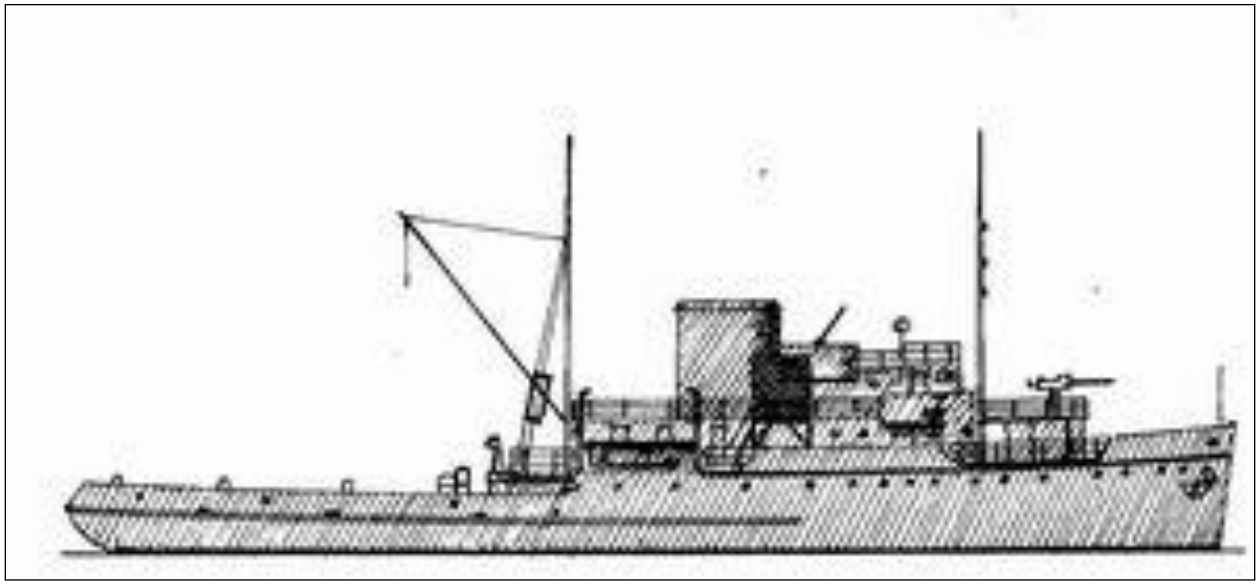
Office of National Marine Sanctuaries
Office of Response and Restoration

Screening Level Risk Assessment Package

Mobile Point



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National Oceanic and
Atmospheric Administration

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Photo: Drawing of a V4-M-A1 Type Tugboat
Source: http://drawings.usmaritimecommission.de/drawings_tugs.htm

Table of Contents

Project Background

The past century of commerce and warfare has left a legacy of thousands of sunken vessels along the U.S. coast. Many of these wrecks pose environmental threats because of the hazardous nature of their cargoes, presence of munitions, or bunker fuel oils left onboard. As these wrecks corrode and decay, they may release oil or hazardous materials. Although a few vessels, such as USS *Arizona* in Hawaii, are well-publicized environmental threats, most wrecks, unless they pose an immediate pollution threat or impede navigation, are left alone and are largely forgotten until they begin to leak.

In order to narrow down the potential sites for inclusion into regional and area contingency plans, in 2010, Congress appropriated $1 million to identify the most ecologically and economically significant potentially polluting wrecks in U.S. waters. This project supports the U.S. Coast Guard and the Regional Response Teams as well as NOAA in prioritizing threats to coastal resources while at the same time assessing the historical and cultural significance of these nonrenewable cultural resources.

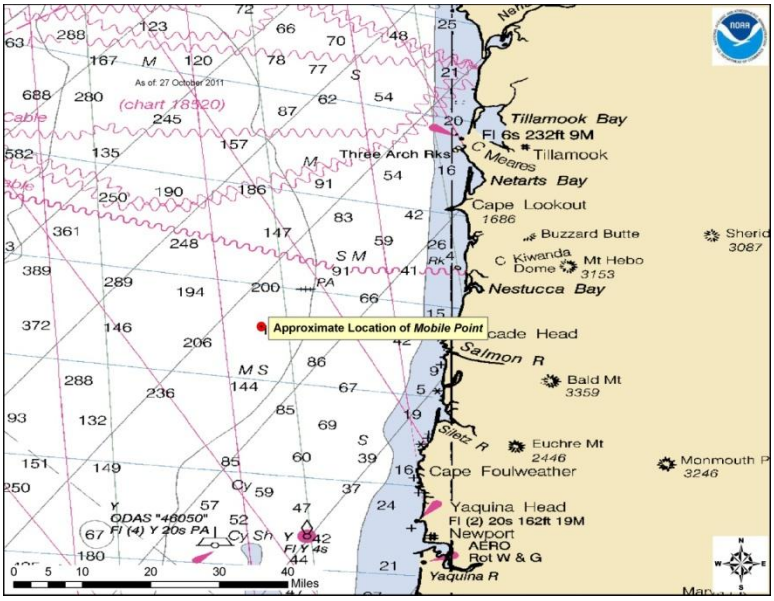
The potential polluting shipwrecks were identified through searching a broad variety of historical sources. NOAA then worked with Research Planning, Inc., RPS ASA, and Environmental Research Consulting to conduct the modeling forecasts, and the ecological and environmental resources at risk assessments.

Initial evaluations of shipwrecks located within American waters found that approximately 600-1,000 wrecks could pose a substantial pollution threat based on their age, type and size. This includes vessels sunk after 1891 (when vessels began being converted to use oil as fuel), vessels built of steel or other durable material (wooden vessels have likely deteriorated), cargo vessels over 1,000 gross tons (smaller vessels would have limited cargo or bunker capacity), and any tank vessel.

Additional ongoing research has revealed that 87 wrecks pose a potential pollution threat due to the violent nature in which some ships sank and the structural reduction and demolition of those that were navigational hazards. To further screen and prioritize these vessels, risk factors and scores have been applied to elements such as the amount of oil that could be on board and the potential ecological or environmental impact.

Executive Summary: *Mobile Point*

The tug *Mobile Point*, sunk after a collision off the coast of Oregon in 1942, was identified as a potential pollution threat, thus a screening-level risk assessment was conducted. The different sections of this document summarize what is known about the *Mobile Point*, the results of environmental impact modeling composed of different release scenarios, the ecological and socio-economic resources that would be at risk in the event of releases, the screening-level risk scoring results and overall risk assessment, and recommendations for assessment, monitoring, or remediation.



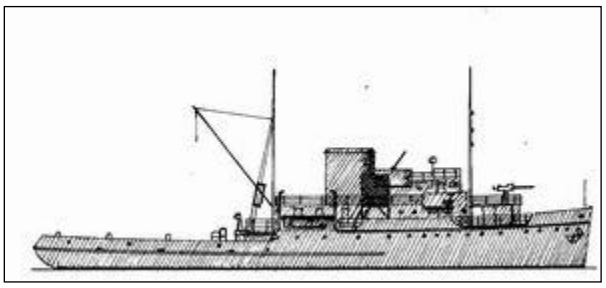
Based on this screening-level assessment, each vessel was assigned a summary score calculated using the seven risk criteria described in this report. For the Worst Case Discharge, *Mobile Point* scores Medium with 13 points; for the Most Probable Discharge (10% of the Worse Case volume), *Mobile Point* scores Low with 11 points. Given these scores, the low level of data certainty, and that the location of this vessel is unknown, NOAA recommends that surveys of opportunity with state, federal, or academic entities be used to attempt to locate this vessel and that general notations are made in the Area Contingency Plans so that if a mystery spill is reported in the general area, this vessel could be investigated as a source. Outreach efforts with the technical dive community as well as commercial and recreational fishermen who frequent the area would be helpful to gain awareness of localized spills in the general area where the vessel is believed lost.

Vessel Risk Factors		Risk Score	
Pollution Potential Factors	A1: Oil Volume (total bbl)	Med	
	A2: Oil Type		
	B: Wreck Clearance		
	C1: Burning of the Ship		
	C2: Oil on Water		
	D1: Nature of Casualty		
	D2: Structural Breakup		
Archaeological Assessment	Archaeological Assessment	Not Scored	
Operational Factors	Wreck Orientation	Not Scored	
	Depth		
	Confirmation of Site Condition		
	Other Hazardous Materials		
	Munitions Onboard		
	Gravesite (Civilian/Military)		
	Historical Protection Eligibility		
		WCD	MP (10%)
Ecological Resources	3A: Water Column Resources	Med	Low
	3B: Water Surface Resources	Med	Low
	3C: Shore Resources	Low	Low
Socio-Economic Resources	4A: Water Column Resources	Med	Low
	4B: Water Surface Resources	Med	Low
	4C: Shore Resources	Med	Low
Summary Risk Scores		13	11

The determination of each risk factor is explained in the document. This summary table is found on page 39.

SECTION 1: VESSEL BACKGROUND INFORMATION: REMEDIATION OF UNDERWATER LEGACY ENVIRONMENTAL THREATS (RULET)

Vessel Particulars



Official Name: *Mobile Point*

Official Number: 244256

Vessel Type: Towing Vessel

Vessel Class: V4-M-A1 Type Tug

Former Names: N/A

Year Built: 1943

Builder: Pendleton Shipyard Company, New Orleans, LA

Builder's Hull Number: 108

Flag: American

Owner at Loss: United States War Shipping Administration

Controlled by: Unknown **Chartered to:** Unknown

Operated by: Moran Towing and Transportation Company, Incorporated

Homeport: New Orleans, LA

Length: 185 feet **Beam:** 37 feet **Depth:** 17 feet

Gross Tonnage: 1,118 **Net Tonnage:** 251

Hull Material: Steel **Hull Fastenings:** Welded **Powered by:** Oil engines

Bunker Type: Marine diesel **Bunker Capacity (bbl):** 3,927

Average Bunker Consumption (bbl) per 24 hours: Unknown

Liquid Cargo Capacity (bbl): 0 **Dry Cargo Capacity:** Unknown

Tank or Hold Description: Unknown

Casualty Information

Port Departed: Unknown

Destination Port: Unknown

Date Departed: Unknown

Date Lost: December 23, 1944

Number of Days Sailing: Unknown

Cause of Sinking: Collision

Latitude (DD): 45.0832

Longitude (DD): -124.401

Nautical Miles to Shore: 16

Nautical Miles to NMS: 123

Nautical Miles to MPA: 18

Nautical Miles to Fisheries: Unknown

Approximate Water Depth (Ft): 780

Bottom Type: Unknown

Is There a Wreck at This Location? Unknown, the wreck has never been located or surveyed

Wreck Orientation: Unknown

Vessel Armament: Unknown (it is possible the vessel was armed like other V4-M-A1 Type Tugs)

Cargo Carried when Lost: No cargo

Cargo Oil Carried (bbl): 0

Cargo Oil Type: N/A

Probable Fuel Oil Remaining (bbl): ≤ 3,927

Fuel Type: Marine diesel

Total Oil Carried (bbl): ≤ 3,927

Dangerous Cargo or Munitions: Unknown

Munitions Carried: Possibly munitions for onboard weapons if the vessel was armed

Demolished after Sinking: Unknown

Salvaged: No

Cargo Lost: Yes

Reportedly Leaking: No

Historically Significant: Unknown

Gravesite: No

Salvage Owner: Not known if any

Wreck Location

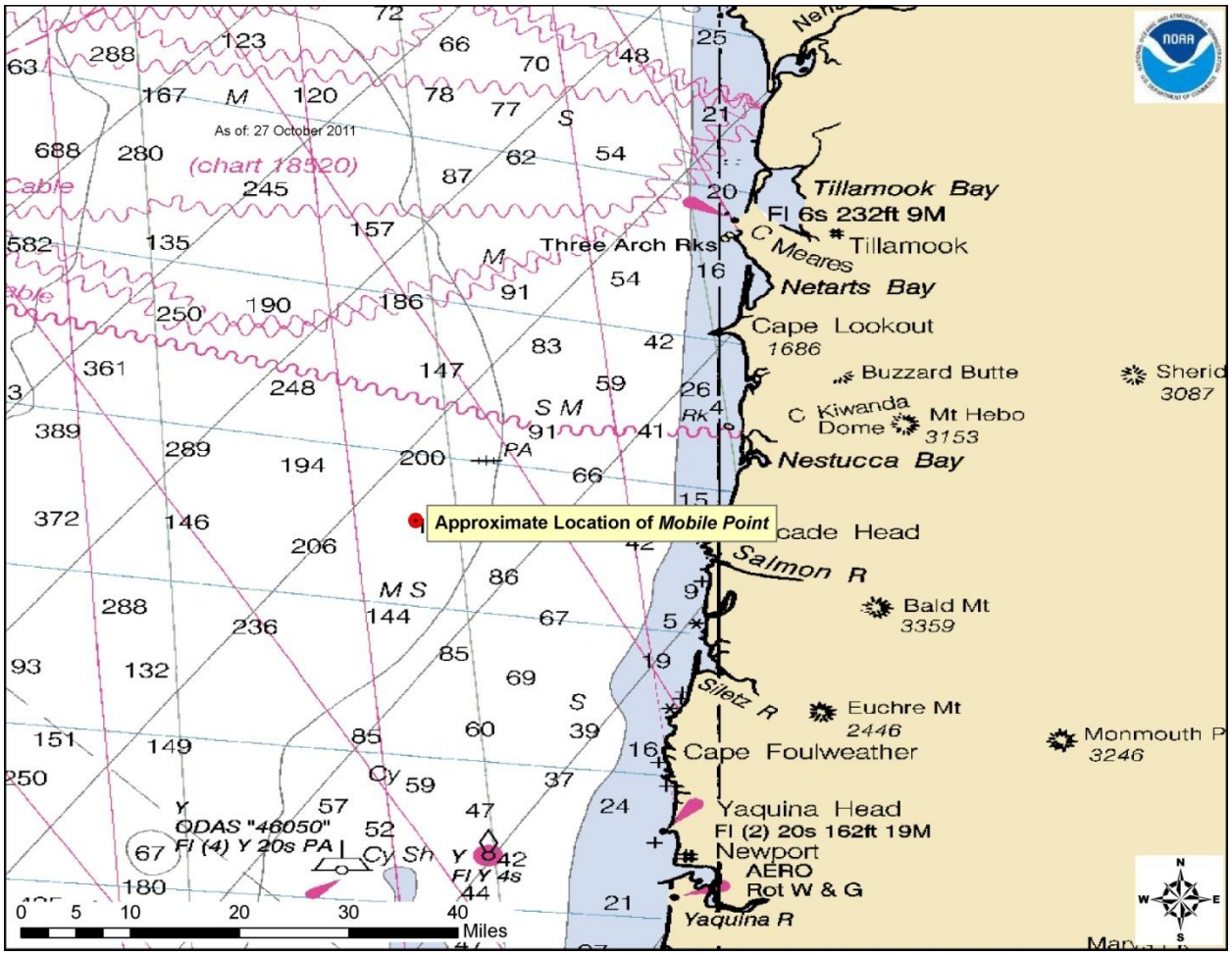


Chart Number: 18007

Casualty Narrative

"The MV *MOBILE POINT* collided with the SS *BEATON PARK*, a British cargo ship, early December 23, in position 44 degrees 43 minutes north and 124 degrees 02 minutes west. We were further informed that the Tug *MOBILE POINT* was abandoned, but that all the crew were safe aboard the SS *BEATON PARK*. It was reported that one man was injured but his identity was not made known.

The MV *MOBILE POINT* was a menace to navigation after being abandoned. Immediately upon receipt of this information, it was passed to Commodore Moran for further action."
-United States Coast Guard

MV *MOBILE POINT*, WWII Reports Concerning Merchant Vessels Sinking, 1938-2002 AMERICAN, Mauna Loa to Mokihana, Records of the United States Coast Guard, Entry P-2, Box 33, Record Group 26, National Archives Building, Washington, DC.

General Notes

NOAA Automated Wreck and Obstruction Information System (AWOIS) Data:

DESCRIPTION
24 NO. 1050; SUNK 12/22/44 BY MARINE CASUALTY; REPORTED THRU WL 9/30/46. (GP DOUBTFUL, NEAREST LAND 16 MILES).

SURVEY REQUIREMENTS
INFORMATION
ASSIGNED: OPR-N913-DA-85

Wreck Condition/Salvage History

Unknown; the wreck has never been located.

Archaeological Assessment

The archaeological assessment provides additional primary source based documentation about the sinking of vessels. It also provides condition-based archaeological assessment of the wrecks when possible. It does not provide a risk-based score or definitively assess the pollution risk or lack thereof from these vessels, but includes additional information that could not be condensed into database form.

Where the current condition of a shipwreck is not known, data from other archaeological studies of similar types of shipwrecks provide the means for brief explanations of what the shipwreck might look like and specifically, whether it is thought there is sufficient structural integrity to retain oil. This is more subjective than the Pollution Potential Tree and computer-generated resource at risk models, and as such provides an additional viewpoint to examine risk assessments and assess the threat posed by these shipwrecks. It also addresses questions of historical significance and the relevant historic preservation laws and regulations that will govern on-site assessments.

In some cases where little additional historic information has been uncovered about the loss of a vessel, archaeological assessments cannot be made with any degree of certainty and were not prepared. For vessels with full archaeological assessments, NOAA archaeologists and contracted archivists have taken photographs of primary source documents from the National Archives that can be made available for future research or on-site activities.

Assessment

NOAA archaeologists have located little additional historic documentation on the sinking of the oceangoing tug *Mobile Point*, and no site reports exist that would allow much additional archaeological assessment about the shipwreck on top of the casualty narrative included in this packet. Based on the lack of an accurate sinking location and the great depths the vessel sank in, it is unlikely that the shipwreck will be intentionally located.

It should be noted that this ship is one of the smallest ships in the RULET database and had one of the smallest bunker capacities as well. Ongoing research also strongly suggests that vessels in great depths of water are generally found in an upright orientation. This orientation has often lead to loss of oil from vents and piping long before loss of structural integrity of hull plates from corrosion or other physical

impacts. As it is believed that this vessel is in water greater than 700 feet, it is likely to have settled upright and may no longer contain oil. This may certainly be the case given the fact that the vessel was powered by a diesel engine and that the diesel oil likely escaped as the vessel's tanks were compressed by the increasing water pressure.

Should the vessel be located in a survey of opportunity or due to a mystery spill attributed to this vessel, it should be noted that this vessel is of historic significance and will require appropriate actions be taken under the National Historic Preservation Act (NHPA) and the Sunken Military Craft Act (SMCA) prior to any actions that could impact the integrity of the vessel. This vessel may be eligible for listing on the National Register of Historic Places.

Background Information References

Vessel Image Sources: http://drawings.usmaritimecommission.de/drawings_tugs.htm

Construction Diagrams or Plans in RULET Database? No

Text References:

-United States Coast Guard
MV *MOBILE POINT*, WWII Reports Concerning Merchant Vessels Sinking, 1938-2002 AMERICAN, Mauna Loa to Mokihana, Records of the United States Coast Guard, Entry P-2, Box 33, Record Group 26, National Archives Building, Washington, DC.

-AWOIS Database #50142

-http://www.towingline.com/wp-content/uploads/2010/03/V4-M-A1.pdf

Vessel Risk Factors

In this section, the risk factors that are associated with the vessel are defined and then applied to the *Mobile Point* based on the information available. These factors are reflected in the pollution potential risk assessment development by the U.S. Coast Guard Salvage Engineering Response Team (SERT) as a means to apply a salvage engineer's perspective to the historical information gathered by NOAA. This analysis reflected in Figure 1-1 is simple and straightforward and, in combination with the accompanying archaeological assessment, provides a picture of the wreck that is as complete as possible based on current knowledge and best professional judgment. This assessment ***does not*** take into consideration operational constraints such as depth or unknown location, but rather attempts to provide a replicable and objective screening of the historical date for each vessel. SERT reviewed the general historical information available for the database as a whole and provided a stepwise analysis for an initial indication of Low/Medium/High values for each vessel.

In some instances, nuances from the archaeological assessment may provide additional input that will amend the score for Section 1. Where available, additional information that may have bearing on operational considerations for any assessment or remediation activities is provided.

Each risk factor is characterized as High, Medium, or Low Risk or a category-appropriate equivalent such as No, Unknown, Yes, or Yes Partially. The risk categories correlate to the decision points reflected in Figure 1-1.

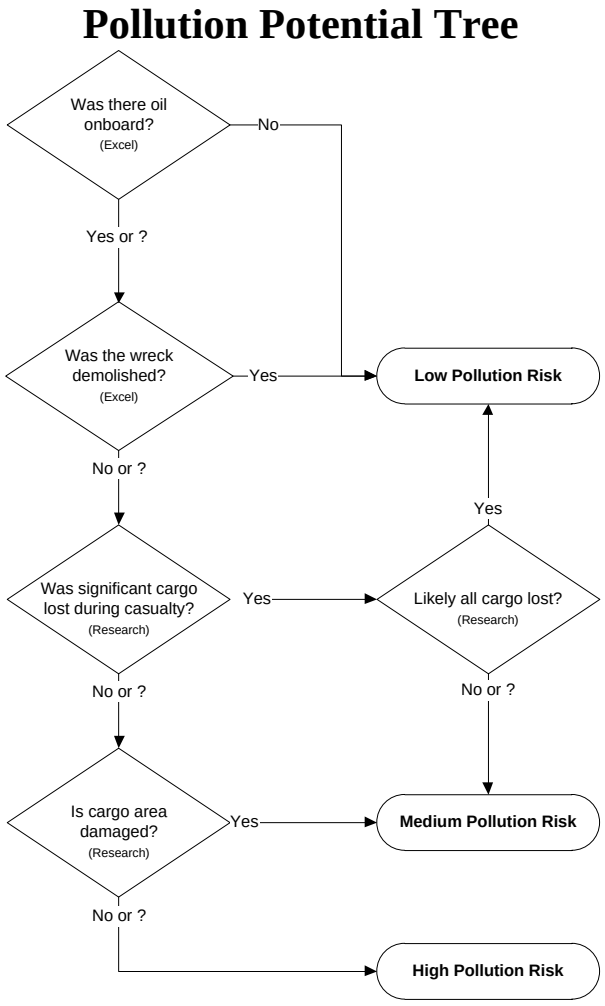


Figure 1-1: U.S. Coast Guard Salvage Engineering Response Team (SERT) developed the above Pollution Potential Decision Tree.

Each of the risk factors also has a "data quality modifier" that reflects the completeness and reliability of the information on which the risk ranks were assigned. The quality of the information is evaluated with respect to the factors required for a reasonable preliminary risk assessment. The data quality modifier scale is:

- **High Data Quality:** All or most pertinent information on wreck available to allow for thorough risk assessment and evaluation. The data quality is high and confirmed.
- **Medium Data Quality:** Much information on wreck available, but some key factor data are missing or the data quality is questionable or not verified. Some additional research needed.
- **Low Data Quality:** Significant issues exist with missing data on wreck that precludes making preliminary risk assessment, and/or the data quality is suspect. Significant additional research needed.

In the following sections, the definition of low, medium, and high for each risk factor is provided. Also, the classification for the *Mobile Point* is provided, both as text and as shading of the applicable degree of risk bullet.

Pollution Potential Factors

Risk Factor A1: Total Oil Volume

The oil volume classifications correspond to the U.S. Coast Guard spill classifications:

- **Low Volume: Minor Spill** <240 bbl (10,000 gallons)
- **Medium Volume: Medium Spill** ≥240 – 2,400 bbl (100,000 gallons)
- **High Volume: Major Spill** ≥2,400 bbl (≥100,000 gallons)

The oil volume risk classifications refer to the volume of the most-likely Worst Case Discharge from the vessel and are based on the amount of oil believed or confirmed to be on the vessel.

The *Mobile Point i*s ranked as High Volume because it is thought to have a potential for up to 3,927 bbl, although some of that may have been lost at the time of the casualty or after the vessel sank. Data quality is medium.

The risk factor for volume also incorporates any reports or anecdotal evidence of actual leakage from the vessel or reports from divers of oil in the overheads, as opposed to potential leakage. This reflects the history of the vessel's leakage. There are no reports of leakage from the *Mobile Point*.

Risk Factor A2: Oil Type

The oil type(s) on board the wreck are classified only with regard to persistence, using the U.S. Coast Guard oil grouping[1]. (Toxicity is dealt with in the impact risk for the Resources at Risk classifications.) The three oil classifications are:

- **Low Risk: Group I Oils** – non-persistent oil (e.g., gasoline)
- **Medium Risk: Group II – III Oils** – medium persistent oil (e.g., diesel, No. 2 fuel, light crude, medium crude)
- **High Risk: Group IV** – high persistent oil (e.g., heavy crude oil, No. 6 fuel oil, Bunker C)

The *Mobile Point* is classified as Medium Risk because the bunker oil is diesel oil, a Group II oil type. Data quality is high.

Was the wreck demolished?

Risk Factor B: Wreck Clearance

[1] Group I Oil or Nonpersistent oil is defined as "a petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions: At least 50% of which, by volume, distill at a temperature of 340°C (645°F); and at least 95% of which, by volume, distill at a temperature of 370°C (700°F)."
Group II - Specific gravity less than 0.85 crude [API° >35.0]
Group III - Specific gravity between 0.85 and less than .95 [API° ≤35.0 and >17.5]
Group IV - Specific gravity between 0.95 to and including 1.0 [API° ≤17.5 and >10.0]

This risk factor addresses whether or not the vessel was historically reported to have been demolished as a hazard to navigation or by other means such as depth charges or aerial bombs. This risk factor is based on historic records and does not take into account what a wreck site currently looks like. The risk categories are defined as:

- **Low Risk:** The wreck was reported to have been entirely destroyed after the casualty
- **Medium Risk:** The wreck was reported to have been partially cleared or demolished after the casualty
- **High Risk:** The wreck was not reported to have been cleared or demolished after the casualty
- **Unknown:** It is not known whether or not the wreck was cleared or demolished at the time of or after the casualty

The *Mobile Point* is classified as High Risk because there are no known historic accounts of the wreck being demolished as a hazard to navigation. Data quality is high.

Was significant cargo or bunker lost during casualty?

Risk Factor C1: Burning of the Ship

This risk factor addresses any burning that is known to have occurred at the time of the vessel casualty and may have resulted in oil products being consumed or breaks in the hull or tanks that would have increased the potential for oil to escape from the shipwreck. The risk categories are:

- **Low Risk:** Burned for multiple days
- **Medium Risk:** Burned for several hours
- **High Risk:** No burning reported at the time of the vessel casualty
- **Unknown:** It is not known whether or not the vessel burned at the time of the casualty

The *Mobile Point* is classified as High Risk because there was no report of fire at the time of casualty. Data quality is high.

Risk Factor C2: Reported Oil on the Water

This risk factor addresses reports of oil on the water at the time of the vessel casualty. The amount is relative and based on the number of available reports of the casualty. Seldom are the reports from trained observers so this is very subjective information. The risk categories are defined as:

- **Low Risk:** Large amounts of oil reported on the water by multiple sources
- **Medium Risk:** Moderate to little oil reported on the water during or after the sinking event
- **High Risk:** No oil reported on the water
- **Unknown:** It is not known whether or not there was oil on the water at the time of the casualty

The *Mobile Point* is classified as High Risk because no oil is known to have been reported spreading across the water as the vessel went down. Data quality is low because full sinking reports were not located.

Is the cargo area damaged?

Risk Factor D1: Nature of the Casualty

This risk factor addresses the means by which the vessel sank. The risk associated with each type of

casualty is determined by the how violent the sinking event was and the factors that would contribute to increased initial damage or destruction of the vessel (which would lower the risk of oil, other cargo, or munitions remaining on board). The risk categories are:

- **Low Risk:** Multiple torpedo detonations, multiple mines, severe explosion
- **Medium Risk:** Single torpedo, shellfire, single mine, rupture of hull, breaking in half, grounding on rocky shoreline
- **High Risk:** Foul weather, grounding on soft bottom, collision
- **Unknown:** The cause of the loss of the vessel is not known

The *Mobile Point* is classified as High Risk because it sank as a result of a collision. Data quality is high.

Risk Factor D2: Structural Breakup

This risk factor takes into account how many pieces the vessel broke into during the sinking event or since sinking. This factor addresses how likely it is that multiple components of a ship were broken apart including tanks, valves, and pipes. Experience has shown that even vessels broken in three large sections can still have significant pollutants on board if the sections still have some structural integrity. The risk categories are:

- **Low Risk:** The vessel is broken into more than three pieces
- **Medium Risk:** The vessel is broken into two-three pieces
- **High Risk:** The vessel is not broken and remains as one contiguous piece
- **Unknown:** It is currently not known whether or not the vessel broke apart at the time of loss or after sinking

The *Mobile Point* is classified as Unknown Risk because it is not known whether additional structural breakup occurred since the location is unknown. Data quality is low.

Factors That May Impact Potential Operations

Orientation (degrees)

This factor addresses what may be known about the current orientation of the intact pieces of the wreck (with emphasis on those pieces where tanks are located) on the seafloor. For example, if the vessel turtled, not only may it have avoided demolition as a hazard to navigation, but it has a higher likelihood of retaining an oil cargo in the non-vented and more structurally robust bottom of the hull.

The location of the *Mobile Point* is unknown. Data quality is low.

Depth

Depth information is provided where known. In many instances, depth will be an approximation based on charted depths at the last known locations.

The depth for *Mobile Point* is believed to be greater than 700 feet due to the last known location. Data quality is low.

Visual or Remote Sensing Confirmation of Site Condition

This factor takes into account what the physical status of wreck site as confirmed by remote sensing or other means such as ROV or diver observations and assesses its capability to retain a liquid cargo. This

assesses whether or not the vessel was confirmed as entirely demolished as a hazard to navigation, or severely compromised by other means such as depth charges, aerial bombs, or structural collapse.

The location of the *Mobile Point* is unknown. Data quality is low.

Other Hazardous (Non-Oil) Cargo on Board
This factor addresses hazardous cargo other than oil that may be on board the vessel and could potentially be released, causing impacts to ecological and socio-economic resources at risk.

There are no reports of hazardous materials onboard. Data quality is high.

Munitions on Board
This factor addresses hazardous cargo other than oil that may be on board the vessel and could potentially be released or detonated causing impacts to ecological and socio-economic resources at risk.

The *Mobile Point* may have had munitions for onboard weapons but this is currently not known. Data quality is low.

Vessel Pollution Potential Summary

Table 1-1 summarizes the risk factor scores for the pollution potential and mitigating factors that would reduce the pollution potential for the *Mobile Point.* Operational factors are listed but do not have a risk score.

Table 1-1: Summary matrix for the vessel risk factors for the *Mobile Point* color-coded as red (high risk), yellow (medium risk), and green (low risk).

Vessel Risk Factors		Data Quality Score	Comments	Risk Score
Pollution Potential Factors	A1: Oil Volume (total bbl)	Medium	Maximum of 3,927 bbl, not reported to be leaking	**Med**
	A2: Oil Type	High	Bunker oil is diesel oil, a Group II oil type	
	B: Wreck Clearance	High	Vessel not reported as cleared	
	C1: Burning of the Ship	High	No fire was reported	
	C2: Oil on Water	Low	No oil was reported on the water	
	D1: Nature of Casualty	High	Collision	
	D2: Structural Breakup	Low	Unknown structural breakup	
Archaeological Assessment	Archaeological Assessment	Low	Full sinking records were not located and no site reports exist so an accurate assessment could not be prepared	**Not Scored**
Operational Factors	Wreck Orientation	Low	Unknown, potential to be upright	**Not Scored**
	Depth	Low	>700	
	Visual or Remote Sensing Confirmation of Site Condition	Low	Location unknown	
	Other Hazardous Materials Onboard	High	No	
	Munitions Onboard	Low	May have had munitions for onboard weapons	
	Gravesite (Civilian/Military)	High	No	
	Historical Protection Eligibility (NHPA/SMCA)	High	NHPA and possibly SMCA	

SECTION 2: ENVIRONMENTAL IMPACT MODELING

To help evaluate the potential transport and fates of releases from sunken wrecks, NOAA worked with RPS ASA to run a series of generalized computer model simulations of potential oil releases. The results are used to assess potential impacts to ecological and socio-economic resources, as described in Sections 3 and 4. The modeling results are useful for this screening-level risk assessment; however, it should be noted that detailed site/vessel/and seasonally specific modeling would need to be conducted prior to any intervention on a specific wreck.

Release Scenarios Used in the Modeling

The potential volume of leakage at any point in time will tend to follow a probability distribution. Most discharges are likely to be relatively small, though there could be multiple such discharges. There is a lower probability of larger discharges, though these scenarios would cause the greatest damage. A **Worst Case Discharge** (WCD) would involve the release of all of the cargo oil and bunkers present on the vessel. In the case of the *Mobile Point* this would be about 4,000 bbl (rounded up from 3,927 bbl) based on current estimates of the amount of oil remaining onboard the wreck.

The likeliest scenario of oil release from most sunken wrecks, including the *Mobile Point*, is a small, episodic release that may be precipitated by disturbance of the vessel in storms. Each of these episodic releases may cause impacts and require a response. **Episodic** releases are modeled using 1% of the WCD. Another scenario is a very low chronic release, i.e., a relatively regular release of small amounts of oil that causes continuous oiling and impacts over the course of a long period of time. This type of release would likely be precipitated by corrosion of piping that allows oil to flow or bubble out at a slow, steady rate. **Chronic** releases are modeled using 0.1% of the WCD.

The **Most Probable** scenario is premised on the release of all the oil from one tank. In the absence of information on the number and condition of the cargo or fuel tanks for all the wrecks being assessed, this scenario is modeled using 10% of the WCD. The **Large** scenario is loss of 50% of the WCD. The five major types of releases are summarized in Table 2-1. The actual type of release that occurs will depend on the condition of the vessel, time factors, and disturbances to the wreck. Note that, the episodic and chronic release scenarios represent a small release that is repeated many times, potentially repeating the same magnitude and type of impact(s) with each release. The actual impacts would depend on the environmental factors such as real-time and forecast winds and currents during each release and the types/quantities of ecological and socio-economic resources present.

The model results here are based on running the RPS ASA Spill Impact Model Application Package (SIMAP) two hundred times for each of the five spill volumes shown in Table 2-1. The model randomly selects the date of the release, and corresponding environmental, wind, and ocean current information from a long-term wind and current database.

When a spill occurs, the trajectory, fate, and effects of the oil will depend on environmental variables, such as the wind and current directions over the course of the oil release, as well as seasonal effects. The magnitude and nature of potential impacts to resources will also generally have a strong seasonal component (e.g., timing of bird migrations, turtle nesting periods, fishing seasons, and tourism seasons).

Table 2-1: Potential oil release scenario types for the *Mobile Point*.

Scenario Type	Release per Episode	Time Period	Release Rate	Relative Likelihood	Response Tier
Chronic (0.1% of WCD)	4 bbl	Fairly regular intervals or constant	100 bbl over several days	More likely	Tier 1
Episodic (1% of WCD)	40 bbl	Irregular intervals	Over several hours or days	Most Probable	Tier 1-2
Most Probable (10% of WCD)	400 bbl	One-time release	Over several hours or days	Most Probable	Tier 2
Large (50% of WCD)	2,000 bbl	One-time release	Over several hours or days	Less likely	Tier 2-3
Worst Case	4,000 bbl	One-time release	Over several hours or days	Least likely	Tier 3

The modeling results represent 200 simulations for each spill volume with variations in spill trajectory based on winds and currents. The spectrum of the simulations gives a perspective on the variations in likely impact scenarios. Some resources will be impacted in nearly all cases; some resources may not be impacted unless the spill trajectory happens to go in that direction based on winds and currents at the time of the release and in its aftermath.

For the large and WCD scenarios, the duration of the release was assumed to be 12 hours, envisioning a storm scenario where the wreck is damaged or broken up, and the model simulations were run for a period of 30 days. The releases were assumed to be from a depth between 2-3 meters above the sea floor, using the information known about the wreck location and depth. It is important to acknowledge that these scenarios are only for this screening-level assessment. Detailed site/vessel/and seasonally specific modeling would need to be conducted prior to any intervention on a specific wreck.

Oil Type for Release

The *Mobile Point* contained a maximum of 3,927 bbl of marine diesel (a Group II oil) as fuel. Thus, the oil spill model was run using light fuel oil.

Oil Thickness Thresholds

The model results are reported for different oil thickness thresholds, based on the amount of oil on the water surface or shoreline and the resources potentially at risk. Table 2-2 shows the terminology and thicknesses used in this report, for both oil thickness on water and the shoreline. For oil on the water surface, a thickness of 0.01 g/m^2, which would appear as a barely visible sheen, was used as the threshold for socio-economic impacts because often fishing is prohibited in areas with any visible oil, to prevent contamination of fishing gear and catch. A thickness of 10 g/m^2 was used as the threshold for ecological impacts, primarily due to impacts to birds, because that amount of oil has been observed to be enough to mortally impact birds and other wildlife. In reality, it is very unlikely that oil would be evenly distributed on the water surface. Spilled oil is always distributed patchily on the water surface in bands or tarballs with clean water in between. So, Table 2-2a shows the number of tarballs per acre on the water surface for these oil thickness thresholds, assuming that each tarball was a sphere that was 1 inch in diameter.

For oil stranded onshore, a thickness of 1 g/m^2 was used as the threshold for socio-economic impacts because that amount of oil would conservatively trigger the need for shoreline cleanup on amenity

beaches. A thickness of 100 g/m^2 was used as the threshold for ecological impacts based on a synthesis of the literature showing that shoreline life has been affected by this degree of oiling.[2] Because oil often strands onshore as tarballs, Table 2-2b shows the number of tarballs per m^2 on the shoreline for these oil thickness thresholds, assuming that each tarball was a sphere that was 1 inch in diameter.

Table 2-2a: Oil thickness thresholds used in calculating area of water impacted. Refer to Sections 3 and 4 for explanations of the thresholds for ecological and socio-economic resource impacts.

Oil Description	Sheen Appearance	Approximate Sheen Thickness		No. of 1 inch Tarballs	Threshold/Risk Factor
Oil Sheen	Barely Visible	0.00001 mm	0.01 g/m^2	~5-6 tarballs per acre	Socio-economic Impacts to Water Surface/Risk Factor 4B-1 and 2
Heavy Oil Sheen	Dark Colors	0.01 mm	10 g/m^2	~5,000-6,000 tarballs per acre	Ecological Impacts to Water Surface/ Risk Factor 3B-1 and 2

Table 2-2b: Oil thickness thresholds used in calculating miles of shoreline impacted. Refer to Sections 3 and 4 for explanations of the thresholds for ecological and socio-economic resource impacts.

Oil Description	Oil Appearance	Approximate Sheen Thickness		No. of 1 inch Tarballs	Threshold/Risk Factor
Oil Sheen/Tarballs	Dull Colors	0.001 mm	1 g/m^2	~0.12-0.14 tarballs/m^2	Socio-economic Impacts to Shoreline Users/Risk Factor 4C-1 and 2
Oil Slick/Tarballs	Brown to Black	0.1 mm	100 g/m^2	~12-14 tarballs/m^2	Ecological Impacts to Shoreline Habitats/Risk Factor 3C-1 and 2

Potential Impacts to the Water Column

Impacts to the water column from an oil release from the *Mobile Point* will be determined by the volume of leakage. Because oil from sunken vessels will be released at low pressures, the droplet sizes will be large enough for the oil to float to the surface. Therefore, impacts to water column resources will result from the natural dispersion of the floating oil slicks on the surface, which is limited to about the top 33 feet. The metric used for ranking impacts to the water column is the area of water surface in mi^2 that has been contaminated by 1 part per billion (ppb) oil to a depth of 33 feet. At 1 ppb, there are likely to be impacts to sensitive organisms in the water column and potential tainting of seafood, so this concentration is used as a screening threshold for both the ecological and socio-economic risk factors for water column resource impacts. To assist planners in understanding the scale of potential impacts for different leakage volumes, a regression curve was generated for the water column volume oiled using the five volume scenarios, which is shown in Figure 2-1. Using this figure, the water column impacts can be estimated for any spill volume.

[2] French, D., M. Reed, K. Jayko, S. Feng, H. Rines, S. Pavignano, T. Isaji, S. Puckett, A. Keller, F. W. French III, D. Gifford, J. McCue, G. Brown, E. MacDonald, J. Quirk, S. Natzke, R. Bishop, M. Welsh, M. Phillips and B.S. Ingram, 1996. The CERCLA type A natural resource damage assessment model for coastal and marine environments (NRDAM/CME), Technical Documentation, Vol. I - V. Office of Environmental Policy and Compliance, U.S. Dept. of the Interior, Washington, DC.

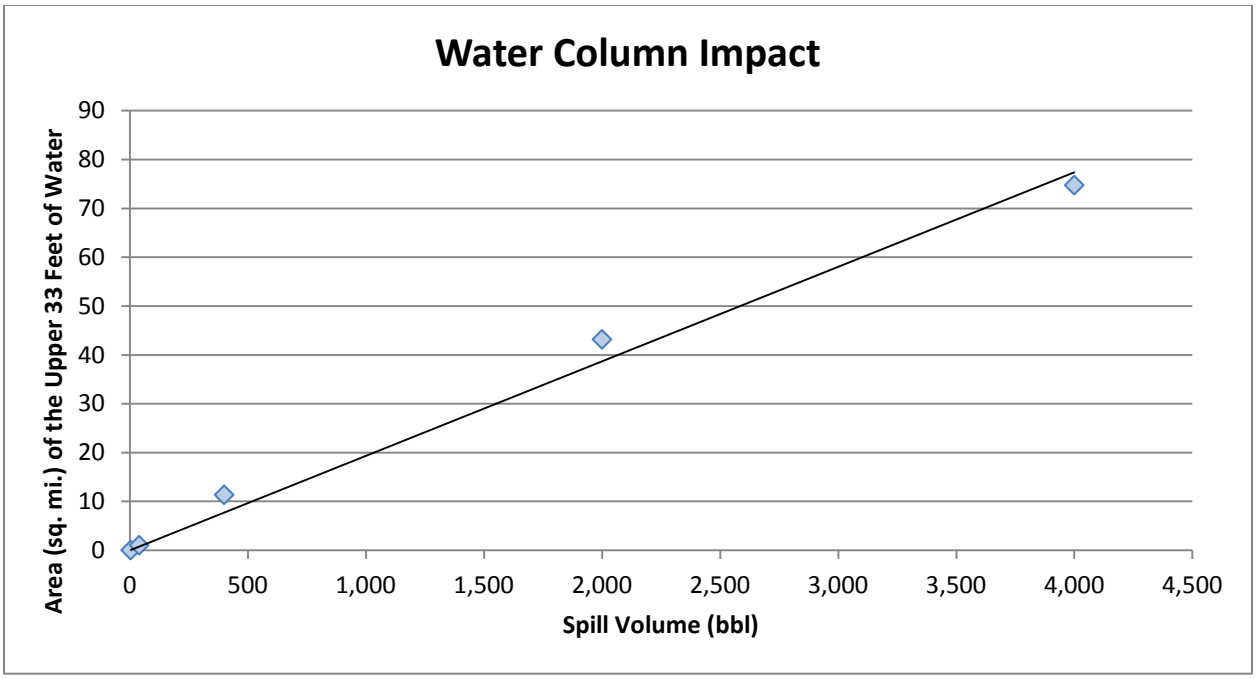


Figure 2-1: Regression curve for estimating the volume of water column at or above 1 ppb aromatics impacted as a function of spill volume for the *Mobile Point*.

Potential Water Surface Slick

The slick size from an oil release from the *Mobile Point* will be determined by the volume of leakage. The estimated water surface coverage by a fresh slick (the total water surface area "swept" by oil over time) for the various scenarios is shown in Table 2-3, as the mean result of the 200 model runs. Note that this is an estimate of total water surface affected over a 30-day period. The slick will not be continuous but rather be broken and patchy due to the subsurface release of the oil. Surface expression is likely to be in the form of sheens and streamers.

Table 2-3: Estimated slick area swept on water for oil release scenarios from the *Mobile Point*.

Scenario Type	Oil Volume (bbl)	Estimated Slick Area Swept Mean of All Models	
		0.01 g/m²	10 g/m²
Chronic	4	106 mi²	9 mi²
Episodic	40	440 mi²	29 mi²
Most Probable	400	1,520 mi²	99 mi²
Large	2,000	3,800 mi²	220 mi²
Worst Case Discharge	4,000	5,800 mi²	310 mi²

The location, size, shape, and spread of the oil slick(s) from an oil release from the *Mobile Point* will depend on environmental conditions, including winds and currents, at the time of release and in its aftermath. The areas potentially affected by oil slicks, given that we cannot predict when the spill might occur and the range of possible wind and current conditions that might prevail after a release, are shown in Figure 2-2 and Figure 2-3 using the Most Probable volume and the socio-economic and ecological thresholds.

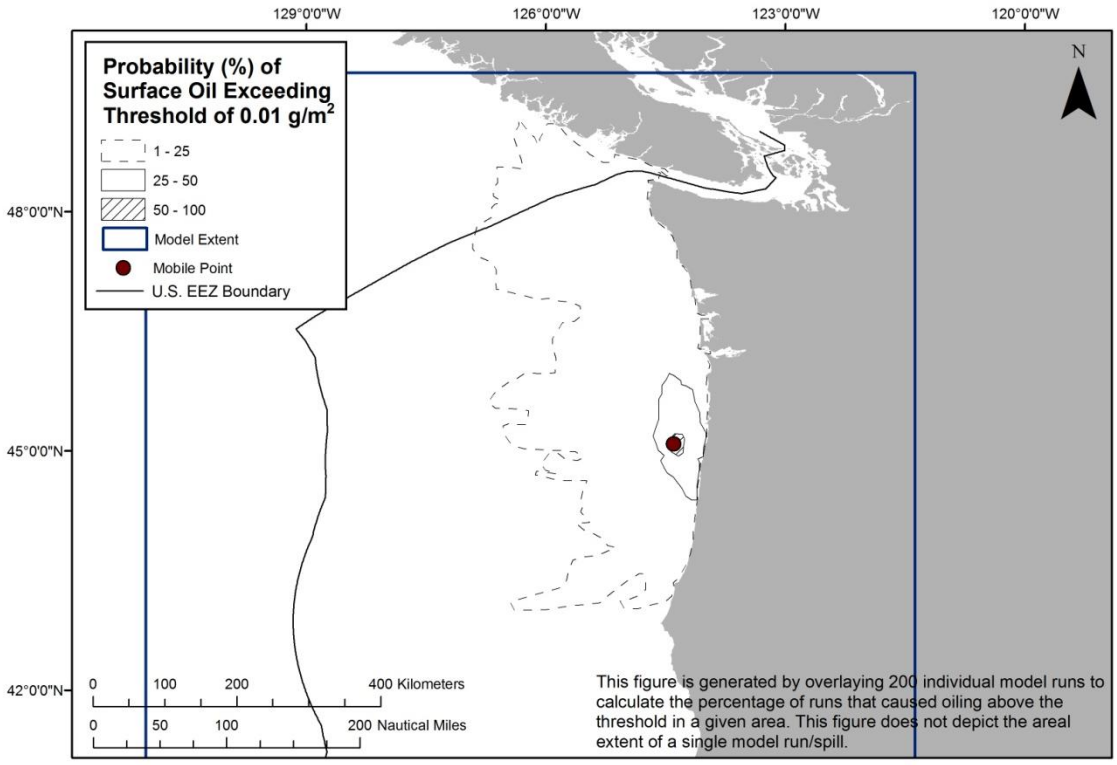


Figure 2-2: Probability of surface oil (exceeding 0.01 g/m^2) from the Most Probable spill of 400 bbl of light fuel oil from the *Mobile Point* at the threshold for socio-economic resources at risk.

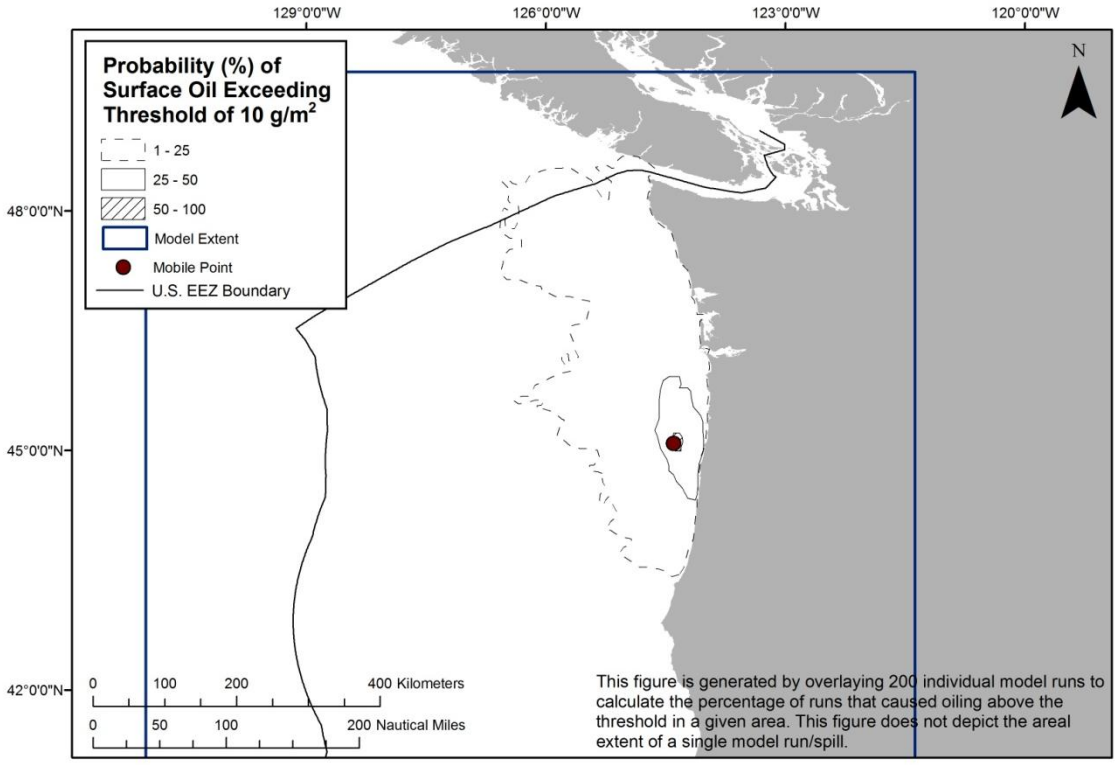


Figure 2-3: Probability of surface oil (exceeding 10 g/m^2) from the Most Probable spill of 400 bbl of light fuel oil from the *Mobile Point* at the threshold for ecological resources at risk.

The maximum potential cumulative area swept by oil slicks at some time after a Most Probable Discharge is shown in Figure 2-4 as the timing of oil movements.

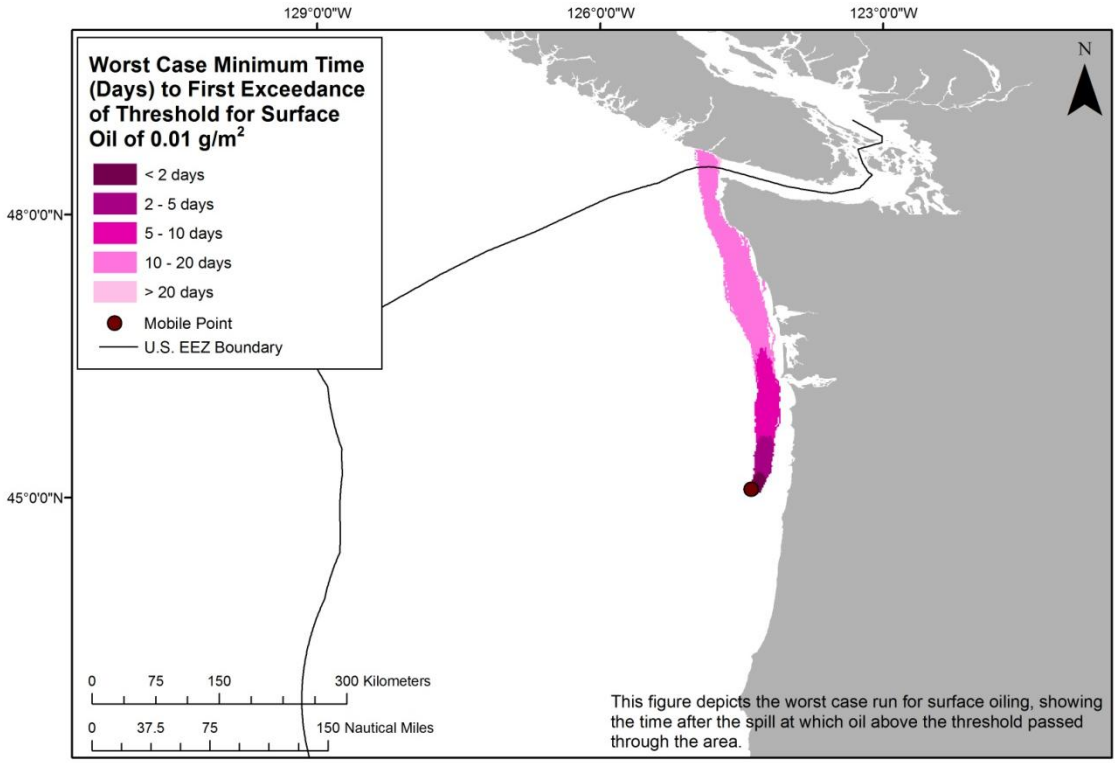


Figure 2-4: Water surface oiling from the Most Probable spill of 400 bbl of light fuel oil from the *Mobile Point* shown as the area over which the oil spreads at different time intervals.

The actual area affected by a release will be determined by the volume of leakage, whether it is from one or more tanks at a time. To assist planners in understanding the scale of potential impacts for different leakage volumes, a regression curve was generated for the water surface area oiled using the five volume scenarios, which is shown in Figure 2-5. Using this figure, the area of water surface with a barely visible sheen can be estimated for any spill volume.

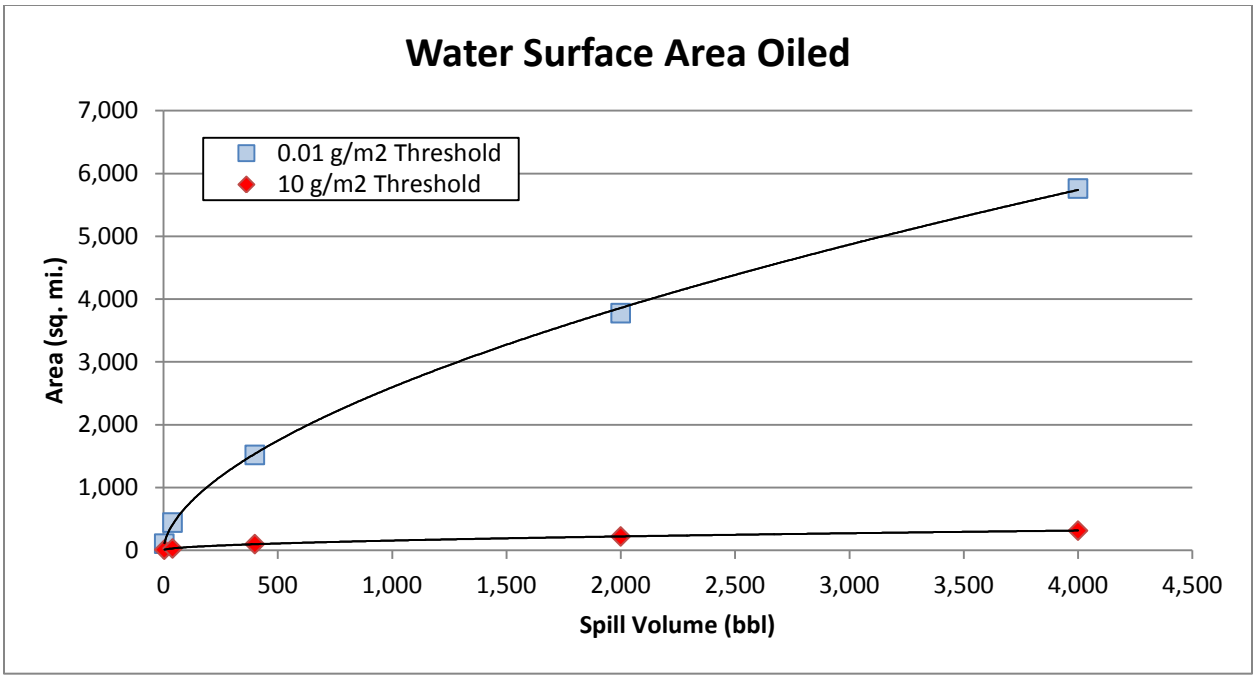


Figure 2-5: Regression curve for estimating the amount of water surface oiling as a function of spill volume for the *Mobile Point*, showing both the ecological threshold of 10 g/m^2 and socio-economic threshold of 0.01 g/m^2.

Potential Shoreline Impacts

Based on these modeling results, shorelines from as far north as Vancouver Island, Canada, to as far south as Coos Bay, Oregon, are at risk. Figure 2-6 shows the probability of oil stranding on the shoreline at concentrations that exceed the threshold of 1 g/m^2, for the Most Probable release of 400 bbl. However, the specific areas that would be oiled will depend on the currents and winds at the time of the oil release(s), as well as on the amount of oil released. Figure 2-7 shows the single oil spill scenario that resulted in the maximum extent of shoreline oiling for the Most Probable volume. Estimated miles of shoreline oiling above the threshold of 1 g/m^2 by scenario type are shown in Table 2-4.

Table 2-4a: Estimated shoreline oiling from leakage from the *Mobile Point*. (U.S. and Canada).

Scenario Type	Volume (bbl)	Estimated Miles of Shoreline Oiling Above 1 g/m^2			
		Rock/Gravel/Artificial	Sand	Wetland/Mudflat	Total
Chronic	4	0	0	0	0
Episodic	40	0	0	0	0
Most Probable	400	3	0	0	4
Large	2,000	3	1	0	4
Worst Case Discharge	4,000	3	2	0	5

Table 2-4b: Estimated shoreline oiling from leakage from the *Mobile Point*. (U.S. only).

Scenario Type	Volume (bbl)	Estimated Miles of Shoreline Oiling Above 1 g/m^2			
		Rock/Gravel/Artificial	Sand	Wetland/Mudflat	Total
Chronic	4	0	0	0	0
Episodic	40	0	0	0	0
Most Probable	400	3	0	0	3
Large	2,000	3	1	0	3
Worst Case Discharge	4,000	3	2	0	4

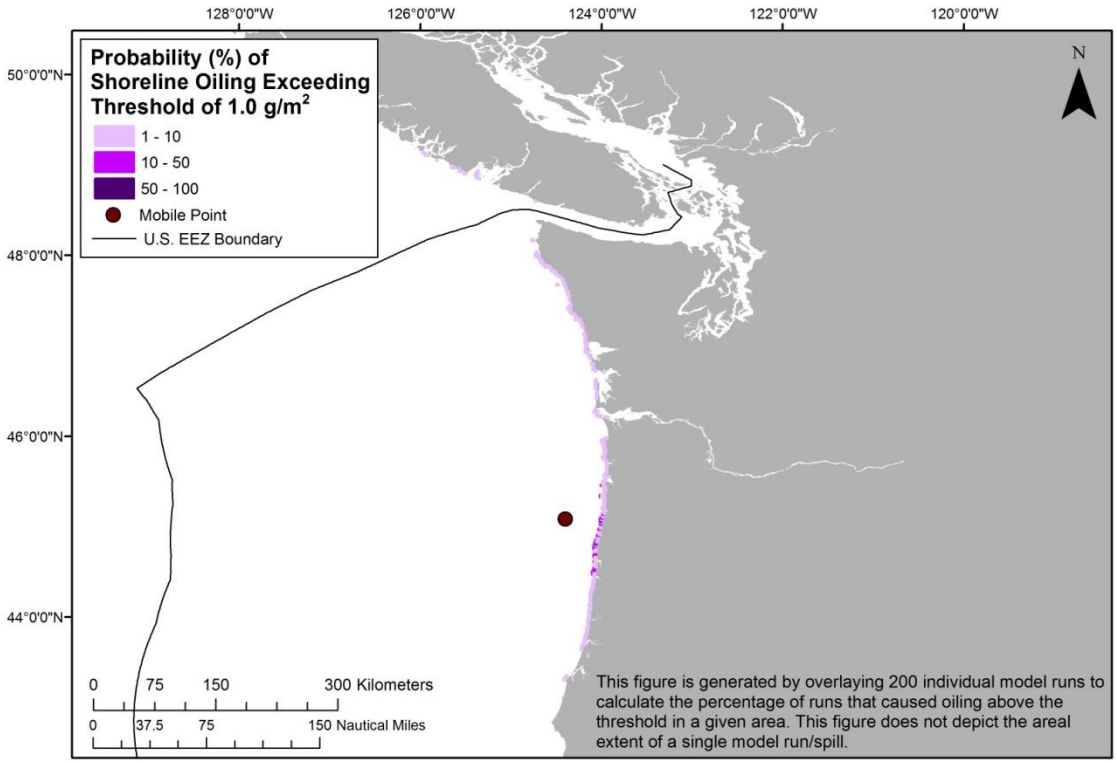


Figure 2-6: Probability of shoreline oiling (exceeding 1.0 g/m^2) from the Most Probable Discharge of 400 bbl of light fuel oil from the *Mobile Point*.

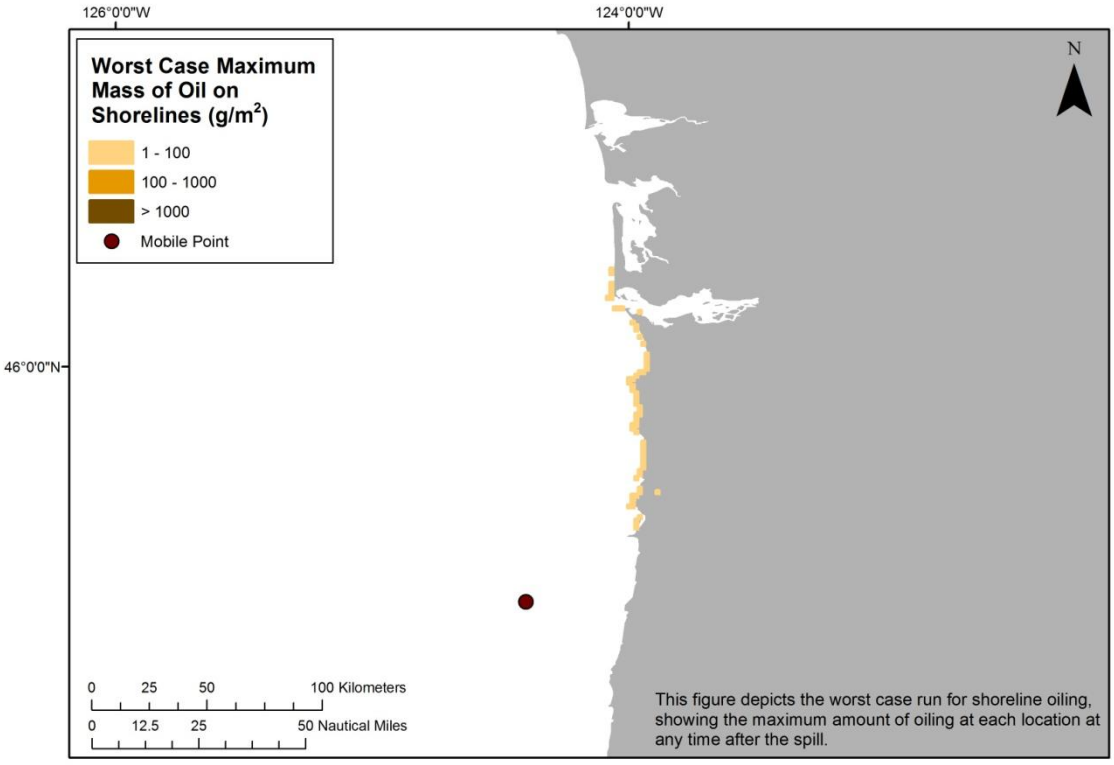


Figure 2-7: The extent and degree of shoreline oiling from the single model run of the Most Probable Discharge of 400 bbl of light fuel oil from the *Mobile Point* that resulted in the greatest shoreline oiling.

The actual shore length affected by a release will be determined by the volume of leakage and environmental conditions during an actual release. To assist planners in scaling the potential impact for different leakage volumes, a regression curve was generated for the total shoreline length oiled using the five volume scenarios, which is shown in Figure 2-8. Using this figure, the shore length oiled can be estimated for any spill volume.

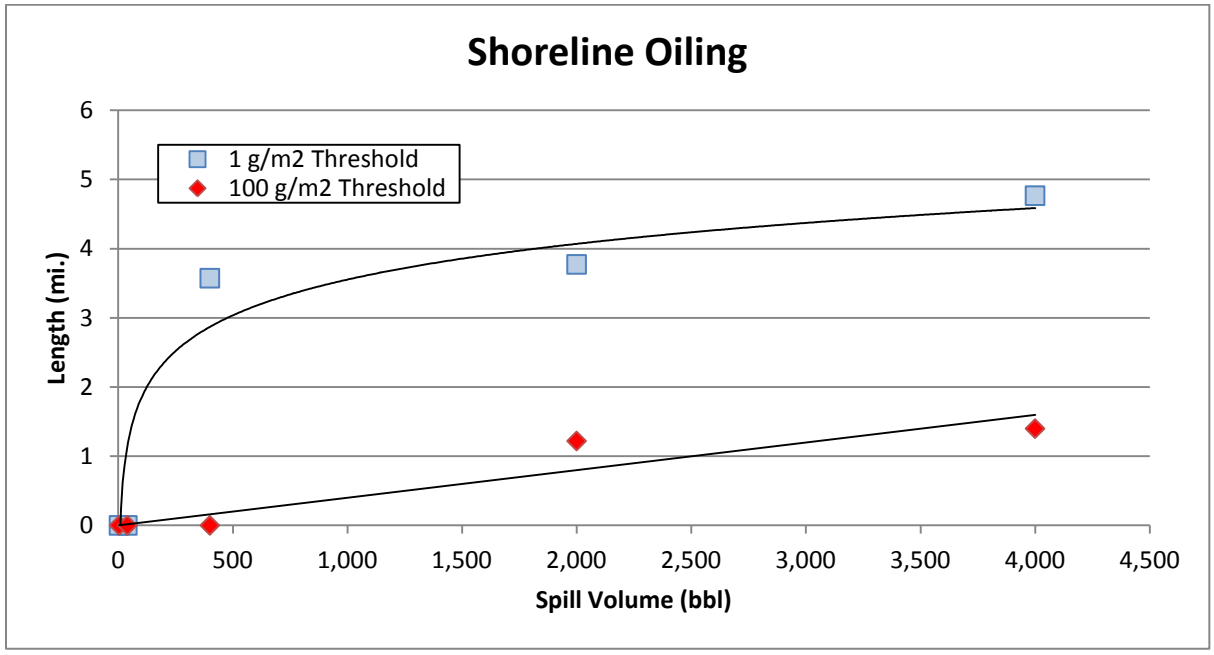


Figure 2-8: Regression curve for estimating the amount of shoreline oiling at different thresholds as a function of spill volume for the *Mobile Point*.

The worst case scenario for shoreline exposure along the potentially impacted area for the WCD volume (Table 2-5) and the Most Probable volume (Table 2-6) consists primarily of rocky shores and gravel beaches. Sand beaches may also be at risk of larger releases or lighter shoreline oiling.

Table 2-5: Worst case scenario shoreline impact by habitat type and oil thickness for a leakage of 4,000 bbl from the *Mobile Point*.

Shoreline/Habitat Type	Lighter Oiling Oil Thickness <1 mm Oil Thickness >1 g/m²	Heavier Oiling Oil Thickness >1 mm Oil Thickness >100 g/m²
Rocky and artificial shores/Gravel beaches	25 miles	3 miles
Sand beaches	18 miles	0 miles
Salt marshes and tidal flats	0 miles	0 miles

Table 2-6: Worst case scenario shoreline impact by habitat type and oil thickness for a leakage of 400 bbl from the *Mobile Point*.

Shoreline/Habitat Type	Lighter Oiling Oil Thickness <1 mm Oil Thickness >1 g/m²	Heavier Oiling Oil Thickness >1 mm Oil Thickness >100 g/m²
Rocky and artificial shores/Gravel beaches	15 miles	0 miles
Sand beaches	3 miles	0 miles
Salt marshes and tidal flats	0 miles	0 miles

SECTION 3: ECOLOGICAL RESOURCES AT RISK

Ecological resources at risk from a catastrophic release of oil from the *Mobile Point* (Table 3-1) include numerous guilds of birds, particularly those sensitive to surface oiling while rafting or plunge diving to feed and are present in nearshore/offshore waters. Many seabirds and shorebirds use the estuaries and offshore islands as foraging and nesting habitat. Pinniped rookeries and haul-outs are common. In addition, this region is important for commercially important fish and invertebrates.

Table 3-1: Ecological resources at risk from a release of oil from the *Mobile Point*.
(FT = Federal threatened; FE = Federal endangered; ST = State threatened; SE = State endangered).

Species Group	Species Subgroup and Geography	Seasonal Presence
Birds	Offshore features can aggregate prey, creating foraging hotspots for pelagic birds, including albatrosses, shearwaters, and fulmars *Shorebird/waterfowl hotspots* Coastal Oregon bays and estuaries are important foraging grounds for migratory and resident shorebirds (avocets, oystercatchers, phalaropes, plovers, sandpipers, stilts, snipes, turnstones) • Tahkenitch Creek Estuary: Large concentrations of migrating shorebirds, Caspian tern, great blue heron, wintering western grebe • Siltcoos Estuary: Important habitat for bufflehead, California gull, Caspian tern, Clark's grebe, common loon, great blue heron, green heron, long-billed curlew, red-necked grebe, Virginia rail • Alsea Bay: Brown pelicans, Caspian terns, shorebirds (thousands) • Tillamook Bay: Waterfowl (7,500, 34 species), great blue heron rookery, shorebirds plentiful • Aleutian Canada goose wintering at Nestucca Bay NWR, dusky Canada goose wintering at Nestucca and Oregon Islands *Nesting locations* 34% of OR breeding seabirds are in this region, including 46% of the pelagic cormorant population, 71% of Brandt's cormorants, 55% of pigeon guillemots, 57% of common murres, 86% of tufted puffins • Marbled murrelet (FT) nest in coastal forests and use nearshore waters for foraging, mating, loafing, molting, and preening • Western snowy plover (FT) breeds on coastal beaches (288 nesting birds in OR) nesting beaches within the area of impact (Tahkenitch Creek estuary, Siltcoos estuary, Sutton Beach/Baker Beach • Two Arches Rock NWR: 42,400+ nesting seabirds • Three Arch Rocks NWR: 12 species of seabird, 226,000 nesting birds, including 60% of OR's tufted puffin population; brown pelicans and bald eagles present • Bird Rocks NWR: 49,500 nesting birds, 6 species • Yaquina Head: 52,000+ birds nesting; one of the largest common murre breeding locations in OR (50,000+ birds), Brandt's cormorant (800-1,500 nests), pelagic cormorants (~610 nests), black oystercatcher (6-7 pairs)	Murrelets present year round, nest Apr-Sep Western snowy plovers nest Mar-Sep Shorebirds present Spring-Fall Assemblage changes seasonally; highest abundance of seabirds Feb-Aug Pelicans present Feb-Dec Waterfowl present Oct/Nov-Apr *Nesting months* Cormorants: Mar-Aug Oystercatcher: Apr-Oct Alcids: Apr-Aug Common murres: Apr-Jul Storm-petrels: May-Oct Great blue herons: Mar-Aug
Marine mammals	*Pinnipeds* • Steller sea lion (FT) rookery present at Three Arch Rocks • Harbor seals present year round; haul-out at Salishan Spit in Lincoln City, Alsea Bay in Waldport, Strawberry Point State Park, and Nehalem Bay • California sea lion males haul-out on beaches near Newport fall-spring	Harbor seals pup Apr-May Steller sea lions pup May-July

Species Group	Species Subgroup and Geography	Seasonal Presence
	Cetaceans *Coastal*: Gray whale (FE), harbor porpoise, bottlenose dolphin are all commonly seen nearshore • Gray whales migrate through coastal waters in fall and spring; some remain and feed during the summer in the California Current • Oregon has a resident gray whale population *Offshore*: Sei whale (FE), sperm whale (FE), *Kogia* spp., Baird's beaked whale, Cuvier's beaked whale and *Mesoplodon* spp.can all occur in offshore waters • All but sei whale are deep-diving and feed on squid *Found in coastal and offshore waters*: Fin whale (FE), humpback whale (FE), minke whale, northern right whale (FE), Dall's porpoise, killer whale, long-beaked common dolphin, northern right-whale dolphin, Pacific white-sided dolphin, Risso's dolphin, short-beaked common dolphin, short-finned pilot whale	Gray whales present Feb-Dec, calves present in spring Harbor porpoises present year round, calve Jun-Aug Blue whales, humpback whales present spring-fall
Sea Turtles	Leatherback sea turtles (FE) can be present in coastal waters in low numbers. Critical foraging habitat occurs in coastal waters north of Cape Blanco Green (FE), loggerhead (FT), and olive ridley (FT) sea turtles can be found offshore in low numbers	Leatherbacks present May-Nov
Fish & Inverts	*Anadromous* • Chinook salmon (FT), coho salmon (FE), steelhead (FT), chum salmon, green sturgeon and white sturgeon populations can be found in coastal rivers in OR • Juveniles use estuarine and nearshore ocean environments • Adults forage in ocean waters prior to upstream migration *Estuarine* • Eelgrass beds are important nursery grounds for many species, including California halibut • Oysters can be present in shallow and intertidal waters *Intertidal* • Surf smelt spawn in the upper intertidal zone of coarse sand/gravel beaches; eggs adhere to the substrate • Rocky intertidal areas are habitat for monkeyface prickleback, some species of rockfish, and larval fish • Black abalone (FE), California mussel, giant octopus, ochre sea star, purple sea urchin, red abalone, red sea urchin, rock scallop can all be found in the intertidal zones of rocky shorelines *Nearshore* • Dungeness crab move nearshore to spawn on sand beaches • Surf perch school in shallow nearshore waters • Several species of shrimp and clams can be found in nearshore waters • Pacific herring spawn adhesive eggs on nearshore seagrass and algae *Demersal (groundfish)* • Many species of rockfish (>20) are found in the area and can be associated with rocky shorelines and kelp beds • Heceta Bank is extremely productive groundfish habitat and has been designated essential fish habitat	Salmon spawn Fall-Winter Steelhead spawn winter and summer Smelt spawn year round Herring spawn Jan-Apr Dungeness crabs mate in the spring and spawn Jun-Sep Rockfish and halibut spawn in deeper offshore waters in winter/spring

Species Group	Species Subgroup and Geography	Seasonal Presence
	Pelagic Important habitat for forage fish (sardine, anchovy) and large predators (white shark) and other ecologically important species • Basking sharks filter feed near the surface • Ocean sunfish bask in surface waters of the open ocean	
Benthic Habitats	Turf grass and sea palm common in rocky intertidal areas Kelp beds (mostly bull kelp) can be found in nearshore waters along the shoreline and is important habitat for fish and invertebrates, and foraging grounds for marine mammals Eelgrass is present in more sheltered habitats; the largest stand in northern Oregon is in Netarts Bay Rocky reef habitats are present offshore of Siletz bay in shallow (<55 m) nearshore areas	Kelp canopy is fullest Mar-Nov

The Environmental Sensitivity Index (ESI) atlases for the potentially impacted coastal areas from a leak from the *Mobile Point* are generally available at each U.S. Coast Guard Sector. They can also be downloaded at: http://response.restoration.noaa.gov/esi. These maps show detailed spatial information on the distribution of sensitive shoreline habitats, biological resources, and human-use resources. The tables on the back of the maps provide more detailed life-history information for each species and location. The ESI atlases should be consulted to assess the potential environmental resources at risk for specific spill scenarios. In addition, the Geographic Response Plans within the Area Contingency Plans prepared by the Area Committee for each U.S. Coast Guard Sector have detailed information on the nearshore and shoreline ecological resources at risk and should be consulted.

Ecological Risk Factors

Risk Factor 3: Impacts to Ecological Resources at Risk (EcoRAR)

Ecological resources include plants and animals (e.g., fish, birds, invertebrates, and mammals), as well as the habitats in which they live. All impact factors are based on both a Worst Case and the Most Probable Discharge oil release from the wreck. Risk factors for ecological resources at risk (EcoRAR) are divided into three categories:

- Impacts to the water column and resources in the water column;
- Impacts to the water surface and resources on the water surface; and
- Impacts to the shoreline and resources on the shoreline.

The impacts from an oil release from the wreck would depend greatly on the direction in which the oil slick moves, which would, in turn, depend on wind direction and currents at the time of and after the oil release. Impacts are characterized in the risk analysis based on the likelihood of any measurable impact, as well as the degree of impact that would be expected if there is an impact. The measure of the degree of impact is based on the median case for which there is at least some impact. The median case is the

"middle case" – half of the cases with significant impacts have less impact than this case, and half have more.

For each of the three ecological resources at risk categories, risk is defined as:

- The **probability of oiling** over a certain threshold (i.e., the likelihood that there will be an impact to ecological resources over a certain minimal amount); and
- The **degree of oiling** (the magnitude or amount of that impact).

In the following sections, the definition of low, medium, and high for each ecological risk factor is provided. Also, the classification for the *Mobile Point* is provided, both as text and as shading of the applicable degree of risk bullet, for the WCD release of 4,000 bbl and a border around the Most Probable Discharge of 400 bbl.

Risk Factor 3A: Water Column Impacts to EcoRAR

Water column impacts occur beneath the water surface. The ecological resources at risk for water column impacts are fish, marine mammals, and invertebrates (e.g., shellfish, and small organisms that are food for larger organisms in the food chain). These organisms can be affected by toxic components in the oil. The threshold for water column impact to ecological resources at risk is a dissolved aromatic hydrocarbons concentration of 1 ppb (i.e., 1 part total dissolved aromatics per one billion parts water). Dissolved aromatic hydrocarbons are the most toxic part of the oil. At this concentration and above, one would expect impacts to organisms in the water column.

Risk Factor 3A-1: Water Column Probability of Oiling of EcoRAR

This risk factor reflects the probability that at least 0.2 mi^2 of the upper 33 feet of the water column would be contaminated with a high enough concentration of oil to cause ecological impacts. The three risk scores for water column oiling probability are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

Risk Factor 3A-2: Water Column Degree of Oiling of EcoRAR

The degree of oiling of the water column reflects the total volume of water that would be contaminated by oil at a concentration high enough to cause impacts. The three categories of impact are:

- **Low Impact:** impact on less than 0.2 mi^2 of the upper 33 feet of the water column at the threshold level
- **Medium Impact**: impact on 0.2 to 200 mi^2 of the upper 33 feet of the water column at the threshold level
- **High Impact:** impact on more than 200 mi^2 of the upper 33 feet of the water column at the threshold level

The *Mobile Point* is classified as High Risk for oiling probability for water column ecological resources for the WCD of 4,000 bbl because 100% of the model runs resulted in contamination of more than 0.2 mi^2 of the upper 33 feet of the water column above the threshold of 1 ppb aromatics. It is classified as Medium Risk for degree of oiling because the mean volume of water contaminated was 75 mi^2 of the

upper 33 feet of the water column. For the Most Probable Discharge of 400 bbl, the *Mobile Point* is classified as High Risk for oiling probability for water column ecological resources because 94% of the model runs resulted in contamination of more than 0.2 mi^2 of the upper 33 feet of the water column above the threshold of 1 ppb aromatics. It is classified as Medium Risk for degree of oiling because the mean volume of water contaminated was 11 mi^2 of the upper 33 feet of the water column.

Risk Factor 3B: Water Surface Impacts to EcoRAR

Ecological resources at risk at the water surface include surface feeding and diving sea birds, sea turtles, and marine mammals. These organisms can be affected by the toxicity of the oil as well as from coating with oil. The threshold for water surface oiling impact to ecological resources at risk is 10 g/m^2 (10 grams of floating oil per square meter of water surface). At this concentration and above, one would expect impacts to birds and other animals that spend time on the water surface.

Risk Factor 3B-1: Water Surface Probability of Oiling of EcoRAR

This risk factor reflects the probability that at least 1,000 mi^2 of the water surface would be affected by enough oil to cause impacts to ecological resources. The three risk scores for oiling are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

Risk Factor 3B-2: Water Surface Degree of Oiling of EcoRAR

The degree of oiling of the water surface reflects the total amount of oil that would affect the water surface in the event of a discharge from the vessel. The three categories of impact are:

- **Low Impact:** less than 1,000 mi^2 of water surface impact at the threshold level
- **Medium Impact:** 1,000 to 10,000 mi^2 of water surface impact at the threshold level
- **High Impact:** more than 10,000 mi^2 of water surface impact at the threshold level

The *Mobile Point* is classified as Low Risk for oiling probability for water surface ecological resources for the WCD because 3% of the model runs resulted in at least 1,000 mi^2 of the water surface affected above the threshold of 10 g/m^2. It is classified as Low Risk for degree of oiling because the mean area of water contaminated was 314 mi^2. The *Mobile Point* is classified as Low Risk for oiling probability for water surface ecological resources for the Most Probable Discharge because 0% of the model runs resulted in at least 1,000 mi^2 of the water surface affected above the threshold of 10 g/m^2. It is classified as Low Risk for degree of oiling because the mean area of water contaminated was 99 mi^2.

Risk Factor 3C: Shoreline Impacts to EcoRAR

The impacts to different types of shorelines vary based on their type and the organisms that live on them. In this risk analysis, shorelines have been weighted by their degree of sensitivity to oiling. Wetlands are the most sensitive (weighted as "3" in the impact modeling), rocky and gravel shores are moderately sensitive (weighted as "2"), and sand beaches (weighted as "1") are the least sensitive to ecological impacts of oil.

Risk Factor 3C-1: Shoreline Probability of Oiling of EcoRAR

This risk factor reflects the probability that the shoreline would be coated by enough oil to cause impacts

to shoreline organisms. The threshold for shoreline oiling impacts to ecological resources at risk is 100 g/m^2 (i.e., 100 grams of oil per square meter of shoreline). The three risk scores for oiling are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

Risk Factor 3C-2: Shoreline Degree of Oiling of EcoRAR

The degree of oiling of the shoreline reflects the length of shorelines oiled by at least 100 g/m^2 in the event of a discharge from the vessel. The three categories of impact are:

- **Low Impact:** less than 10 miles of shoreline impacted at the threshold level
- **Medium Impact:** 10 - 100 miles of shoreline impacted at the threshold level
- **High Impact:** more than 100 miles of shoreline impacted at the threshold level

The *Mobile Point* is classified as Medium Risk for oiling probability for shoreline ecological resources for the WCD because 28% of the model runs resulted in shorelines affected above the threshold of 100 g/m^2. It is classified as Low Risk for degree of oiling because the mean weighted length of shoreline contaminated was 3 miles. The *Mobile Point* is classified as Low Risk for oiling probability to shoreline ecological resources for the Most Probable Discharge because 0% of the model runs resulted in shorelines affected above the threshold of 100 g/m^2. It is classified as Low Risk for degree of oiling because the mean weighted length of shoreline contaminated was 0 miles.

Considering the modeled risk scores and the ecological resources at risk, the ecological risk from potential releases of the WCD of 4,000 bbl of light fuel oil from the *Mobile Point* is summarized as listed below and indicated in the far-right column in Table 3-2:

- Water column resources – Medium, because there are many commercially and recreationally important fish and shellfish resources in nearshore habitats that could be affected
- Water surface resources – Medium, because although a relatively small surface area swept by a spill of light fuel oil, there are many sensitive bird and marine mammals present. It should be noted that oil on the surface will not be continuous but rather be broken and patchy and in the form of sheens and streamers
- Shoreline resources – Low, because of the lower likelihood of significant amounts of light fuel oil to strand onshore and most of the potentially impacted shorelines are exposed sand/gravel beaches where a light fuel oil would not be as persistent as heavier oils

Table 3-2: Ecological risk factor scores for the **Worst Case Discharge of 4,000 bbl** of light fuel oil from the *Mobile Point*.

Risk Factor	Risk Score			Explanation of Risk Score	Final Score
3A-1: Water Column Probability EcoRAR Oiling	Low	Medium	High	100% of the model runs resulted in at least 0.2 mi^2 of the upper 33 feet of the water column contaminated above 1 ppb aromatics	Med
3A-2: Water Column Degree EcoRAR Oiling	Low	Medium	High	The mean volume of water contaminated above 1 ppb was 75 mi^2 of the upper 33 feet of the water column	
3B-1: Water Surface Probability EcoRAR Oiling	Low	Medium	High	3% of the model runs resulted in at least 1,000 mi^2 of water surface covered by at least 10 g/m^2	Med
3B-2: Water Surface Degree EcoRAR Oiling	Low	Medium	High	The mean area of water contaminated above 10 g/m^2 was 314 mi^2	
3C-1: Shoreline Probability EcoRAR Oiling	Low	Medium	High	28% of the model runs resulted in shoreline oiling of 100 g/m^2	Low
3C-2: Shoreline Degree EcoRAR Oiling	Low	Medium	High	The length of shoreline contaminated by at least 100 g/m^2 was 3 mi	

For the Most Probable Discharge of 400 bbl, the ecological risk from potential releases of light fuel oil from the *Mobile Point* is summarized as listed below and indicated in the far-right column in Table 3-3:

- Water column resources – Low, because of the smaller volume of water column impacts mostly offshore where the most sensitive resources and life stages are not concentrated
- Water surface resources – Low, because the impacted area is smaller, although there are still a large number of birds and marine mammals at risk. It should be noted that oil on the surface will not be continuous but rather be broken and patchy and in the form of sheens and streamers
- Shoreline resources – Low, because shoreline stranding from such a small release is unlikely

Table 3-3: Ecological risk factor scores for the **Most Probable Discharge of 400 bbl** of light fuel oil from the *Mobile Point*.

Risk Factor	Risk Score			Explanation of Risk Score	Final Score
3A-1: Water Column Probability EcoRAR Oiling	Low	Medium	High	94% of the model runs resulted in at least 0.2 mi^2 of the upper 33 feet of the water column contaminated above 1 ppb aromatics	Low
3A-2: Water Column Degree EcoRAR Oiling	Low	Medium	High	The mean volume of water contaminated above 1 ppb was 11 mi^2 of the upper 33 feet of the water column	
3B-1: Water Surface Probability EcoRAR Oiling	Low	Medium	High	0% of the model runs resulted in at least 1,000 mi^2 of water surface covered by at least 10 g/m^2	Low
3B-2: Water Surface Degree EcoRAR Oiling	Low	Medium	High	The mean area of water contaminated above 10 g/m^2 was 99 mi^2	
3C-1: Shoreline Probability EcoRAR Oiling	Low	Medium	High	0% of the model runs resulted in shoreline oiling of 100 g/m^2	Low
3C-2: Shoreline Degree EcoRAR Oiling	Low	Medium	High	The length of shoreline contaminated by at least 100 g/m^2 was 0 mi	

SECTION 4: SOCIO-ECONOMIC RESOURCES AT RISK

In addition to natural resource impacts, spills from sunken wrecks have the potential to cause significant social and economic impacts. Socio-economic resources potentially at risk from oiling are listed in Table 4-1 and shown in Figures 4-1 and 4-2. The potential economic impacts include disruption of coastal economic activities such as commercial and recreational fishing, boating, vacationing, commercial shipping, and other activities that may become claims following a spill.

Socio-economic resources in the areas potentially affected by a release from the *Mobile Point* include very highly utilized recreational beaches in Washington and Oregon. Both states have significant coastlines devoted to state beaches and parks to preserve the natural beauty of the coast. Many areas along the entire potential spill zone are widely popular seaside resorts and support recreational activities such as boating, diving, sightseeing, sailing, fishing, and wildlife viewing.

A release could impact shipping lanes that run through the area of impact into important ports in the Puget Sound and Columbia River, as well as along the Pacific coasts of Washington and Oregon. There are over 5,800 vessel port calls annually with over 324 million tonnage. Commercial fishing is economically important to the region. A release could impact fishing fleets where regional commercial landings for 2010 exceeded $148.4M. Tribal nations in the area also conduct a significant amount of subsistence fishing in these waters. There are nine Tribal Nations represented in reservations along the Washington and Oregon coasts in the area of potential impact.

In addition, the Geographic Response Plans within the Area Contingency Plans prepared by the Area Committee for each U.S. Coast Guard Sector have detailed information on important socio-economic resources at risk.

Spill response costs for a release of oil from the *Mobile Point* would be dependent on volume of oil released and specific areas impacted. The specific shoreline impacts and spread of the oil would determine the response required and the costs for that response.

Table 4-1: Socio-economic resources at risk from a release of oil from the *Mobile Point*.

Resource Type	Resource Name	Economic Activities
Beach Communities	Arch Cape, OR Barview, OR Brighton, OR Cannon Beach, OR Cape Alava, WA Charleston, OR Coos Bay, OR Florence, OR Grayland, WA Ilwaco, WA La Push, WA Lincoln Beach, OR Lincoln City, OR Long Beach, WA	Potentially affected beach resorts and beach-front communities Oregon and Washington provide recreational activities (e.g., swimming, boating, recreational fishing, wildlife viewing, nature study, sports, dining, camping, and amusement parks) with substantial income for local communities and state tax income. Many of these recreational activities are limited to or concentrated into the late spring through the early fall months.

Resource Type	Resource Name	Economic Activities
	Manzanita, OR Moclips, WA Neah Bay, WA Neotsu, OR Newport, OR North Bend, OR Ocean City, WA Ocean Park, WA Ocean Shores, WA Oceanside, OR Ozette, WA Pacific Beach, WA Pacific City, OR Queets, WA Rockaway Beach, OR Seaside, OR Seaview, WA South Beach, OR Sunset Beach, OR Taholah, WA Tierra del Mar, OR Twin Rocks, OR Waldport, OR Warrenton, OR Westport, WA Woods, OR	
National Parks	Olympic National Park Oregon Dunes National Recreation Area	National parks provide recreation for local and tourist populations while preserving and protecting the nation's natural shoreline treasures.
National Wildlife Refuges	Bandon Marsh NWR (OR) Siletc Bay NWR (OR) Nestucca Bay NWR (OR) Three Arches Rock NWR (OR) Cape Meares NWR (OR) Willapa NWR (WA) Grays Harbor NWR (WA) Copalis NWR (WA) Quillayute Needles NWR (WA) Flattery Rocks NWR (WA)	National wildlife refuges in two states may be impacted. These federally-managed and protected lands provide refuges and conservation areas for sensitive species and habitats.
State Parks	Agate Beach State Recreation Site, OR Arcadia State Recreation Site, OR Beachside State Recreation Site, OR Beverly Beach State Park, OR Bolon Island Tideways Scenic Corridor, OR Cape Blanco State Park, OR Cape Disappointment State Park, WA Cape Kiwanda State Natural Area, OR Cape Lookout State Park, OR Carl G. Washburne Memorial State Park, OR D River State Recreation Site, OR Del Rey State Recreation Site, OR Devil's Punchbowl State Natural Area, OR	Coastal state parks are significant recreational resources for the public (e.g., swimming, boating, recreational fishing, wildlife viewing, nature study, sports, dining, camping, and amusement parks). They provide income to the states. State parks in the states of Oregon and Washington are potentially impacted. Many of these recreational activities are limited to or concentrated into the late spring into early fall months.

Resource Type	Resource Name	Economic Activities
	Driftwood Beach State Recreation Site, OR Ecola State Park, OR Fogarty Creek State Recreation Area, OR Fort Columbia State Park, WA Fort Stevens State Park, OR Gleneden Beach State Recreation Site, OR Gov. Patterson Memorial State Recreation Site, OR Grayland Beach State Park, WA Griffiths-Priday State Park, WA Heceta Head Lighthouse State Scenic Site, OR Hug Point State Recreation Site, OR Jessie M. Honeyman Memorial State Park, OR Leadbetter State Park, WA Lost Creek State Recreation Site, OR Manhattan Beach State Recreation Site, OR Nehalem Bay State Park, OR Neptune State Scenic Viewpoint, OR Neskowin Beach State Recreation Site, OR Ocean City State Park, WA Oceanside Beach State Recreation Site, OR Ona Beach State Park, OR Oswald West State Park, OR Otter Crest State Scenic Viewpoint, OR Pacific Beach State Park, WA Pacific Pines State Park, WA Robert Straub State Park, OR Rocky Creek State Scenic Viewpoint, OR Seal Rock State Recreation Site, OR Shore Acres State Park, OR South Beach State Park, OR Stonefield Beach State Recreation Site, OR Sunset Bay State Park, OR Tolovana State Park, OR Umpqua Lighthouse State Park, OR Westport Light State Park, WA Yachats Ocean Road State Natural Site, OR Yachats State Recreation Area, OR Yaquina Bay State Recreation Site, OR	
Tribal Lands	Coos, Lower Umpqua & Siuslaw Indian Reservation Coquille Indian Reservation Hoh Indian Reservation Makah Indian Reservation Ozette Indian Reservation Quileute Indian Reservation Quinault Indian Reservation Shoalwater Indian Reservation Siletz Indian Reservation	The Washington and Oregon coasts include nine Tribal Reservations.
Commercial Fishing	A number of fishing fleets use the surrounding waters for commercial fishing purposes.	
	Bay Center-South Bend, WA	Total Landings (2010): $19.4M
	Brookings, OR	Total Landings (2010): $5.2M
	Coos Bay-Charleston	Total Landings (2010): $24.0M
	Ilwaco-Chinook, WA	Total Landings (2010): $2.5M
	La Push, WA	Total Landings (2010): $17.9M
	Neah Bay, WA	Total Landings (2010): $7.7M

Resource Type	Resource Name	Economic Activities
	Newport, OR	Total Landings (2010): $30.6M
	Tillamook, OR	Total Landings (2010): $2.6M
	Westport, WA	Total Landings (2010): $38.5M
Ports	There are a number of significant commercial ports in the Pacific Northwest that could potentially be impacted by spillage and spill response activities. The port call numbers below are for large vessels only. There are many more, smaller vessels (under 400 GRT) that also use these ports.	
	Anacortes, WA	11 port calls annually
	Bellingham, WA	3 port calls annually
	Bremerton, WA	3 port calls annually
	Cherry Point, WA	271 port calls annually
	Columbia River, OR	2,635 port calls annually
	Coos Bay, OR	37 port calls annually
	Everett, WA	81 port calls annually
	Ferndale, WA	101 port calls annually
	Manchester, WA	14 port calls annually
	March Point, WA	188 port calls annually
	Olympia, WA	22 port calls annually
	Point Wells, WA	14 port calls annually
	Port Angeles, WA	325 port calls annually
	Port Townsend, WA	1 port call annually
	Seattle, WA	1,046 port calls annually
	Tacoma, WA	1,035 port calls annually
	Westport, WA	13 port calls annually

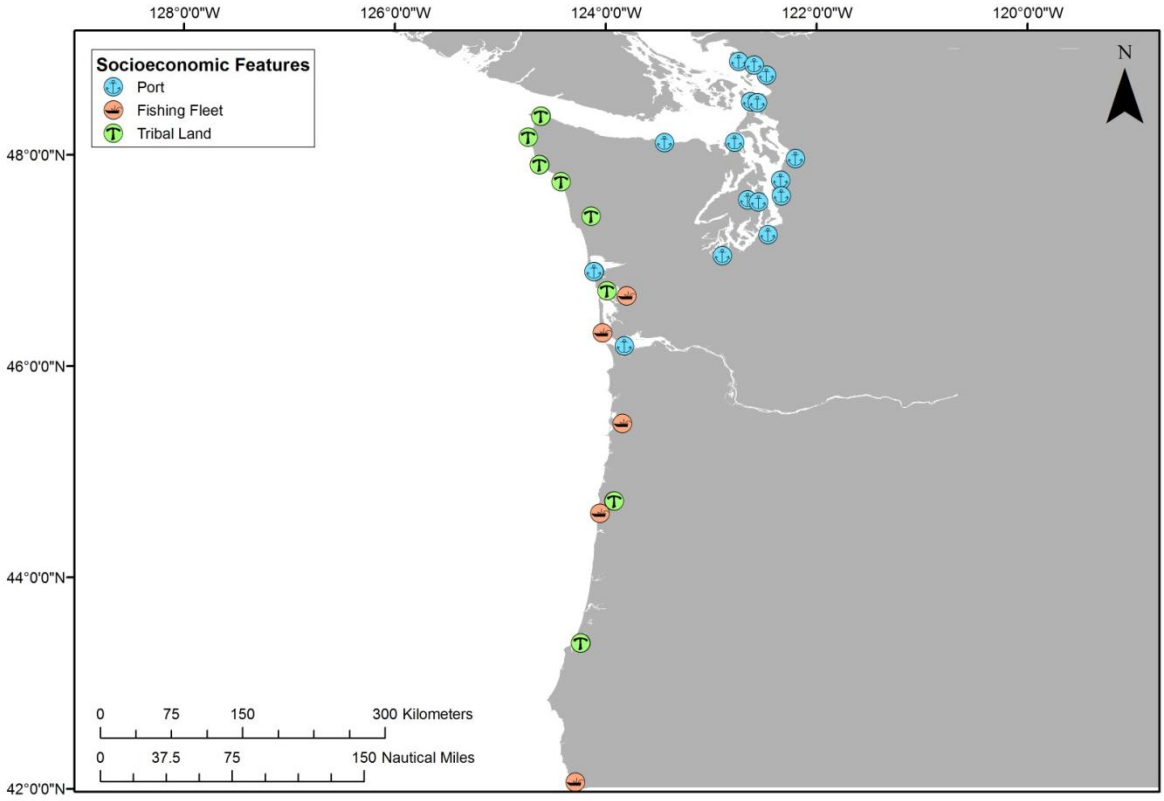


Figure 4-1: Tribal lands, ports, and commercial fishing fleets at risk from a release from the *Mobile Point*.

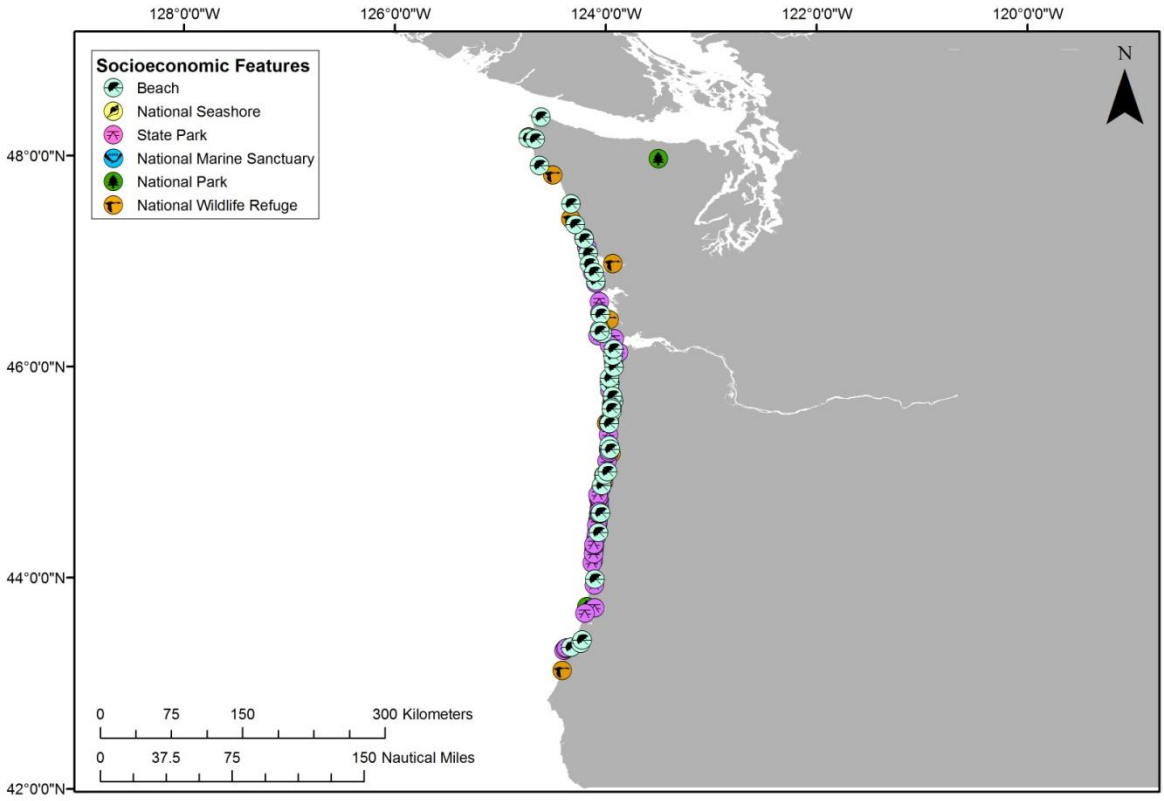


Figure 4-2: Beaches, coastal state parks, and Federal protected areas at risk from a release from the *Mobile Point*.

Socio-Economic Risk Factors

Risk Factor 4: Impacts to Socio-economic Resources at Risk (SRAR)

Socio-economic resources at risk (SRAR) include potentially impacted resources that have some economic value, including commercial and recreational fishing, tourist beaches, private property, etc. All impact factors are evaluated for both the Worst Case and the Most Probable Discharge oil release from the wreck. Risk factors for socio-economic resources at risk are divided into three categories:

- **Water Column:** Impacts to the water column and to economic resources in the water column (i.e., fish and invertebrates that have economic value);
- **Water Surface:** Impacts to the water surface and resources on the water surface (i.e., boating and commercial fishing); and
- **Shoreline:** Impacts to the shoreline and resources on the shoreline (i.e., beaches, real property).

The impacts from an oil release from the wreck would depend greatly on the direction in which the oil slick moves, which would, in turn, depend on wind direction and currents at the time of and after the oil release. Impacts are characterized in the risk analysis based on the likelihood of any measurable impact, as well as the degree of impact that would be expected if there were one. The measure of the degree of impact is based on the median case for which there is at least some impact. The median case is the "middle case" – half of the cases with significant impacts have less impact than this case, and half have more.

For each of the three socio-economic resources at risk categories, risk is classified with regard to:

- The **probability of oiling** over a certain threshold (i.e., the likelihood that there will be exposure to socio-economic resources over a certain minimal amount known to cause impacts); and
- The **degree of oiling** (the magnitude or amount of that exposure over the threshold known to cause impacts).

As a reminder, the socio-economic impact thresholds are: 1 ppb aromatics for water column impacts; 0.01 g/m^2 for water surface impacts; and 1 g/m^2 for shoreline impacts.

In the following sections, the definition of low, medium, and high for each socio-economic risk factor is provided. Also, in the text classification for the *Mobile Point* shading indicates the degree of risk for the WCD release of 4,000 bbl and a border indicates degree of risk for the Most Probable Discharge of 400 bbl.

Risk Factor 4A-1: Water Column: Probability of Oiling of SRAR

This risk factor reflects the probability that at least 0.2 mi^2 of the upper 33 feet of the water column would be contaminated with a high enough concentration of oil to cause socio-economic impacts. The threshold for water column impact to socio-economic resources at risk is an oil concentration of 1 ppb (i.e., 1 part oil per one billion parts water). At this concentration and above, one would expect impacts and potential tainting to socio-economic resources (e.g., fish and shellfish) in the water column; this concentration is used as a screening threshold for both the ecological and socio-economic risk factors.
The three risk scores for oiling are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

Risk Factor 4A-2: Water Column Degree of Oiling of SRAR

The degree of oiling of the water column reflects the total amount of oil that would affect the water column in the event of a discharge from the vessel. The three categories of impact are:

- **Low Impact:** impact on less than 0.2 mi^2 of the upper 33 feet of the water column at the threshold level
- **Medium Impact**: impact on 0.2 to 200 mi^2 of the upper 33 feet of the water column at the threshold level
- **High Impact:** impact on more than 200 mi^2 of the upper 33 feet of the water column at the threshold level

The *Mobile Point* is classified as High Risk for oiling probability and Medium Risk degree of oiling for water column socio-economic resources for the WCD of 4,000 bbl because 100% of the model runs resulted in contamination of more than 0.2 mi^2 of the upper 33 feet of the water column above the threshold of 1 ppb aromatics, and the mean volume of water contaminated was 75 mi^2 of the upper 33 feet of the water column. For the Most Probable Discharge of 400 bbl, the *Mobile Point* is classified as High Risk for oiling probability for water column socio-economic resources because 94% of the model runs resulted in contamination of more than 0.2 mi^2 of the upper 33 feet of the water column above the

threshold of 1 ppb aromatics. It is classified as Medium Risk for degree of oiling because the mean volume of water contaminated was 11 mi^2 of the upper 33 feet of the water column.

Risk Factor 4B-1: Water Surface Probability of Oiling of SRAR

This risk factor reflects the probability that at least 1,000 mi^2 of the water surface would be affected by enough oil to cause impacts to socio-economic resources. The three risk scores for oiling are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

The threshold level for water surface impacts to socio-economic resources at risk is 0.01 g/m^2 (i.e., 0.01 grams of floating oil per square meter of water surface). At this concentration and above, one would expect impacts to socio-economic resources on the water surface.

Risk Factor 4B-2: Water Surface Degree of Oiling of SRAR

The degree of oiling of the water surface reflects the total amount of oil that would affect the water surface in the event of a discharge from the vessel. The three categories of impact are:

- **Low Impact:** less than 1,000 mi^2 of water surface impact at the threshold level
- **Medium Impact:** 1,000 to 10,000 mi^2 of water surface impact at the threshold level
- **High Impact:** more than 10,000 mi^2 of water surface impact at the threshold level

The *Mobile Point* is classified as High Risk for oiling probability and Medium for degree of oiling for water surface socio-economic resources for the WCD because 88% of the model runs resulted in at least 1,000 mi^2 of the water surface affected above the threshold of 0.01 g/m^2, and the mean area of water contaminated was 5,760 mi^2. The *Mobile Point* is classified as High Risk for oiling probability for water surface socio-economic resources for the Most Probable Discharge because 53% of the model runs resulted in at least 1,000 mi^2 of the water surface affected above the threshold of 0.01 g/m^2. It is classified as Medium Risk for degree of oiling because the mean area of water contaminated was 1,520 mi^2.

Risk Factor 4C: Shoreline Impacts to SRAR

The impacts to different types of shorelines vary based on economic value. In this risk analysis, shorelines have been weighted by their degree of sensitivity to oiling. Sand beaches are the most economically valued shorelines (weighted as "3" in the impact analysis), rocky and gravel shores are moderately valued (weighted as "2"), and wetlands are the least economically valued shorelines (weighted as "1"). Note that these values differ from the ecological values of these three shoreline types.

Risk Factor 4C-1: Shoreline Probability of Oiling of SRAR

This risk factor reflects the probability that the shoreline would be coated by enough oil to cause impacts to shoreline users. The threshold for impacts to shoreline SRAR is 1 g/m^2 (i.e., 1 gram of oil per square meter of shoreline). The three risk scores for oiling are:

- **Low Oiling Probability:** Probability = <10%
- **Medium Oiling Probability:** Probability = 10 – 50%
- **High Oiling Probability:** Probability > 50%

Risk Factor 4C-2: Shoreline Degree of Oiling of SRAR

The degree of oiling of the shoreline reflects the total amount of oil that would affect the shoreline in the event of a discharge from the vessel. The three categories of impact are:

- **Low Impact:** less than 10 miles of shoreline impacted at threshold level
- **Medium Impact:** 10 - 100 miles of shoreline impacted at threshold level
- **High Impact:** more than 100 miles of shoreline impacted at threshold level

The *Mobile Point* is classified as Medium Risk for oiling probability for shoreline socio-economic resources for the WCD because 38% of the model runs resulted in shorelines affected above the threshold of 1 g/m^2. It is classified as Medium Risk for degree of oiling because the mean length of weighted shoreline contaminated was 11 miles. The *Mobile Point* is classified as Low Risk for both oiling probability and degree of oiling for shoreline socio-economic resources for the Most Probable Discharge as 6% of the model runs resulted in shorelines affected above the threshold of 1 g/m^2, and the mean length of weighted shoreline contaminated was 7 miles.

Considering the modeled risk scores and the socio-economic resources at risk, the socio-economic risk from potential releases of the WCD of 4,000 bbl of light fuel oil from the *Mobile Point* is summarized as listed below and indicated in the far-right column in Table 4-2:

- Water column resources – Medium, because there would be moderate water column impacts in an area with tribal subsistence fishing; the light fuel would break up relatively quickly
- Water surface resources – Medium, because a relatively large area of offshore surface water would be impacted in an area with busy shipping lanes and offshore subsistence and commercial fishing; the light fuel oil would break up relatively quickly. It should be noted that oil on the surface will not be continuous but rather be broken and patchy and in the form of sheens and streamers
- Shoreline resources – Medium, because there are high-value and sensitive resources at risk, including tribal lands that have subsistence fishing resources on the shorelines (e.g., geoducks), and the oil would break up relatively quickly if there is any stranding

Table 4-2: Socio-economic risk factor ranks for the **Worst Case Discharge of 4,000 bbl** of light fuel oil from the *Mobile Point*.

Risk Factor	Risk Score			Explanation of Risk Score	Final Score
4A-1: Water Column Probability SRAR Oiling	Low	Medium	High	100% of the model runs resulted in at least 0.2 mi^2 of the upper 33 feet of the water column contaminated above 1 ppb aromatics	Med
4A-2: Water Column Degree SRAR Oiling	Low	Medium	High	The mean volume of water contaminated above 1 ppb was 75 mi^2 of the upper 33 feet of the water column	
4B-1: Water Surface Probability SRAR Oiling	Low	Medium	High	88% of the model runs resulted in at least 1,000 mi^2 of water surface covered by at least 0.01 g/m^2	Med
4B-2: Water Surface Degree SRAR Oiling	Low	Medium	High	The mean area of water contaminated above 0.01 g/m^2 was 5,760 mi^2	
4C-1: Shoreline Probability SRAR Oiling	Low	Medium	High	38% of the model runs resulted in shoreline oiling of 1 g/m^2	Med
4C-2: Shoreline Degree SRAR Oiling	Low	Medium	High	The length of shoreline contaminated by at least 1 g/m^2 was 11 mi	

For the Most Probable Discharge of 400 bbl, the socio-economic risk from potential releases of light fuel oil from the *Mobile Point* is summarized below and indicated in the far-right column in Table 4-3:

- Water column resources – Low, because there would be moderate water column impacts in an area with tribal subsistence fishing, and the light fuel would break up relatively quickly
- Water surface resources – Low, because a relatively large area of offshore surface water would be impacted in an area with busy shipping lanes and offshore subsistence and commercial fishing, and the light fuel oil would break up relatively quickly. It should be noted that oil on the surface will not be continuous but rather be broken and patchy and in the form of sheens and streamers
- Shoreline resources – Low, because there are high-value and sensitive resources at risk, including tribal lands that have subsistence fishing resources on the shorelines (e.g., geoducks), and the oil would break up relatively quickly if there is any stranding

Table 4-3: Socio-economic risk factor ranks for the **Most Probable Discharge of 400 bbl** of light fuel oil from the *Mobile Point*.

Risk Factor	Risk Score			Explanation of Risk Score	Final Score
4A-1: Water Column Probability SRAR Oiling	**Low**	**Medium**	**High**	94% of the model runs resulted in at least 0.2 mi^2 of the upper 33 feet of the water column contaminated above 1 ppb aromatics	**Low**
4A-2: Water Column Degree SRAR Oiling	**Low**	**Medium**	**High**	The mean volume of water contaminated above 1 ppb was 11 mi^2 of the upper 33 feet of the water column	
4B-1: Water Surface Probability SRAR Oiling	**Low**	**Medium**	**High**	53% of the model runs resulted in at least 1,000 mi^2 of water surface covered by at least 0.01 g/m^2	**Low**
4B-2: Water Surface Degree SRAR Oiling	**Low**	**Medium**	**High**	The mean area of water contaminated above 0.01 g/m^2 was 1,520 mi^2	
4C-1: Shoreline Probability SRAR Oiling	**Low**	**Medium**	**High**	6% of the model runs resulted in shoreline oiling of 1 g/m^2	**Low**
4C-2: Shoreline Degree SRAR Oiling	**Low**	**Medium**	**High**	The length of shoreline contaminated by at least 1 g/m^2 was 7 mi	

SECTION 5: OVERALL RISK ASSESSMENT AND RECOMMENDATIONS FOR ASSESSMENT, MONITORING, OR REMEDIATION

The overall risk assessment for the *Mobile Point* is comprised of a compilation of several components that reflect the best available knowledge about this particular site. Those components are reflected in the previous sections of this document and are:

- Vessel casualty information and how the site formation processes have worked on this particular vessel
- Ecological resources at risk
- Socio-economic resources at risk
- Other complicating factors (war graves, other hazardous cargo, etc.)

Table 5-1 summarizes the screening-level risk assessment scores for the different risk factors, as discussed in the previous sections. The ecological and socio-economic risk factors are presented as a single score for water column, water surface, and shoreline resources as the scores were consolidated for each element. For the ecological and socio-economic risk factors each has two components, probability and degree. Of those two, degree is given more weight in deciding the combined score for an individual factor, e.g., a high probability and medium degree score would result in a medium overall for that factor.

In order to make the scoring more uniform and replicable between wrecks, a value was assigned to each of the 7 criteria. This assessment has a total of 7 criteria (based on table 5-1) with 3 possible scores for each criteria (L, M, H). Each was assigned a point value of L=1, M=2, H=3. The total possible score is 21 points, and the minimum score is 7. The resulting category summaries are:

Low Priority	7-11
Medium Priority	12-14
High Priority	15-21

For the Worst Case Discharge, *Mobile Point* scores Medium with 13 points; for the Most Probable Discharge, *Mobile Point* scores Low with 11 points. Under the National Contingency Plan, the U.S. Coast Guard and the Regional Response Team have the primary authority and responsibility to plan, prepare for, and respond to oil spills in U.S. waters. Based on the technical review of available information, NOAA proposes the following recommendations for the *Mobile Point*. The final determination of what type of action, if any, rests with the U.S. Coast Guard.

Mobile Point	**Possible NOAA Recommendations**
	Wreck should be considered for further assessment to determine the vessel condition, amount of oil onboard, and feasibility of oil removal action
✓	Location is unknown; Use surveys of opportunity to attempt to locate this vessel and gather more information on the vessel condition
	Conduct active monitoring to look for releases or changes in rates of releases
✓	Be noted in the Area Contingency Plans so that if a mystery spill is reported in the general area, this vessel could be investigated as a source
✓	Conduct outreach efforts with the technical and recreational dive community as well as commercial and recreational fishermen who frequent the area, to gain awareness of changes in the site

Table 5-1: Summary of risk factors for the *Mobile Point*.

Vessel Risk Factors		Data Quality Score	Comments		Risk Score
Pollution Potential Factors	A1: Oil Volume (total bbl)	Medium	Maximum of 3,927 bbl, not reported to be leaking		**Med**
	A2: Oil Type	High	Bunker oil is diesel oil, a Group II oil type		
	B: Wreck Clearance	High	Vessel not reported as cleared		
	C1: Burning of the Ship	High	No fire was reported		
	C2: Oil on Water	Low	No oil was reported on the water		
	D1: Nature of Casualty	High	Collision		
	D2: Structural Breakup	Low	Unknown structural breakup		
Archaeological Assessment	Archaeological Assessment	Low	Full sinking records were not located and no site reports exist so an accurate assessment could not be prepared		**Not Scored**
Operational Factors	Wreck Orientation	Low	Unknown, potential to be upright		**Not Scored**
	Depth	Low	>700		
	Visual or Remote Sensing Confirmation of Site Condition	Low	Location unknown		
	Other Hazardous Materials Onboard	High	No		
	Munitions Onboard	Low	May have had munitions for onboard weapons		
	Gravesite (Civilian/Military)	High	No		
	Historical Protection Eligibility (NHPA/SMCA)	High	NHPA and possibly SMCA		
				WCD	**Most Probable**
Ecological Resources	3A: Water Column Resources	High	Many important commercial/recreational species at risk in nearshore areas; smaller spills are less persistent	**Med**	**Low**
	3B: Water Surface Resources	High	Although many birds and marine mammals are present, relatively small areas are affected by light fuel oil slicks	**Med**	**Low**
	3C: Shore Resources	High	Very little to no shoreline stranding is expected from likely spill volumes	**Low**	**Low**
Socio-Economic Resources	4A: Water Column Resources	High	Although there would be moderate water column impacts in an area with tribal subsistence fishing, the light fuel would break up relatively quickly	**Med**	**Low**
	4B: Water Surface Resources	High	A relatively large area of offshore surface water would be impacted with busy shipping lanes and offshore subsistence and commercial fishing, light fuel oil would break up quickly	**Med**	**Low**
	4C: Shore Resources	High	There are high-value and sensitive resources at risk, including tribal lands that have subsistence fishing resources on the shorelines (e.g., geoducks), light oils are not persistent	**Med**	**Low**
Summary Risk Scores				**13**	**11**