meters that are compelled to actively participate in the VMRS.
- Vessels over 20-meters, but under 40-meters, that are compelled to passively participate in the VTS.
- Vessels under 20 meters that are not compelled to participate in either the VTS or the VMRS.

VMRS Participating General Traffic: VMRS Participating General Traffic (active participants) is further delineated as US-Flagged and Foreign-Flagged General Traffic.

VTS Participating General Traffic: VTS Participating Traffic (passive participants) is assumed captured and quantified with VMRS Participating Traffic. Although VTS passive participating General Traffic is not compelled to actively participate in the VMRS system,

modern vessel movement surveillance technologies enable passive participation to be captured as quantified data points (see AIS Section 2.5.4).

Small General Traffic: All vessel traffic not considered CPO Traffic, or compelled to continuously actively or passively participate in the traffic system, is considered to be *Small General Traffic*. Typically vessels under 20-meters in length are not compelled to actively or passively participate in the VMRS or VTS systems, and are considered in the VTRA as *Small General Traffic*. Individual vessels may choice to actively participate in the vessel traffic system, or may at times be passively captured. Because of the inconstant nature of participation, all traffic below 20-meters in length will be quantified and modeled separately from non-Small General Traffic, unless considered to be CPO Traffic.

As it is assumed that neither PG Traffic nor CG Traffic is captured in the VMRS or VTS system, identifying and quantifying this traffic is a function of interacting with local experts of individual user groups. Individuals from primary user groups are queried to estimate annual vessel movements within the VTRA study area.

Small General Traffic is further delineated as: Small Private General Traffic (SPG Traffic) and Small Commercial General Traffic SCG Traffic.

Small Private General Traffic: Private General Traffic (PG Traffic) is further delineated as Permitted and Non-Permitted PG Traffic.

Permitted SPG Traffic: Permitted SPG Traffic is delineated as 1) Sailing Regattas and Sailing Races, 2) Powerboat Races, 3) Maritime Parades, 4) Sport Fishing Events. A review of permits issued by the United States Coast Guard Puget Sound Marine Safety Office demonstrated that calendar year 2005 as representative of a typical year for Permitted SPG Traffic activity for purposes of quantifying magnitude, path and time of movement.

Non-Permitted SPG Traffic: Non-Permitted SPG Traffic is loosely defined as traffic that operates within the VTRA study area as singular and independent vessels, cooperating in organized gathering of vessels to only a very limited scale. This traffic is further delineated

as 1) Cruising and Sailing, 2) Sport Fishing. With this definition, it is assumed that there are no content experts for the whole of the VTRA study area. No attempt has yet been made to quantify vessel movements in the VTRA study area.

Small Commercial General Traffic: Small Commercial General Traffic (SCG Traffic) is delineated as: 1) state commercial fisheries, 2) tribal commercial fisheries, 3) Canadian commercial fisheries, and 4) non-fisheries commercial traffic. State commercial, tribal commercial and Canadian commercial fisheries are very similar in nature, yet have been delineated in this system description to allow traffic movements to be forecasted as a function of allocation of marine resource allocations tribal and non-native commercial fishers.

State Commercial Fisheries Traffic: State Commercial Fisheries Traffic is delineated by species sought and gear-type utilized by state commercial fishers:

- Crab
- Salmon Seine
- Salmon Gillnet
- Shrimp Beam Trawl
- Shrimp Pod

These commercial fisheries are governed by the Washington Department of Fish and Wildlife (WDF&W). Through conversations with WDF&W personnel, the commercial fisheries delineated in this section were determined as the largest and most representative of total State Commercial Fisheries fleet. The vessels involved in the individual fisheries vary in size, speed, gear-type utilized, region of the VTRA study area and time of year. The methodology for quantifying this diverse body of traffic is as an interview process, wherein subject matter experts are queried for the information (or data) that will allow a series of traffic movement rules to be established within the VTRA exposure model. Specific information sought includes:

- Fishery
- Number of vessels
- Time of year actively participating in commercial fishery

- Location of fishery
- Typical transit activities between home port (intra-fishery port-of-call) and fishing grounds
    - Time of day
    - Period in transit
- Movements during fisheries (within region identified as fishing grounds)

Tribal Commercial Fisheries Traffic: Tribal Commercial Fisheries Traffic is delineated by species sought and gear-type utilized by Tribal commercial fishers:

- Crab
- Salmon Seine
- Salmon Gillnet
- Halibut

The Tribal Commercial Fisheries are governed by the individual tribal organizations. Each tribal organization is allocated some proportion of the total allowable catch for individual species through annual negotiates with the WDF&W during the Pacific Fisheries Management Council. Individual tribal organization's allocation for each species is dependent on a tribal organization's "Usual and Accustom Rights" to that resource. This situation leads to a fragmented fishery effort and thus a need to interact with a large number of tribal fisheries experts in order to identify and quantify Tribal Commercial Fisheries vessel traffic movement. Efforts have been made to contact each tribal organization individually in order to identify and quantify the fisheries effort for the tribal organization. For those tribal organization that have participated in this process, subject matter experts where queried for the following information:

- Fishery
- Number of vessels
- Time of year actively participating in commercial fishery
- Location of fishery
- Typical transit activities between home port (intra-fishery port-of-call) and fishing grounds
    - Time of day

    - Period in transit
- Movements during fisheries (within region identified as fishing grounds)

Canadian Commercial Fisheries Traffic: The Canadian commercial fishers are not delineated as Tribal (termed First Nations) and non-tribal fisheries. This is because the Canadian Department of Fisheries and Oceans (DFO) holds regulatory authority over both user groups, thus the DFO fishery managers are the singular competent authority for all commercial fisheries.

The Canadian commercial fishery fleet incorporates a diverse body of vessel types operating in the Canadian regions of the VTRA study area. The DFO was contacted in October 2007 to initiate a conversation pertaining to modeling the movement of this fleet for a representative year (2005). During this initial conversation, the defined VTRA Study Area (see Systems Description) was utilized to determine the segments of the commercial fishing fleet that would be considered for further investigation. These were identified by species and gear-type:

- Salmon-Seine
- Salmon-Gillnet
- Shrimp-Pod
- Crab-Pod

The competent managerial authority for all Canadian Commercial fisheries in the VTRA Study Area is housed in the Victoria office of the DFO. This office was contacted and elicited for data pertaining to typified movements of the commercial fishery fleet over which the manager had regulatory authority. An initial meeting took place in December 2007. This initial meeting began an iterative process through which data was elicited, compiled and returned in order to develop a series of rules that would allow typified fleet movements to be modeled for a representative year. These rules are listed below:

- For each fishery and gear type
    - regulatory boundaries of fishery
    - regulatory times of fishery
        - time of year (months)

        - time of day (day light, clock, 24 hour)
    - typical distribution of fleet across regulatory area
    - typical transit habits of fishers between fishing grounds and home-port or intra-fishery port of call (to deliver days/weeks catch)
        - time of day of transits
    - number and type of vessel participating in fishery
        - number of vessel participating as a function stage of fishery
            - first third
            - second third
            - final third
        - typified design of participating vessel
            - length
            - draft
            - fuel capacity
            - speed

The DFO fisheries managers participating in this process were long-term DFO employees, with a body of in-office and on-water managerial experience that would allow them to offer insight to specific and general habits of the commercial fishing fleet and commercial fishers.

Whale watching: There is a robust commercial whale watching industry that typically operates in the region of the San Juan Islands Archipelago. Commercial whale watching vessels that participate on a daily bases can number in the hundreds at the height of the summer season, with vessels transiting the waters of Straits of Georgia, Rosario Strait, Haro Strait, Boundary Pass and Juan de Fuca-East as J and K pods of Orca Whales migrate the region. The US/Canadian international boundary is typically transparent to the commercial whale watching vessels that transit from near all port cities in the region, with US and Canadian fleets freely mixing in all locations during whale watching activities.

Unlike the commercial fisheries, there is no specific US or Canadian government competent regulatory authority with the body of knowledge that would allow the commercial whale watching fleet to be modeled. Therefore, raw data pertaining to the commercial whale

watching fleet was obtained through a publicly accessible database developed and maintained Sound Watch (as part of The Whale Museum).

Sound Watch is a privately funded boater education program, with no regulatory authority over the commercial whale watching fleet. However, the intent and purpose of Sound Watch is to observe and document the activities of the whale watching fleet (commercial or private). This documentation process includes capturing specific data pertaining to:

- the number of vessels within a 2-mile radii of the whale-pod at every half hour
- the home port of vessels commonly seen within the 2-mile radii of the whale pod
- the location of the whale pod documented every half hour as Latitude and Longitude.

B-5. Traffic Management Protocols and Technological Infrastructure

The traffic management protocols and accompanying technological infrastructure in the VTRA study area are robust; integrating standard maritime navigation and communication protocols, with direct observation and management of maritime vessel movements in Puget Sound, Strait of Juan de Fuca, San Juan Island Archipelago and Straits of Georgia. Elements of these systems that are critical to the development of the VTRA are described in this section of this system description.

Within the VTSPS coverage area are adjoining United States and Canada territorial waters. Boundaries between these waters are at times transparent to the vessel traffic transiting the VTSPS area. To minimize potential for conflicts between potentially variant navigation rules and jurisdictional control, the Cooperative Vessel Traffic Service (CVTS) was established to allocate oversight and control over adjoining waters. All waters defined as being within the VTRA study area are referred to as the waters of the VTSPS. Exceptions are noted when dictated in order to consider the CVTS.

B-5.1. Vessel Traffic Service - Puget Sound

The Vessel Traffic Service-Puget Sound (VTSPS) is defined as the traffic management protocols and physical infrastructures utilized in the geographic region wherein the rules and regulation contained in CFR Title 33 Parts 160 and 161 are applicable (Vessel Traffic

Service-Puget Sound Region [VTSPS Region]). The VTSPS Region is defined in Subpart C of the Vessel Traffic Service-Puget Sound User Manual. The VTRA study area, in it entirety, is considered within the VTSPS Region. The VTSPS is comprised of three major components (VTSPS User Manual): 1) Vessel Movement Reporting System (VMRS), 2) Traffic Separation Scheme (TSS) and 3) Surveillance systems

B-5.1.1. Vessel Movement Reporting System

The VMRS is the system of communication and navigation protocols and technologies through which the requisite traffic control authority monitors and controls traffic movement in the VTSPS area. The communication system is VHF-FM frequency based, with participating vessels communicating on specific frequencies dependent on location (see Vessel Traffic Service-Puget Sound Region [VTSPS Region]).

There are two classes of traffic regulated to participate in the VMRS:

Vessel Movement Reporting System Users: Vessel Movement Reporting System Users (VMRS Users) are also referred to as 'active participants' in the VTSPS. Active participants are required to communicate with the Vessel Traffic Center (or other requisite authority depending on location – see Section 2.4.2) while underway in the VTSPS area. VMRS Users are defined as:

1) all power-driven vessels of 40 meters or more while underway and navigating.
2) Every commercial vessel engaged in towing 8-meters or more in length while underway and navigating
3) Every vessel certificated to carry 50 or more passengers for hire when engaged in trade.

Note: Canadian regulations dictate that vessels over 20 meters participate as active participants in the VMRS

Vessel Traffic System Users: Vessel Traffic System Users (VTS Users) are also referred to as 'passive participants' in the VTSPS. Passive participants are required to (at a minimum) continuously monitor appropriate VHF-FM VTS frequency while navigating in the VTSPS

area (Channels 5A or 14 dependent on location) as well as VHF Channel 13. VTS Users are defined as:

1) every power driven vessel of 20 meters or more, but less than 40 meters.
2) Every vessel of 100 gross tons or more carrying 1 or more passengers for hire, while navigating
3) A dredge of floating plant engaged in or near a channel or fairway in operations likely to restrict or affect navigation of other vessels.

Note: Canadian regulations dictate that vessels over 20 meters are active participants in the VMRS

B-5.1.2. Traffic Separation Scheme

The Traffic Separation Scheme (TSS) is an internationally recognized and accepted system for maintaining separation between inbound and outbound traffic. Where the TSS is active, the body of water is delineated into two traffic lanes with a separating zone between the lanes. Navigation rules governing vessel movements (such as entering and crossing the traffic lanes, and overtaking vessels within the traffic lanes) are defined in Rule #10 of the International Collision Regulations (1972 COLREGS) (VTSPS User Manual).

In addition to requirements under 1972 COLREGS, additional navigation rules are defined in the VTSPS User Manual when navigating Rosario Strait and Guemes Channel (VTSPS User Manual).

B-5.1.3. Surveillance Systems

The Vessel Traffic Center in Seattle receives radar signals from 12 radar sites that are placed across the full extent of the VTSPS area. Radar provides approximately 2,900 square miles of coverage including the Strait of Juan de Fuca, Rosario Strait, Admiralty Inlet, and Puget Sound south to Commencement Bay. There are also close circuit cameras at locations of know high density traffic.

A recent addition to the surveillance system includes the Automatic Information Systems (AIS), which continuously relay AIS equipped vessel's name, description, vector and

destination to all similarly AIS equipped vessels within transmission range, as well as VTS Puget Sound.

B-5.2. Cooperative Vessel Traffic Service for the Juan de Fuca Region (CVTS)

The waters of the CVTS Region are defined in Subpart C of the VTSPS User Manual. The purpose of the CVTS is to jointly manage vessel traffic in the Juan de Fuca region. The Strait of Juan de Fuca is delineated by the United States and Canadian boarder into northern and southern sections. The CVTS is the vessel traffic management system established and jointly operated by the United States and Canada within these waters to ensure continuity of vessel traffic and regulation oversight, as well as to minimize jurisdictional conflicts (cite VTSPS User Manual).

Vessels navigating within Canadian Territorial waters in the Strait of Juan de Fuca are required to follow traffic rules defined by Seattle Traffic. Canada maintains jurisdictional control over investigation of violation of Seattle Traffic defined navigation rules (cite VTSPS User Manual).

B-5.3. Pilotage Requirements

Pilotage, Strait of Juan de Fuca and Puget Sound Pilotage is compulsory for all foreign vessels and U.S. vessels engaged in foreign trade. Pilotage is optional for U.S. vessels engaged in the coastwise trade with a federally licensed pilot on board.

Puget Sound Pilots serve all U.S. ports and places E of 123°24'W., including Port Angeles, Puget Sound, and adjacent inland waters. Port Angeles has been designated as the pilotage station for all vessels enroute to or from the sea. The pilot station is located on Ediz Hook about 0.7 mile W of Ediz Hook Light (see chart 18468). There are two pilot boats, both are 22 meters in length with white hulls and orange houses. The standard day and night signals are displayed.

B-5.4. Escort Requirements

Vessels transporting crude oil or petroleum products that are over 40,000 DWTs are required to have a tug escort beyond a point east of a line between Discovery Island and New Dungeness Light.