Board of Pilotage Commissioners Tug Escort Rulemaking (Chapter 363-116 WAC) State Environmental Policy Act Environmental Impact Statement

Draft Environmental Impact Statement

By

Eastern Research Group, Inc.

In cooperation with the Washington State Department of Ecology Spill Prevention, Preparedness, and Response Program

For the

Washington State Department of Ecology and the Board of Pilotage Commissioners

Washington State Department of Ecology

Olympia, Washington

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Cover photo credit

- Greg Fitzgerald, Department of Ecology, February 2, 2021

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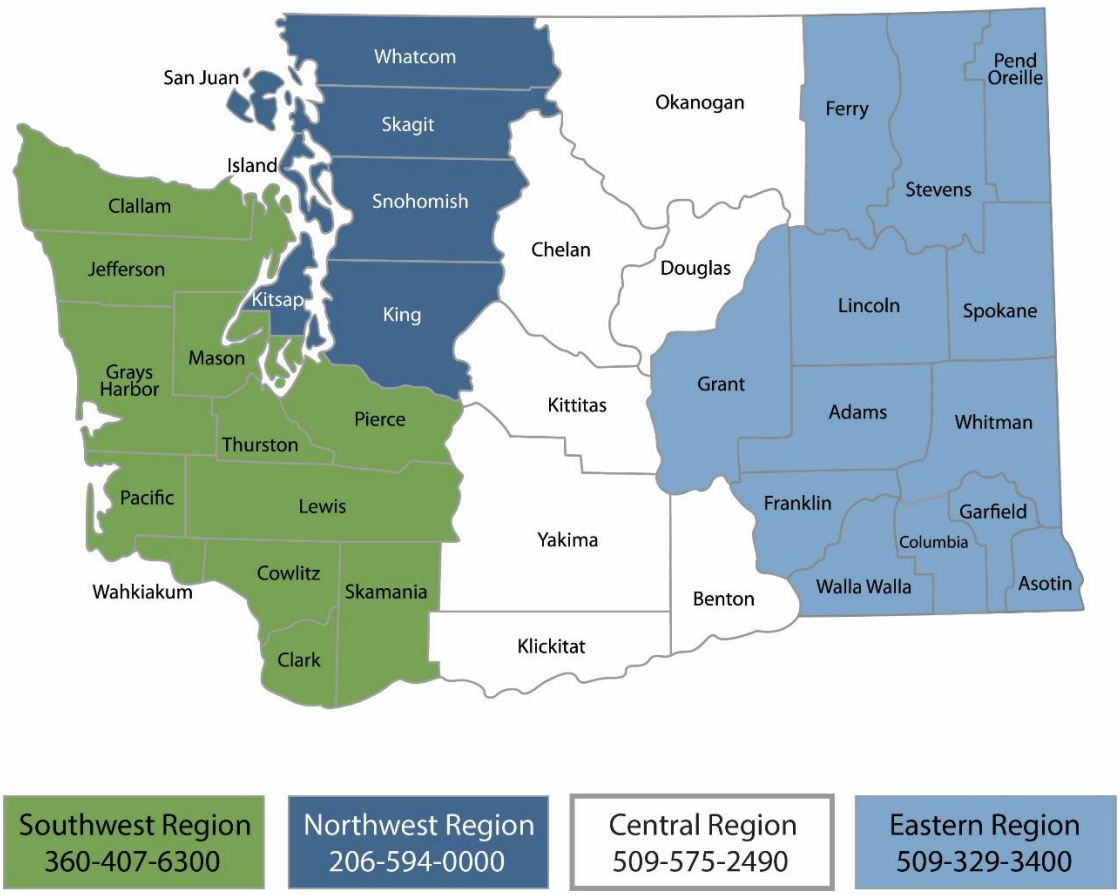
Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Cover Letter

June 11, 2025

Dear Interested Parties, Tribes, Jurisdictions, and Agencies,

The Board of Pilotage Commissioners (BPC) in coordination with the Washington State Department of Ecology (Ecology) is issuing this Draft Environmental Impact Statement (EIS) as part of the BPC Tug Escort Rulemaking, Chapter 363-116 WAC (Pilotage Rules). This rulemaking considers 2019 legislative changes made to Chapter 88.16 RCW (Pilotage Act) through the passage of Engrossed Substitute House Bill (ESHB) 1578. The proposed rule is designed to achieve best achievable protection (BAP), as defined in RCW 88.46.010, and is informed by other considerations in ESHB 1578.

The ESHB 1578 directs the BPC to adopt rules regarding tug escorts in Puget Sound for small- to medium-sized oil carrying tank vessels by December 31, 2025. Because the proposed rule could change escort tug activity and the risk of oil spills in Puget Sound, the BPC and Ecology determined that the rulemaking may have a significant adverse impact on the environment and requires an EIS.

A catastrophic oil spill in the Puget Sound could harm endangered Southern Resident Killer Whales (SRKWs) and other species, damage Tribal, commercial, and recreational fishing, and impact public health and the economy in Washington State. This rulemaking addresses critical safety gaps for vessels carrying oil in bulk by proposing new tug escort requirements to reduce spill risk and enhance environmental protection.

The Draft EIS has been prepared to satisfy the requirements of the Washington State Environmental Policy Act. The purpose of the Draft EIS is to evaluate the probable significant environmental impacts from the implementation of the proposed rule and its contribution to cumulative environmental impacts. The Draft EIS evaluates four alternatives: Alternative A (No Action), Alternative B (Addition of functional and operational requirements (FORs)), Alternative C (Expansion), and Alternative D (Removal).

The following resource areas are evaluated in the Draft EIS:

- Transportation: Vessel Traffic
- Air Quality and Greenhouse Gases
- Recreation

- Environmental Health: Releases (Oil Pollution)
- Water Quality
- Environmental Health: Noise
- Plants and Animals
- Energy and Natural Resources
- Visual Resources
- Tribal Resources
- Environmental Justice

The Draft EIS proposes mitigation to address adverse environmental impacts of the proposed rulemaking identified in the analysis. Sometimes the proposed mitigation does not fully eliminate significant adverse impacts to the environment, or no mitigation is possible. These are identified in the Draft EIS as significant and unavoidable adverse environmental impacts. We identified significant and unavoidable adverse environmental impacts for at least one alternative for the following elements of the environment: Environmental Health: Releases, Environmental Health: Noise, Plants and Animals, Recreation, Tribal Resources, and Environmental Justice.

Comments on the rulemaking, including the Draft EIS, will be accepted during the comment period (June 11 through August 1, 2025). Comments must be submitted by **August 1, 2025, at 11:59 p.m.** Please note: Any information (e.g., personal or contact) you provide in a comment or in an attachment may be publicly disclosed and posted on the internet. Draft EIS comments should focus on the substance of the EIS and be as specific as possible. This could include comments on the adequacy of the EIS, alternatives, methodology used, mitigation measures proposed, or additional information that should be considered. Comments may be submitted in the following ways:

By mail to:
Jaimie Bever
Board of Pilotage Commissioners
2901 Third Avenue, Suite 500
Seattle, WA 98121

Online:
Complete a comment form at: https://sppr.ecology.commentinput.com?id=HihgcrTsY

At a public hearing:

July 17, 2025: in person and online
Meeting begins at 10:00 AM
Join online via MS Teams: Microsoft Teams Meeting Link

Join in person at:
Board of Pilotage Commissioners
2901 Third Avenue, 1st Floor – Agate Conference Rm.
Seattle, WA 98121

July 22, 2025: online
Meeting begins at 1:00 PM
Join online via Zoom: https://waecy-wa-gov.zoom.us/j/85159736200

July 23, 2025: online
Meeting begins at 6:00 PM
Join online via Zoom: https://waecy-wa-gov.zoom.us/j/88213023292

The BPC and Ecology will compile and review comments received on the Draft EIS during the comment period. Comments will be considered by the BPC and Ecology in the preparation of a Final EIS. Ecology anticipates the Final EIS will be published in December 2025.

Questions about the Draft EIS may be directed to: Jaimie Bever at beverj@wsdot.wa.gov or (206) 515-3887 and/or Haley Kennard at haley.kennard@ecy.wa.gov or (564) 233-5178.

Sincerely,

Jaimie Bever, Executive Director BPC
SEPA Responsible Official
Board of Pilotage Commissioners

Brian Kirk, Acting Spill Prevention, Preparedness, and Response Program Manager
SEPA Responsible Official
Washington State Department of Ecology

Board of Pilotage Commissioners Tug Escort Rulemaking (Chapter 363-116 WAC)
State Environmental Policy Act Environmental Impact Statement

Draft Environmental Impact Statement

Washington State Board of Pilotage Commissioners

Washington State Department of Ecology

Olympia, WA

April 2025 | Publication 25-08-010

Fact Sheet

Proposed Title

Board of Pilotage Commissioners Tug Escort Rulemaking (Chapter 363-116 WAC)

Description of Proposed Rulemaking and Alternatives

In 2019, the Washington State Legislature passed ESHB 1578 to improve oil transportation safety and protect Southern Resident Killer Whales (SRKW) (ESHB 1578, 66th Leg., 2019). The bill directs the Board of Pilotage Commissioners (BPC), in consultation with the Department of Ecology (Ecology), to develop tug escort rules for certain vessels that transport oil in Puget Sound by conducting a rulemaking to amend Chapter 363-116 of the Washington Administrative Code (WAC), Pilotage Rules.

This rulemaking addresses tug escort requirements for three types of vessels ("target vessels") while they are transporting oil: oil tankers of between 5,000 and 40,000 deadweight tons (DWT), and articulated tug barges (ATBs) and towed waterborne vessels or barges greater than 5,000 DWT that are designed to transport oil in bulk internal to the hull.

The rules will be designed to achieve best achievable protection, as defined in RCW 88.46.010, and will be informed by other considerations in ESHB 1578. The rulemaking will also specify operational and functionality requirements for tug escorts where they are required and make clarifying changes or corrections. We consider three functional and operational requirements (FORs) intended to increase safety and formalize existing best practices: minimum horsepower requirements, propulsion system specifications, and a pre-escort conference between the escort tug, escorted vessel, and pilot if present.

This Draft Environmental Impact Statement (Draft EIS) evaluates four alternatives:

A. **Alternative A (No Action):** Alternative A represents the most likely future conditions if the proposed rule amendments are not adopted. Tug escort requirements for target vessels continue to apply in Rosario Strait and waters east. No FORs are added.
B. **Alternative B (Addition of FORs):** Alternative B adds the FORs of minimum horsepower, propulsion specifications, and a pre-escort conference. It makes no change to the geographic boundaries described in Alternative A.
C. **Alternative C (Expansion of Tug Escort Requirements):** Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. The expansion area covers approximately 28.9 square miles and is approximately seven miles long end-to-end following the vessel traffic lane. Alternative C includes the FORs outlined in Alternative B.
D. **Alternative D (Removal of Tug Escort Requirements):** Alternative D removes the existing tug escort requirements for target vessels described in Alternative A.

Location

The RCW 88.16.260 defined the geographic scope of the rulemaking as waters east of the line extending from Discovery Island light south to New Dungeness light and all points in the Puget

Sound area, including the San Juan Islands, connected waterways, and waters south of Admiralty Inlet within Washington's territorial boundaries.

The ESHB 1587 established tug escort requirements for target vessels in Rosario Strait and connected waters east, which were implemented in September 2020 (RCW 88.16.190(2)(a)(ii)). This is reflected in the EIS as the Alternative A boundary (See Alternative A boundary in Figure 1). The BPC and Ecology considered expanding tug escort requirements for target vessels to the full geographic scope that the RCW allows. However, ultimately our largest expansion alternative (Alternative C) extended the current tug escort requirements approximately seven miles northwest towards Patos Island (See Alternative C boundary in Figure 1).

Proponent

The BPC is leading the rulemaking in coordination with Ecology as directed by RCW 88.16.260. This is a non-project EIS and there is no proponent.

Proposed Date of Implementation

The BPC and Ecology plan to file and adopt the rule by December 2025. The rule will be effective 31 days after filing.

Lead Agency

The Washington State Board of Pilotage Commissioners (BPC) and the Washington State Department of Ecology (Ecology) have agreed to act as co-lead agencies under SEPA and will share lead agency responsibilities.

Responsible Officials

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Washington State Department of Ecology, Spill Prevention, Preparedness, and Response Program

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Required Permits, Licenses, and Approvals

None required for the implementation of this proposed rulemaking.

Authors and Principal Contributors

This document has been prepared under the direction of Ecology in coordination with the BPC. All chapters and appendices have been prepared for and approved by Ecology. Key authors and principal contributors to the analyses are listed below.

- Washington State Department of Ecology
- Washington State Board of Pilotage Commissioners
- Washington State Department of Archaeology and Historic Preservation
- Washington State Department of Fish and Wildlife
- Washington State Department of Health
- National Oceanic and Atmospheric Administration, Office of Response and Restoration
- Eastern Research Group, Inc. (ERG)
- AS1MET Services
- Cascadia Research Collective
- JASCO Applied Sciences

- Triangle Associates

Date of Draft EIS Issuance

June 11, 2025

Date Comments are Due

August 1, 2025 at 11:59 PM

Public Comment and Hearings on the Draft EIS

Comments on this Draft EIS will be accepted during a 52-day comment period (June 11 through August 1, 2025). Draft EIS comments should focus on the substance of the EIS and be as specific as possible. This could include comments on the adequacy of the EIS, alternatives, methodology used, mitigation measures proposed, or additional information that should be considered. Comments may be submitted in the following ways:

By mail to:
Jaimie Bever
Board of Pilotage Commissioners
2901 Third Avenue, Suite 500
Seattle, WA 98121

Online:
Complete a comment form at: https://sppr.ecology.commentinput.com?id=HihgcrTsY

At a public hearing:

Date	Time	Location	Details
Thursday, July 17, 2025	10:00 a.m.	2901 Third Avenue 1st Floor – Agate Conference Rm. Seattle, WA 98121 or Webinar hearing via Microsoft Teams	Presentation, question and answer session, followed by the hearing. This hearing will be a hybrid meeting, with an opportunity to attend in person or via webinar. You can attend the online meeting from any computer using internet access. Join online: Microsoft Teams Meeting Link For call in only, use your phone to call 206-531-0324 and enter meeting ID 230 566 175 086.

Date	Time	Location	Details
Tuesday, July 22, 2025	1:00 p.m.	Webinar hearing via Zoom	Presentation, question and answer session, followed by the hearing. We are holding this hearing via webinar. This is an online meeting that you can attend from any computer using internet access. Join online: https://waecy-wa-gov.zoom.us/j/85159736200 For call in only, use your phone to call 253-205-0468 and enter meeting ID 851 5973 6200.
Thursday, July 23, 2025	6:00 p.m.	Webinar hearing via Zoom	Presentation, question and answer session, followed by the hearing. We are holding this hearing via webinar. This is an online meeting that you can attend from any computer using internet access. Join online: https://waecy-wa-gov.zoom.us/j/88213023292 For call in only, use your phone to call 253-205-0468 and enter meeting ID 882 1302 3292

Date Final Action is Planned by Lead Agency

The final EIS is estimated to be completed in late November or December 2025. It will be published seven days before the final rule is filed.

Document Availability

The Draft EIS is posted on the following websites:

- SEPA Register: https://apps.ecology.wa.gov/separ/Main/SEPA
- Ecology Rulemaking Website: https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Spills-Prevention-Preparedness-Response/Legislative-work/BPC-tug-escort-rulemaking
- BPC Oil Transportation Safety Website: https://pilotage.wa.gov/oil-transportation-safety.html

This document is also available at the following location:

Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Location of Background Materials

The EIS and associated discipline reports developed specifically for this environmental review are available on Ecology's rulemaking website: https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Spills-Prevention-Preparedness-Response/Legislative-work/BPC-tug-escort-rulemaking. On this website, you will also find documents from the rule announcement and EIS scoping phase, slides from previous workshops, and links to other reports created under ESHB 1578.

The EIS and associated discipline reports developed specifically for this environmental review are also available on the BPC's Oil Transportation Safety website: https://pilotage.wa.gov/oil-transportation-safety.html. On this website, you will also find the interpretive statement for the rulemaking, geographic zone information, records of BPC votes relevant to the rule and EIS development, and links to BPC and OTSC meeting minutes.

Cost of Copy of EIS

A hard copy of this publication can be ordered by email request. Please contact jasmin.adams@ecy.wa.gov for more information.

Table of Contents

Board of Pilotage Commissioners Tug Escort Rulemaking (Chapter 363-116 WAC) i

State Environmental Policy Act Environmental Impact Statement i

Publication Information ii

Contact Information ii

ADA Accessibility ii

Department of Ecology's Regional Offices iii

Map of Counties Served iii

Cover Letter iv

Board of Pilotage Commissioners Tug Escort Rulemaking (Chapter 363-116 WAC) State Environmental Policy Act Environmental Impact Statement vii

Fact Sheet viii

Proposed Title viii

Description of Proposed Rulemaking and Alternatives viii

Location viii

Proponent ix

Proposed Date of Implementation ix

Lead Agency ix

Responsible Officials ix

Lead Agency Contact Person x

Required Permits, Licenses, and Approvals x

Authors and Principal Contributors x

Date of Draft EIS Issuance xi

Date Comments are Due xi

Public Comment and Hearings on the Draft EIS xi

Date Final Action is Planned by Lead Agency xii

Document Availability xii

Location of Background Materials xiii

Cost of Copy of EIS xiii

Table of Contents xiv

List of Figures and Tables xix

Acronyms and Abbreviations xxii

Summary xxvi

Introduction and Background xxvi
Location of Proposed Rulemaking xxvi
Roles and Responsibilities xxvii
Site Background and Project History xxvii
Purpose and Need xxix
Environmental Review Process xxix
SEPA Environmental Impact Statement Scoping Process xxx
Summary of Feedback Received During Scoping xxx
Alternatives Considered xxxi
Alternative A (No Action) xxxii
Alternative B (Addition of Functional and Operational Requirements) xxxii
Alternative C (Expansion of Tug Escort Requirements) xxxiii
Alternative D (Removal of Tug Escort Requirements) xxxiii
Major Conclusions xxxiii
Areas of Controversy and Uncertainty xlii
Next Steps xliii
1. Introduction and Background 1
1.1 EIS Overview 1
1.2 Proposed Rulemaking and Alternatives 2
1.2.1 Proposed Rulemaking 2
1.2.2 Rulemaking Alternatives to be Assessed in the EIS 3
1.3 EIS Scope of Analysis 3
1.4 State Environmental Policy Act Process 3
1.5 EIS Organization 4
2. Proposed Rulemaking Description and Alternatives 5
2.1 Purpose and Objectives 5
2.2 Location 6
2.2.1 RCW Geographic Scope 6
2.2.2 EIS Study Area 6
2.2.3 BPC and non-BPC Zones 6
2.3 Proposed Rulemaking 9
2.3.1 Tug Escort Requirements 9
2.3.2 Collaboration and Advisory Support 10
2.4 Determining Environmental Impact Statement Alternatives 10
2.5 Alternative A: No Action 12
2.6 Alternative B: Addition of Functional and Operational Requirements (FORs) 12
2.6.1 Horsepower 13
2.6.2 Propulsion Specifications 13
2.6.3 Pre-escort Conference 13
2.7 Alternative C: Expansion of Tug Escort Requirements 14

2.8 Alternative D: Removal of Tug Escort Requirements 15

2.9 Alternatives Considered and Eliminated 16
2.9.1 Geographic Zones Considered and Eliminated 16
2.9.2 Functional and Operational Requirements Considered and Eliminated 17

3. Required Permits and Approvals 19

4. Affected Environment, Potential Significant Impacts, and Mitigation Measures 20

4.1 Transportation: Vessel Traffic 20
4.1.1 Methodology 20
4.1.2 Affected Environment 21
4.1.3 Findings for Alternative A (No Action) 24
4.1.4 Findings for Alternative B (Addition of FORs) 28
4.1.5 Findings for Alternative C (Expansion) 28
4.1.6 Findings for Alternative D (Removal) 35

4.2 Environmental Health: Releases (Oil Pollution) 37
4.2.1 Methodology 37
4.2.2 Affected Environment 39
4.2.3 Findings for Alternative A (No Action) 42
4.2.4 Findings for Alternative B (Addition of FORs) 45
4.2.5 Findings for Alternative C (Expansion) 45
4.2.6 Findings for Alternative D (Removal) 47

4.3 Water Quality 51
4.3.1 Methodology 51
4.3.2 Affected Environment 52
4.3.3 Findings for Alternative A (No Action) 53
4.3.4 Findings for Alternative B (Addition of FORs) 55
4.3.5 Findings for Alternative C (Expansion) 55
4.3.6 Findings for Alternative D (Removal) 57

4.4 Environmental Health: Noise 58
4.4.1 Methodology 58
4.4.2 Affected Environment 61
4.4.3 Findings for Alternative A (No Action) 62
4.4.4 Findings for Alternative B (Addition of FORs) 66
4.4.5 Findings for Alternative C (Expansion) 67
4.4.6 Findings for Alternative D (Removal) 68

4.5 Plants and Animals 70
4.5.1 Methodology 70
4.5.2 Affected Environment 71
4.5.3 Findings for Alternative A (No Action) 75
4.5.4 Findings for Alternative B (Addition of FORs) 80
4.5.5 Findings for Alternative C (Expansion) 81
4.5.6 Findings for Alternative D (Removal) 84

4.6 Energy and Natural Resources 86
4.6.1 Methodology 86
4.6.2 Affected Environment 87
4.6.3 Findings for Alternative A (No Action) 89
4.6.4 Findings for Alternative B (Addition of FORs) 90
4.6.5 Findings for Alternative C 90
4.6.6 Findings for Alternative D 91

4.7 Air Quality and Greenhouse Gases....93
4.7.1 Methodology....93
4.7.2 Affected Environment....97
4.7.3 Findings for Alternative A (No Action)....97
4.7.4 Findings for Alternative B (Addition of FORs)....100
4.7.5 Findings for Alternative C (Expansion)....100
4.7.6 Findings for Alternative D (Removal)....102
4.8 Recreation....104
4.8.1 Methodology....104
4.8.2 Affected Environment....104
4.8.3 Findings for Alternative A (No Action)....110
4.8.4 Findings for Alternative B (Addition of FORs)....111
4.8.5 Findings for Alternative C (Expansion)....112
4.8.6 Findings for Alternative D (Removal)....113
4.9 Visual Resources....115
4.9.1 Methodology....115
4.9.2 Affected Environment....116
4.9.3 Findings for Alternative A (No Action)....119
4.9.4 Findings for Alternative B (Addition of FORs)....120
4.9.5 Findings for Alternative C (Expansion)....121
4.9.6 Findings for Alternative D....122
4.10 Tribal Resources....124
4.10.1 Methodology....124
4.10.2 Affected Environment....125
4.10.3 Findings for Alternative A (No Action)....126
4.10.4 Findings for Alternative B (Addition of FORs)....128
4.10.5 Findings for Alternative C (Expansion)....128
4.10.6 Findings for Alternative D (Removal)....129
4.11 Environmental Justice....131
4.11.1 Methodology....131
4.11.2 Affected Environment....132
4.11.3 Findings for Alternative A (No Action)....133
4.11.4 Findings for Alternative B (Addition of FORs)....134
4.11.5 Findings for Alternative C (Expansion)....135
4.11.6 Findings for Alternative D (Removal)....136
5. Cumulative Impacts....138
5.1 Past, Present, and Reasonably Foreseeable Future Actions....138
5.2 Cumulative Impacts....140
6. Consultation and Coordination....143
6.1 Environmental Impact Statement Scoping Process....143
6.2 Additional Public Outreach....143
6.3 Tribal Coordination....144
6.4 Agency Coordination....145
7. List of Preparers and Contributors....146
8. Distribution List....147

8.1 OTSC Members and Alternates 147
8.2 Regulated Industry (Tug and Target Vessel Operators) 147
8.3 Tribal Governments and Organizations (Includes First Nations) 147
8.4 Federal and Regional Agencies 148
8.5 Washington State Agencies 148
8.6 Other State and Provincial Government Agencies 149
8.7 Local Governments (Cities, Counties) 149
8.8 Ports 150
8.9 Other Agencies and Organizations 151
9. References 155

Appendix A Scoping Summary Report

Appendix B Transportation: Vessel Traffic Discipline Report

Appendix C Environmental Health: Releases Discipline Report

Appendix D Water Quality Discipline Report

Appendix E Environmental Health: Noise Discipline Report

Appendix F Plants and Animals Discipline Report

Appendix G Energy and Natural Resources Discipline Report

Appendix H Air Quality and Greenhouse Gases Discipline Report

Appendix I Recreation Discipline Report

Appendix J Visual Resources Discipline Report

Appendix K Tribal Resources Discipline Report

Appendix L Environmental Justice Discipline Report

Appendix M Additional Maps

List of Figures and Tables

List of Figures

Figure 1. This map shows the EIS Study Area as well as the boundaries of Alternatives A (No Action) and Alternative C (Expansion). Alternative A represents the tug escort requirements for target vessels implemented in September 2020 by the passage of ESHB 1578. xxviii
Figure 2. The SEPA EIS process. We are in the Draft EIS phase. xxx
Figure 3. Comparison between the four alternatives evaluated in the EIS showing geography (top row) and the inclusion or not of functional and operational requirements (FORs, bottom row) xxxii
Figure 4. A map of the EIS Study Area showing the boundaries of the BPC and non-BPC zones, as well as the boundaries of Alternatives A and C. 8
Figure 5. Comparison between the four rulemaking alternatives showing geography (top row) and the inclusion or not of functional and operational requirements (FORs, bottom row). 11
Figure 6. Simulated escort tug activity under Alternative A and B 25
Figure 7. Nautical chart showing the traffic lanes in the expansion area with the expansion area boundary overlaid. 29
Figure 8. Simulated escort tug activity under Alternative C. 31
Figure 9. Simulated change in escort tug activity between Alternative A and Alternative C. An additional accessible version of this map is available in Appendix M. 32
Figure 10. Map of modeling area with key acoustic receptor locations and density tracks of the tug escorts affected by the rulemaking. 59
Figure 11. Sum of unique SRKW sightings from 1999 to 2022 based on The Whale Museum Orca Sightings and NMFS Fisheries (2024b) data. 74
Figure 12. Minutes per year escort tugs travel at speeds exceeding 10 knots in the EIS Study Area – Alternative A. 77
Figure 13. Mean speed by escort tugs throughout the EIS Study Area – Alternative A. 78
Figure 14. Time that escort tugs travel at speeds exceeding 10 knots – Change from Alternative A to Alternative C. An additional accessible version of this map is available in Appendix M. 83
Figure 15. Volume of oil transferred over water by all vessels (2017-2024). This graph includes the volume transferred (bars) and the number of individual transfers (line). 88
Figure 16. Volume of fuel transferred to escort tugs over water in Washington state (2017-2023). 89
Figure 17. Receptor areas for dispersion modeling. 96
Figure 18. A map of the rulemaking area showing nearby federal, state, and municipal parks with water access. 106
Figure 19. Map of the WDFW marine areas for recreational fishing, boat access, and shoreline fishing access in and around the rulemaking area. 108
Figure 20. An oil tanker at the top of the photo is shown with a tug alongside, and one astern. Both of these tugs are the size and character of escort tugs. An ATB is shown in the middle ground with a crew boat alongside. A fishing boat passes in the foreground. 117
Figure 21. Escort tug transiting to an oil tanker. 118

List of Tables

Table 1. Elements of the environment with significant adverse impacts organized by alternative. xxxiv
Table 2. Summary of impacts and proposed mitigation by element of the environment. xxxv
Table 3. Significance thresholds for vessel traffic impacts. 21
Table 4. Historical underway minutes by target vessel type. 23
Table 5. Modeled escort tug underway time by zone and for the EIS Study Area in Alternative A, as compared to 2023 historical AIS traffic underway time and all escort/assist tug underway time. 26
Table 6. Modeled escort tug underway time by zone and for the EIS Study Area in Alternative C, as compared to 2023 historical AIS traffic underway time and all escort/assist tug underway time. 34
Table 7. Probability of tug incidents per operating minute and per one million operating minutes. These rates are used in the EIS calculations. 38
Table 8. Significance thresholds for oil pollution risk impacts. 39
Table 9. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative A 43
Table 10. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative C. 46
Table 11. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative D. 48
Table 12. Significance thresholds for water quality impacts. 52
Table 13. Key underwater noise receptor locations and rationale for their selection. 60
Table 14. Significance thresholds for noise impacts. 61
Table 15. Modeled number of minutes (per week) above the 120 dB threshold under existing conditions, with and without tug escorts. 63
Table 16. Modeled average total area ensonified above the 120 dB threshold under existing conditions, with and without tug escorts. 63
Table 17. Modeled number of minutes (per week) above the 120 dB threshold under Alternative A and Alternative C. 67
Table 18. Modeled average total area ensonified above the 120 dB threshold under Alternative A and Alternative C. 67
Table 19. Significance thresholds for plants and animal resources impacts. 71
Table 20. Significance thresholds for energy and natural resources impacts. 87
Table 21. Significance thresholds for air quality and GHG impacts. 95
Table 22. Annual tug escort emissions in the EIS Study Area (Alternative A) and comparison to total marine vessel emissions in the Puget Sound air basin. 98
Table 23. Annual escort tug emissions in the EIS Study Area (Alternative C) and comparison to total marine vessel emissions in the Puget Sound air basin. 101
Table 24. Significance thresholds for impacts to recreation. 104
Table 25. Significance thresholds for visual resource impacts. 115
Table 26. Significance thresholds for Tribal resources impacts. 124
Table 27. Significance thresholds for environmental justice-related impacts. 132

Table 28. Summary of Communities with EJ Concerns within the EJ Study Area. 132
Table 30. List of preparers and contributors. 146

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
AIS	Automatic Identification System
ANT	Advance Notice of Transfer
APA	Administrative Procedures Act
ASIL	acceptable source impact levels
ASTM	Advancing Standards and Transforming Markets International
ATB	Articulated tug barge
ATNI	Affiliated Tribes of Northwest Indians
BAP	best achievable protection
BC	British Columbia
BLM	Bureau of Land Management
BPC	Washington State Board of Pilotage Commissioners
CFR	Code of Federal Regulations
CH4	methane
CO	carbon monoxide
CO2e	carbon dioxide equivalent
COLREGS	International Regulations for Preventing Collisions at Sea (Collision Regulations)
DAHP	Washington State Department of Archaeology and Historic Preservation
dB	decibel
DFO	Department of Fisheries and Oceans Canada
DNR	Washington State Department of Natural Resources
DP	delta port
DWT	deadweight tons
ECA	Emissions Control Area
ECHO	Port of Vancouver's Enhancing Cetacean Habitat and Observation Program
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat

EIS	Environmental Impact Statement
EJ	environmental justice
EPA	United States Environmental Protection Agency
ERG	Eastern Research Group, Inc.
ESA	Endangered Species Act
ESHB	Engrossed Substitute House Bill
FHWA	Federal Highway Administration
FORs	functional and operational requirements
GHG	greenhouse gases
GIS	Geographic Information Systems
GNOME	General NOAA Operational Modeling Environment
HAP	hazardous air pollutants
HAPC	Habitat Areas of Particular Concern
IMO	International Maritime Organization
JASCO	JASCO Applied Sciences
LNG	liquefied natural gas
LOP	loss of propulsion
MARPOL	International Convention for the Prevention of Pollution from Ships
MARSIS	Canadian Marine Safety Information System
MISLE	Marine Information for Safety and Law Enforcement
MMT	million metric tons
NAAQS	National Ambient Air Quality Standard
NDZ	No Discharge Zone
NMFS	National Marine Fisheries Service
NO2	nitrogen dioxides
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NWAC	Northwest Area Committees
NWIFC	Northwest Indian Fisheries Commission
NWR	National Wildlife Refuge
OTSC	Oil Transportation Safety Committee

PLACES	Population Level Analysis and Community Estimates
PM	particulate matter
PSHSC	Puget Sound Harbor Safety Committee
PWWA	Pacific Whale Watch Association
RCO	Washington State Recreation and Conservation Office
RCW	Revised Code of Washington
RRT	Regional Response Team
SCUBA	Self-Contained Underwater Breathing Apparatus
SEPA	State Environmental Policy Act
SIL	significant impact levels
SME	subject matter expert
SO2	sulfur dioxide
SOC	Standard of Care
SPL	sound pressure level
SRKW	Southern Resident Killer Whale
SSHIAP	Salmon and Steelhead Habitat Inventory and Assessment Program
TAP	toxic air pollutants
TCP	Traditional Cultural Property
TMDL	total maximum daily load
TPY	tons per year
ULC	unlimited liability corporation
US	United States of America
USCG	United States Coast Guard
VEAT	Vessel Entries and Transits for Washington Waters
VGO	vacuum gas oil
VGP	Vessel General Permit
VIA	visual impact assessment
VOC	volatile organic compounds
VTS	Vessel Traffic Service
WAC	Washington Administrative Code
WCD	worst case discharge

WCT	West Coast Transient killer whales
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

Summary

Introduction and Background

In 2019, the Washington State Legislature passed ESHB 1578 to improve oil transportation safety and protect Southern Resident Killer Whales (SRKW) (ESHB 1578, 66th Leg., 2019). The bill directs the Board of Pilotage Commissioners (BPC), in consultation with the Department of Ecology (Ecology), to develop tug escort rules for certain vessels that transport oil in Puget Sound by conducting a rulemaking to amend Chapter 363-116 of the Washington Administrative Code (WAC), Pilotage Rules.

This rulemaking addresses tug escort requirements for three types of vessels while they are transporting oil: oil tankers of between 5,000 and 40,000 deadweight tons (DWT), and articulated tug barges (ATBs) and towed waterborne vessels or barges greater than 5,000 DWT that are designed to transport oil in bulk internal to the hull. We call these vessels the "target vessels" for the rulemaking. Target vessels engaged in bunkering are excluded from tug escort requirements. The rules will be designed to achieve best achievable protection, as defined in RCW 88.46.010, and will be informed by other considerations in ESHB 1578. Throughout the Environmental Impact Statement (EIS), this will generally be referred to as the "proposed rulemaking."

The Proposed Rulemaking

- **Scope:** Consider and develop tug escort rules for target vessels in Puget Sound.
- **Target Vessels Include:** Oil tankers between 5,000 and 40,000 DWT, ATBs and barges greater than 5,000 DWT.
- **Applies:** While vessels are laden.
- **Does Not Apply:** While vessels are engaged in bunkering.
- **Rulemaking Should:** Reduce the likelihood of a catastrophic oil spill, achieve best achievable protection, minimize impacts to Tribal treaty fishing, minimize underwater noise, focus vessel traffic in shipping lanes.

The proposed rulemaking could potentially change tug escort activity and the risk of oil spills in Puget Sound. As co-lead agencies, BPC and Ecology determined the rulemaking may have a significant adverse impact on the environment and requires an EIS. This is a non-project EIS: It assesses potential rulemaking alternatives.

The rulemaking will also specify operational and functionality requirements for tug escorts where they are required and make clarifying changes or corrections. It will also consider the existing tug escort requirements in Rosario Strait and connected waterways east established in RCW 88.16.190(2)(a)(ii), including adjusting or suspending those requirements, as needed; and consider and describe any exemptions to the tug escort requirements for target vessels.

Location of Proposed Rulemaking

The RCW 88.16.260 defined the geographic scope of the rulemaking as waters east of the line extending from Discovery Island light south to New Dungeness light and all points in the Puget Sound area, including the San Juan Islands, connected waterways, and waters south of

Admiralty Inlet within Washington's territorial boundaries. While the scope of potential rulemaking alternatives is limited to the geographic scope described in the RCW, the EIS Study Area is larger to more fully capture potential impacts (see Figure 1).

The ESHB 1587 established tug escort requirements for target vessels in Rosario Strait and connected waters east, which were implemented in September 2020 (RCW 88.16.190(2)(a)(ii)). This is reflected in the EIS as the Alternative A boundary (See Alternative A boundary in Figure 1). The BPC and Ecology considered expanding tug escort requirements for target vessels to the full extent of the rulemaking geographic scope. However, ultimately our largest expansion alternative (Alternative C) extended the current tug escort requirements approximately seven miles northwest towards Patos Island (See Alternative C boundary in Figure 1).

Roles and Responsibilities

The BPC and Ecology are co-lead agencies under SEPA and share lead agency responsibility. Ecology is the technical lead on the EIS and the BPC is the final decision-maker on the rulemaking. The BPC also appointed the Oil Transportation Safety Committee (OTSC) as an advisory committee of subject matter experts to develop recommendations for the BPC related to the rulemaking and the EIS.

Site Background and Project History

The proposed rulemaking to amend Chapter 363-116 WAC is part of a package of efforts passed by the Legislature in 2019 to reduce the risk of oil spills and protect Southern Resident Killer Whales (SRKW). Included in that package is legislative direction to conduct a rulemaking that considers changing tug escort requirements for target vessels throughout Puget Sound.

Tug escort requirements have been part of the marine safety system in Washington state since 1975 and are intended to help prevent catastrophic accidents and large oil spills from tank vessels. Escort tugs reduce oil spill risk by reducing the chance that the sudden disabling of an underway vessel will result in a grounding.

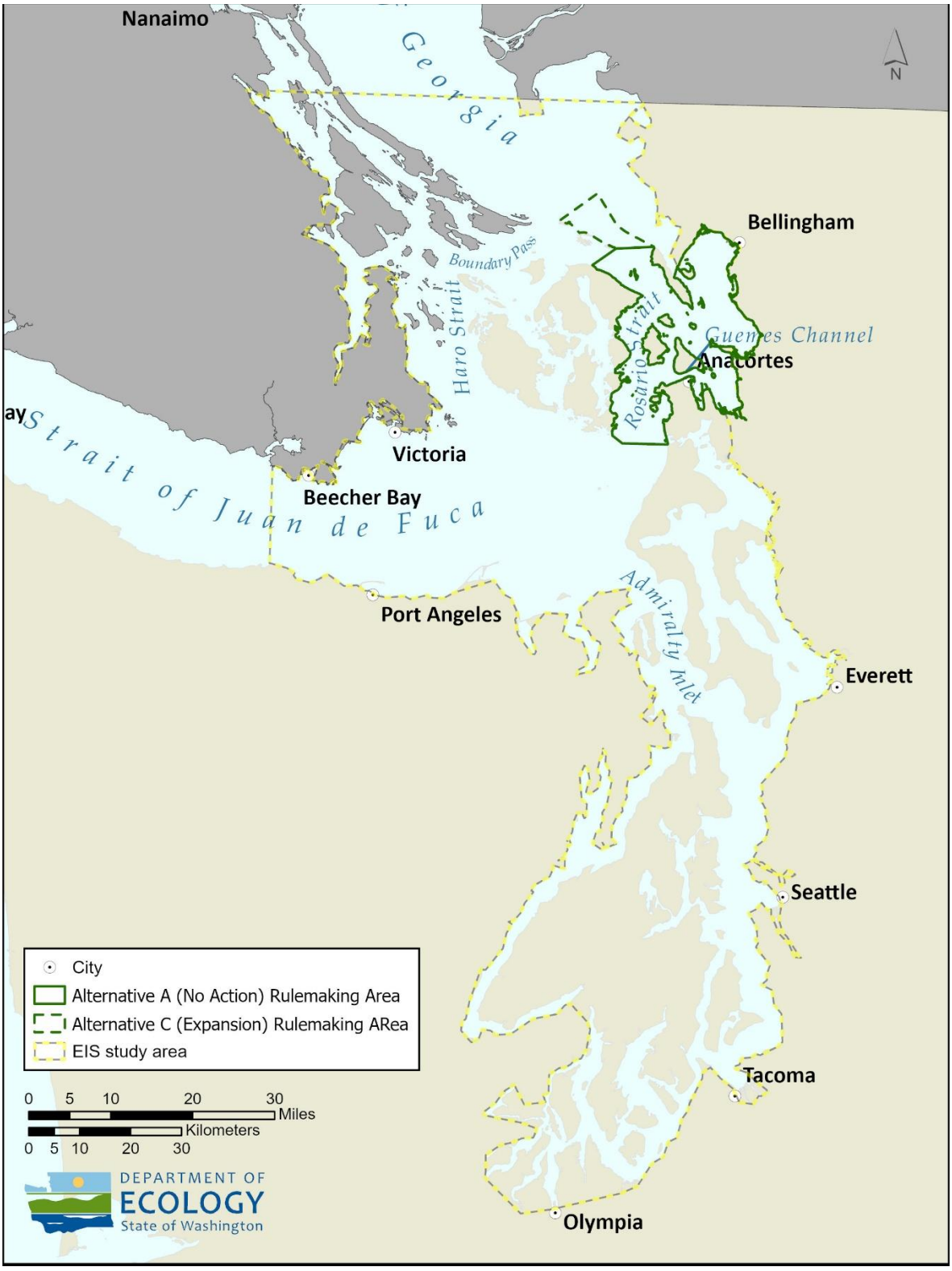


Figure 1. This map shows the EIS Study Area as well as the boundaries of Alternatives A (No Action) and Alternative C (Expansion). Alternative A represents the tug escort requirements for target vessels implemented in September 2020 by the passage of ESHB 1578.

Purpose and Need

The ESHB 1578 provided clear direction to the agencies regarding the rulemaking objectives, which we summarize here and use in the EIS. These objectives include:

- **Reduce Oil Spill Risk:** The purpose of this rulemaking is to reduce the risk of a catastrophic[2] oil spill from vessels carrying oil in Puget Sound, by considering tug escort requirements for the target vessels.
- **Minimize Underwater Noise:** The rule should have the goal of avoiding or minimizing additional underwater noise from vessels.
- **Minimize Impacts to Treaty Fishing:** The rule should have the goal of protecting and minimizing vessel traffic impacts to Tribal treaty fishing areas and respecting treaty-protected interests and fishing rights.
- **Focus Vessel Traffic:** The rule should have the goal of focusing vessel traffic in the existing shipping lanes.
- **Best Achievable Protection:** The rule should be designed to achieve best achievable protection (BAP), as defined in RCW 88.46.010.

Environmental Review Process

Ecology prepared this Draft EIS to meet the requirements of the Washington State Environmental Policy Act (SEPA) (Chapter 43.21C of the Revised Code of Washington) and the SEPA Rules (Chapter 197.11 of the Washington Administrative Code (WAC)). The proposed rulemaking triggers SEPA review because the BPC and Ecology determined that changing tug escort requirements is likely to have a significant adverse impact to the environment. The BPC will use the Final EIS, along with other information, to inform decision-making on final rule language.

The SEPA EIS

Under SEPA, an EIS is necessary if a proposed action is likely to result in significant adverse environmental impacts.

The purpose of an EIS is to provide the public and agencies with information about the effects of a proposed action and inform decision-making.

This EIS provides a comprehensive and objective evaluation of probable significant adverse environmental impacts, reasonable alternatives, and mitigation measures that would avoid or minimize impacts. Figure 2 shows the SEPA EIS process.

[2] ESHB 1578 uses the term "catastrophic" oil spill. For this analysis, we focus on the potentially significant spills that could result from a target vessel drift grounding. We also completed trajectory modeling for worst case discharge spill scenarios, which have a specific definition under WAC 173-182-030. See the Environmental Health: Releases Discipline Report (Appendix C) for additional information.

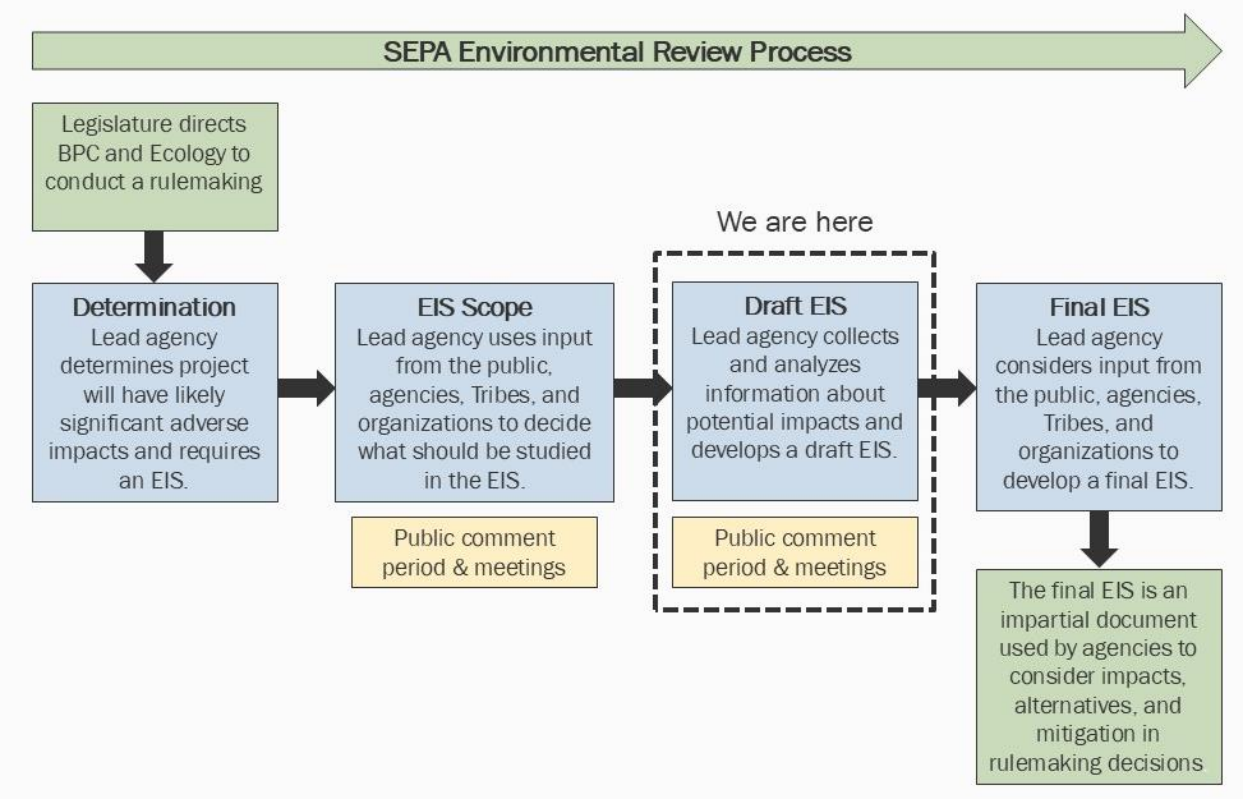


Figure 2. The SEPA EIS process. We are in the Draft EIS phase.

SEPA Environmental Impact Statement Scoping Process

Ecology and the BPC issued a Determination of Significance and conducted an EIS scoping period from February 22, 2023, to April 8, 2023. During the scoping period, Ecology held one virtual scoping meeting on March 21, 2023, and scoping materials were available on the Ecology rulemaking website. This website was developed to provide information throughout the duration of the rulemaking process, including the SEPA environmental review and EIS development (https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Spills-Prevention-Preparedness-Response/Legislative-work/BPC-tug-escort-rulemaking). Ecology accepted comments by mail, via online form, and verbally during the meetings. We also held an additional workshop on scoping on March 5, 2024, to solicit feedback from Tribes and stakeholders.

Tribes, agencies, members of the public, and stakeholders were invited to participate in the scoping process and provide comments. Additional details on the scoping process and the comments received are in the Scoping Summary Report in Appendix A of the EIS.

Summary of Feedback Received During Scoping

Comments and feedback from the scoping period were about the SEPA process, rulemaking alternatives, the scope of analysis, modeling and data, mitigation, cumulative impacts, and many elements of the environment. The list below briefly summarizes some of the key issues

and resources identified. A detailed summary of the scoping process and comments received is in the Scoping Summary Report (Appendix A). Key themes in scoping comments included:

- Prioritization of impacts to SRKWs from a variety of threats including underwater noise, physical disturbance, and oil spill risk.
- Need for a careful assessment of underwater noise impacts, including spatial and temporal impacts. Comments also included a discussion of potential mitigation measures and their efficacy and feasibility.
- Impacts of increasing vessel traffic, including the need to study the location of increased vessel traffic and implications for increases in vessel casualties, interactions with Tribal fishing, and congestion.
- Concerns about changes in oil spill risk and a need to understand potential for decreases (target vessels) as well as increases (more escort tug underway time) from tug escort requirements.
- Differing opinions about the scale of potential air quality impacts, and comments specifically about public health, environmental justice, and state and industry emission reductions goals.
- Prioritization of potential impacts to Tribal treaty fishing and vessel interaction with Tribal fishers. Comments also emphasized the importance of consulting with Tribes and the need to provide spatial and temporal information on vessel traffic increases to support Tribes in decision-making.
- Some comments were about water quality, energy and natural resources, visual resources, and recreation, but these topics were not a focus of scoping comments.
- Emphasis on mitigation feasibility, using existing voluntary forums such as the Puget Sound Harbor Safety Committee (PSHSC), Quiet Sound, and the ECHO Program, and considering opportunities for tug design and electrification. Mitigation comments also emphasized reducing conflict with Tribal treaty fishing.
- Consideration of the challenges of modeling, need for nuance in describing the differences in environmental impacts from tugs transiting alone vs. escorting, and preferences for use of data and previously created reports.
- Some comments requested economic or cost-benefit analysis, which are not included in the EIS, but are included as part of the Preliminary Regulatory Assessment.

Alternatives Considered

To develop rulemaking alternatives, Ecology and the BPC reviewed the results from the Ecology risk model, vessel traffic trend data, previous vessel traffic risk assessments in the Salish Sea, tug escort requirements from other jurisdictions, the BPC Zone descriptions, and other data and studies on oil pollution and vessel traffic safety in the region. Ecology and the BPC also considered input from Tribes and stakeholders and comments received in the scoping phase. The maritime experts on the OTSC made formal recommendations to the BPC on the final set of alternatives to be considered for the rulemaking and evaluated in this EIS. Alternatives that did not meet the WAC 197-11-786 definition of a reasonable alternative were eliminated from further consideration (see Section 2.9 of the EIS).

The BPC identified four alternatives which Ecology evaluated in this EIS: Figure 3 below compares the four alternatives based on geography and functional and operational requirements (FORs):

A. Alternative A (No Action)
B. Alternative B (Addition of FORs)
C. Alternative C (Expansion of Tug Escort Requirements)
D. Alternative D (Removal of Tug Escort Requirements).

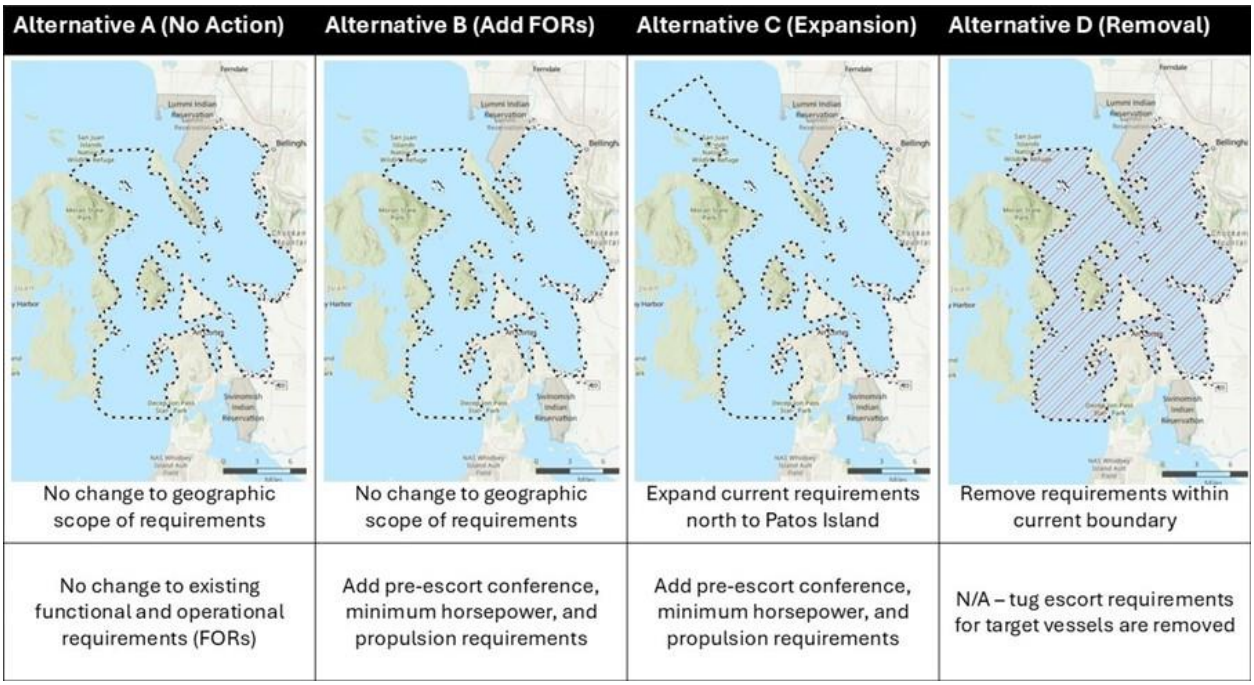


Figure 3. Comparison between the four alternatives evaluated in the EIS showing geography (top row) and the inclusion or not of functional and operational requirements (FORs, bottom row)

Alternative A (No Action)

Alternative A is the "No Action Alternative." It represents the most likely future conditions if the proposed rule amendments are not adopted. Tug escort requirements for target vessels apply in Rosario Strait and waters east (see Figures 1 and 3). Alternative A makes no changes to the functional and operational requirements listed in RCW 88.16.190, which requires tugs to have a minimum of 2,000 horsepower (hp).

Alternative B (Addition of Functional and Operational Requirements)

Alternative B adds functional and operational requirements (FORs) intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. The FORs added under Alternative B are:

- **Minimum horsepower (hp):** Escort tugs must meet minimum horsepower requirements based on the DWT of the escorted vessel:

    - Escort tugs must have 2,000 hp for vessels greater than 5,000 and less than 18,000 DWT
    - Escort tugs must have 3,000 hp for vessels equal to or greater than 18,000 DWT.
- **Propulsion specifications:** To ensure sufficient propulsion, escort tugs must have a minimum of twin-screw propulsion.
- **Pre-escort conference:** Prior to beginning the escort, the escort tug and the target vessel (and pilot if present) need to coordinate and discuss safety measures and other standard requirements.

Alternative C (Expansion of Tug Escort Requirements)

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. The expansion area covers approximately 28.9 square miles and is approximately seven miles long end-to-end following the vessel traffic lane (see Figure 3 above or Figure 7 in the EIS). Alternative C includes the FORs outlined in Alternative B.

Alternative D (Removal of Tug Escort Requirements)

Alternative D removes the existing tug escort requirements for target vessels as described in Alternative A. However, Alternative D does not affect the pre-existing requirements for tank vessels over 40,000 DWT to be escorted east of the line extending between Discovery Island light south to New Dungeness light. Alternative D also does not affect the need for assist services for larger vessels as they come into port. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels.

Major Conclusions

Our analysis identified significant and unavoidable adverse impacts to several elements of the environment, all of which are related to the following impacts:

- Increase in oil spill risk under Alternative D
- Harmful levels of underwater noise under Alternatives A, B, and C
- Impacts of current levels of vessel traffic on Tribal Resources under Alternatives A, B, and C.

The significant and unavoidable increase in oil spill risk under Alternative D led to a significance finding for Alternative D for Environmental Health: Releases, Water Quality, Plants and Animals, Recreation, Tribal Resources, and Environmental Justice.

Significant increases in harmful levels of underwater noise led to significance findings for Alternatives A, B, and C for Environmental Health: Noise, Plants and Animals, Tribal Resources, and Environmental Justice.

Some Tribes have stated that levels of vessel traffic prior to the implementation of tug escort requirements for target vessels in 2020 already affected Tribal treaty fishing. Escort tug requirements would increase vessel traffic and exacerbate this existing issue. This led to a significance finding for Alternatives A, B, and C for Tribal Resources and Environmental Justice.

We did not identify any significant and unavoidable adverse impacts for Transportation: Vessel Traffic, Energy and Natural Resources, Air Quality and Greenhouse Gases, or Visual Resources. Table 1 summarizes significance findings by alternative.

Table 1. Elements of the environment with significant adverse impacts organized by alternative.

Alternative	**Elements of the Environment with Significant Unavoidable and Adverse Impacts**
Alternative A (No Action)	• Tribal Resources • Plants and Animals • Environmental Justice • Environmental Health: Noise
Alternative B (Addition of FORs)	• Tribal Resources • Plants and Animals • Environmental Justice • Environmental Health: Noise
Alternative C (Expansion of tug escort requirements for target vessels)	• Tribal Resources • Plants and Animals • Environmental Justice • Environmental Health: Noise
Alternative D (Removal of tug escort requirements for target vessels)	• Tribal Resources • Plants and Animals • Environmental Justice • Environmental Health: Releases (Oil Pollution) • Water Quality • Recreation

Proposed mitigation measures considered in the EIS include required mitigation, such as proposed rule language, compliance with existing vessel traffic safety regulations, SRKW protections, and oil pollution prevention regulations. Because the scope of the rulemaking is narrow and most of the authorities to regulate vessel traffic and vessel design exist at the federal level, we have also included a number of recommended but voluntary mitigation measures. These include continued participation in the voluntary PSHSC Standards of Care (SOCs), participation in voluntary slowdown measures to reduce underwater noise, and adoption of quieter and more fuel-efficient propulsion systems. However, because these are voluntary, we can't assume that they would fully mitigate any of the significant adverse impacts identified in the EIS. Table 2 summarizes the probable significant adverse impacts and mitigation measures for each element of the environment we analyzed.

Table 2. Summary of impacts and proposed mitigation by element of the environment.

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
Transportation: Vessel Traffic (see Section 4.1)	No significant adverse impact	• 1,537 escort jobs/year (4-5 escort jobs/day) for Alternatives A, B and C. • Escort tug underway time from this proposed rule is approximately 0.96% (Alternatives A and B) to 0.99% (Alternative C) of all AIS vessel traffic underway time. • Escort tug underway time increases 2.41% from Alternative A to Alternative C, with moderate increases in underway time in the expansion area. • Under Alternative D, there are zero escort jobs and no escort tug underway time associated with the rule. • No significant navigational safety or congestion concerns were identified for any alternative.	• Compliance with FORs as required in the rule. • Continued adherence to existing federal and state vessel traffic safety regulations. • Encourage continued participation in voluntary PSHSC SOCs and other industry best practices. • Recommendation to the PSHSC to extend applicable SOCs to the escort of target vessels. • Encourage tugs to reduce waiting times at rendezvous locations where safe and feasible.
Environmental Health: Releases (see Section 4.2)	Significant and unavoidable adverse impacts for **Alternative D (Removal)**	• A target vessel drift grounding is a serious marine event. A drift grounding could result in a spill which would have major environmental consequences. Any major oil spill in this area would have broad consequences for the region, affecting sensitive ecological resources and habitats, water quality, recreation, and Tribal resources, including archaeological sites. • Under Alternative D, the probability of a target vessel drift grounding increases by 11.84% over Alternative A across the entirety of the EIS Study Area. In the rulemaking area in particular, Alternative D would result in a 90.5% increase in drift grounding probability.	• Compliance with FORs as required in the rule. • Continued adherence to existing federal and state vessel traffic safety and oil pollution regulations. • Encourage continued participation in voluntary PSHSC SOCs and other industry best practices. • Recommendation to the PSHSC to extend applicable SOCs to the escort of target vessels.

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
Water Quality (see Section 4.3)	Significant and unavoidable adverse impacts for **Alternative D (Removal)**	• Alternatives A and B: Escort tug activity may continue to result in minor and localized impacts to water quality, but are not likely to cause chronic or recurring water quality criteria exceedances, or harmful algal blooms (HABs), or disrupt water quality-dependent habitats and activities in the EIS Study Area. • Alternative C: Distribution of these minor impacts would shift into the expansion area. • Alternative D: The increase in target vessel oil spill risk could result in acute exceedances of water quality criteria, resulting in a significant impact to the environment.	• Continued compliance with the No Discharge Zone, vessel discharge requirements such as those under the Vessel General Permit, and with all federal and state vessel traffic and oil pollution regulations. • Encourage continued participation in voluntary PSHSC SOCs and other industry best practices. • Encourage continued compliance with marina and port-specific water quality and discharge rules.
Environmental Health: Noise (see Section 4.4)	Significant and unavoidable adverse impacts for **Alternatives A (No Action), B (Addition of FORs), and C (Expansion)**	• Underwater noise over 120 dB can result in behavioral disturbances in marine mammals. Noise that exceeds this threshold is considered potentially harmful. • All seven biologically sensitive modeled locations in the EIS Study Area periodically exceed the 120 dB threshold. The presence of escort tug requirements elevates average noise levels at most modeled locations, including up to 2.8 dB at the noisiest location (Rosario) compared to Alternative D (the pre-ESHB 1578 statutory standards). • Alternatives A and B: Tug escort requirements contribute significantly to exceedances of the underwater noise threshold where harm to marine mammals may occur (over 120 dB). At the Rosario, Anacortes, and Lummi locations, these modeled exceedances occur over 10% more	• Continued adherence to existing federal vessel traffic safety and marine mammal protection regulations, and to state regulations regarding noise. • Encourage escort tugs to maintain a safe distance from killer whales consistent with state and federal requirements (despite exemption for tugs operating under the VTS). • Recommend that the PSHSC develop an SOC for escort tugs to maintain 1,000-yard distance from killer whales. • Encourage continued participation in voluntary vessel slow downs which have been

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
		frequently than they would with no tug escort requirements for target vessels. • Alternative C: Largely the same as Alternative A. Slight increases in noise at the Boundary Pass and Lummi locations in winter and slight decreases in noise at the Lummi and Anacortes locations in summer. No change to the exceedances of the 120 dB threshold. • Alternative D: Removing tug escort requirements reduces the occurrence and duration of harmful levels of underwater noise (over 120 dB) at three locations in winter and four in summer compared to Alternative A (current tug escort requirements). Average noise levels were reduced at all locations during at least one season.	shown to reduce underwater noise. • Encourage continued participation in voluntary PSHSC SOCs and other industry best practices, in particular reduced speeds while escorting and best practices for limiting unnecessary and nighttime vessel noise. • Recommendation to the PSHSC to extend applicable SOCs to the escort of target vessels. • Encourage transition to hybrid electric and fully electric propulsion as technological readiness and cost make them feasible.
Plants and Animals (see Section 4.5)	Significant and unavoidable adverse impacts for **All Alternatives**	• Alternatives A, B, and C: Current levels of escort tug activity contribute to harmful levels of underwater noise in biologically important areas. Alternative C has similar levels of noise to Alternatives A and B. • Alternative D: Although there is a reduction in underwater noise in this alternative, the risk of a drift grounding increases by 11.84%, and the potential consequences for plant and animal resources from a major spill would be significant.	• Continued adherence to existing federal vessel traffic safety and marine mammal protection regulations, and to state regulations regarding noise. • Encourage escort tugs to maintain a safe distance from killer whales consistent with state and federal requirements (despite exemption for tugs operating under the VTS). • Recommend that the PSHSC develop an SOC for escort tugs to maintain 1,000-yard distance from killer whales.

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
			• Encourage continued participation in voluntary vessel slow downs which have been shown to reduce underwater noise. • Encourage compliance with the Be Whale Wise guidelines where safe and feasible to do so. • Consider options for tugs to safely adopt the Whale Report Alert System. • Encourage continued participation in in voluntary PSHSC SOCs that reduce the risk of oil spills. • Encourage transition to hybrid electric and fully electric propulsion as technological readiness and cost make them feasible.
Energy and Natural Resources (see Section 4.6)	No significant adverse impact	• Alternatives A, B, and C: Calculated escort tug fuel use ranges from 0.32% to 0.33% of annual average fuel transferred over water in Washington State. This is unlikely to affect maritime fuel availability. • Alternative D: Minor reduction in maritime fuel use.	• Continued compliance with existing clean fuels and vessel traffic safety and speed regulations. • Encourage participation in voluntary slowdowns, which reduce fuel use. • Encourage transition to more efficient and zero-emission propulsion as technological readiness and cost make this feasible.

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
Air Quality and Greenhouse Gases (see Section 4.7)	No significant adverse impact	• For all alternatives, tug escort emissions of criteria pollutants do not cause or contribute to National Ambient Air Quality Standards (NAAQS). Emissions of air toxics do not pose an unacceptable risk to human health. There would be minor localized air quality impacts where the emissions occur and minor contributions to GHG emissions. • Total emissions range from 12,000 (Alternative A) to 12,400 (Alternative C) tons per year of carbon dioxide equivalent (around 0.01% of total Washington state emissions).	• Continued compliance with existing low sulfur fuel requirements and existing federal and state vessel traffic safety regulations. • Encourage participation in voluntary slowdowns, which have demonstrated emission reductions. • Encourage transition to more efficient and zero-emission propulsion as technological readiness and cost make this feasible. • Encourage continued participation in voluntary PSHSC SOCs and other industry best practices.
Recreation (see Section 4.8)	Significant and unavoidable adverse impacts for **Alternative D (Removal)**	• We assessed a variety of water-based recreational activities including fishing, shellfishing, boating, whale watching, SCUBA diving, and visitation to parks with shoreline access. • Alternatives A, B, and C: Potential impacts are likely transitory in nature and would not result in a long-term or permanent reduction in recreational opportunity or quality. In Alternative C, tugs waiting for target vessels may be more dispersed. The expansion area includes an area with more frequent whale watching activity. • Alternative D: A major oil spill could result in long-term closures of recreational opportunities. Oil spill risk increases significantly under this Alternative.	• Continued adherence to existing federal and state vessel traffic safety and oil pollution regulations. • Continued adherence to existing federal and state regulations protecting SRKW and other marine mammals (speed reductions, maintaining distance, etc.). • Encourage adoption of voluntary measures designed to protect SRKW outlined in Section 4.5 (Plants and Animals). • Encourage continued participation in voluntary PSHSC

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
			SOCs and other industry best practices.
Visual Resources (see Section 4.9)	No significant adverse impact	• Alternatives A, B, and C: Escort tug activities may result in minor and transitory visual impacts. In Alternative C, escort tugs would be visible more frequently in the existing shipping lanes and while waiting for target vessels in and near the expansion area. • Alternative D: Minor reduction in visual impact of tugs across the EIS Study Area and concentrated in the current rulemaking area.	• Continued compliance with all U.S. Coast Guard vessel traffic safety measures in particular the requirements for lighting. • Encourage continued participation in the PSHSC SOCs, specifically Anchorage SOC which addresses the use of lights at anchor.
Tribal Resources (see Section 4.10)	Significant and unavoidable adverse impacts for **All Alternatives**	• The entire EIS Study Area is the usual and accustomed fishing area of one or more Tribes. Tribal treaty fisheries occur year-round and include a large variety of target species. Some Tribes have stated that current levels of vessel traffic negatively impact treaty fishing. • Coastal archaeological resources exist throughout the EIS Study Area. All modeled spill trajectories intersect with many known archaeological sites. • Most marine resources have cultural significance for Tribes and may have economic and subsistence value also. • Alternatives A, B, and C: Escort tugs are part of overall vessel traffic impacts to Tribal treaty fishing (gear loss, access, interference with fishing, safety issues, etc.). • Marine mammals are culturally significant to many Tribes. Under Alternatives A, B, and C, significant levels of underwater noise, vessel interaction, and potential strike risk pose threats to marine mammals.	• Proposed pre-escort conference checklist includes checking for active Tribal and non-Tribal fisheries. • Continued adherence to existing federal and state vessel traffic safety and oil pollution regulations. • Continued compliance with the Northwest Area Contingency Plan, which includes policies for oil spills and cultural resources, including inadvertent discovery. • Encourage development of agreements with interested Tribes to reduce impacts to Tribal treaty fishing through notification and coordination. • Encourage just-in-time shipping and limiting waiting time at rendezvous locations particularly during active Tribal fishing.

Resource	Impact Finding	Summary Description	Summary of Proposed Mitigation
		• Alternative D: Target vessel drift grounding risk increases significantly, which would put Tribal resources at greater risk of an oil spill.	• Encourage participation in the PSHSC Tribal Fisheries Lost Gear Subcommittee**.**
Environmental Justice (see Section 4.11)	Significant and unavoidable adverse impacts for **All Alternatives**	• This analysis included impacts to populations of color, low-income populations, and Tribal communities. • The only impacts we identified were disproportionate impacts to Tribal communities from those impacts described in Section 4.10 (Tribal Resources).	• See mitigation measures for Section 4.10.

Areas of Controversy and Uncertainty

Oil Spill Risk Reduction vs. Increased Escort Tug Underway Time: The trade-offs between oil spill risk reduction and additional escort tug underway time are an area of controversy in this process and an overarching theme of public input. Expanding tug escort requirements reduces the risk of oil spills from target vessels and the risk of potentially catastrophic environmental consequences that would affect ecological and cultural resources and Tribal treaty fishing wherever a spill occurred. Expanding tug escort requirements increases escort tug underway time. Increased tug escort underway time increases underwater noise (impacts to SRKW) and vessel traffic interactions with Tribal treaty fishing and marine mammals on a daily basis. More escort tug underway time also increases risk of escort tug incidents.

Modeling Vessel Traffic and Oil Spill Risk: Most of the analyses in this EIS rely on the modeling of vessel traffic and oil spill risk described in Sections 4.1 and 4.2, in combination with historical AIS data from 2023. For the simulated dataset analysis, we selected the model run with the highest amounts of escort tug underway time. We made this choice to ensure that the EIS did not under-count potential impacts and to account for potential near-term increases in vessel traffic and inter-annual variation. However, it is possible that some impacts are over-counted in this analysis.

A model is always a simplification of a complex real-world system. How the escort tug and target vessel industries respond to changes in tug escort requirements may differ from the conditions predicted in our modeling. Vessel traffic also changes on an inter-annual basis based on global policy, trade, and market conditions, which are challenging to predict. There is also some uncertainty around the permitting and approvals of various proposed maritime infrastructure projects described in Section 5.0 Cumulative Impacts in the EIS.

Environmental Impacts from Oil Spills: Oil spills are low-probability but high-consequence events. While they occur infrequently, a major oil spill could have catastrophic impacts to the environment. Those specific impacts would vary based on the ocean, weather, and wind conditions, the time of year, the type of oil spilled, and the specific location of a spill. This variability makes the exact impacts of an oil spill challenging to predict and describe. To address this, we used trajectory models for worst case discharges at eight spill locations in the EIS Study Area and selected times of year when sensitive species (e.g. SRKW, salmon) would be present and described those impacts, and included general descriptions of oil spill impacts on individual elements of the environment.

Underwater Noise: The underwater noise assessment has been an area of public interest and controversy throughout the EIS development. We held an additional public meeting with JASCO Applied Sciences, our subcontractor for underwater noise, to address these concerns and provide additional information about underwater noise dynamics and modeling. Some stakeholders suggested that the analysis should use a different marine mammal noise threshold than the one that the National Marine Fisheries Service recommends. We tested this alternative threshold and found that for our analysis, the NMFS threshold of 120 dB was more ecologically conservative and continued to rely on it for the analysis.

Vessel Traffic Impacts to Tribal Resources: Current levels of vessel traffic already impact Tribal treaty fishing and Tribal resources. The passage of ESHB 1578 added additional vessel traffic to the Puget Sound. Three of the alternatives assessed in this EIS contemplate maintaining or increasing vessel traffic. While the addition of this traffic provides an oil spill risk reduction, it does exacerbate existing impacts to Tribal treaty fishing and Tribal resources. The recommended voluntary mitigation measures and inclusion of checking on active fisheries in the required pre-escort conference attempt to avoid and reduce conflicts with Tribal treaty fishing. However, the mechanism of this rulemaking, tug escort requirements, unavoidably increases vessel traffic.

Climate Change: Another area of uncertainty is the magnitude of the future effects of climate change and how the changing climate will affect water quality, air quality, and plants and animals including sensitive habitats. We included climate change information where available and we do not anticipate that these impacts would substantially alter the impact determinations in the Draft EIS.

Next Steps

The BPC and Ecology will compile and review comments received on the Draft EIS during the comment period. Comments will be considered by the BPC and Ecology in the preparation of a Final EIS. The Final EIS and the final rule are estimated to be published by December 2025 and will be released to the public. The Final EIS will provide information to support decision-making on final rule language.

1. Introduction and Background

1.1 EIS Overview

The Board of Pilotage Commissioners (BPC), in consultation with the Washington Department of Ecology (Ecology), is conducting a rulemaking to amend Chapter 363-116 of the Washington Administrative Code (WAC), Pilotage Rules. The rulemaking will consider 2019 legislative changes made to Chapter 88.16 of the Revised Code of Washington (RCW) (Pilotage Act) through the passage of Engrossed Substitute House Bill (ESHB) 1578. The rules will be designed to achieve best achievable protection, as defined in RCW 88.46.010, and will be informed by other considerations in ESHB 1578. Throughout the Environmental Impact Statement (EIS), this will generally be referred to as the "proposed rulemaking."

The proposed rulemaking could potentially change tug escort activity and the risk of oil spills in Puget Sound. As co-lead agencies, BPC and Ecology determined the rulemaking may have a significant adverse impact on the environment and requires an EIS. An EIS evaluates the probable significant adverse impacts on the environment from the rulemaking. It analyzes the conditions that could be present once the rulemaking is implemented. This EIS evaluates four reasonable alternatives: Alternative A (No Action), Alternative B (Addition of Functional and Operational Requirements [FORs]), Alternative C (Expansion of Tug Escort Requirements), and Alternative D (Removal of Tug Escort Requirements).

The Proposed Rulemaking

Amend Chapter 363-116 of the Washington Administrative Code (WAC), Pilotage Rules, to change tug escort requirements throughout the Puget Sound and achieve best achievable protection against oil spills. This is a non-project proposal.

Environmental Review Terminology

Lead Agencies: The agencies responsible for preparing the EIS (BPC and Ecology).

State Environmental Policy Act or SEPA: State law that requires analysis of the probable environmental impacts of a proposed project (or, in this instance, a rulemaking) before any decisions are made by government agencies.

Environmental Impact Statement or EIS: A fact-based document that evaluates the probable significant adverse environmental impacts of the proposed project. It also looks at alternatives and mitigation to avoid or minimize impacts. This document is a non-project EIS; see WAC 197-11-442.

EIS Alternatives: An action that meets the project objectives but at a lower environmental cost. This EIS evaluates four alternatives:

- Alternative A: No Action
- Alternative B: Addition of Functional and Operational Requirements
- Alternative C: Expansion of Tug Escort Requirements
- Alternative D: Removal of Tug Escort Requirements

Ecology, in coordination with the BPC, has prepared this **non-project EIS** to meet the State Environmental Policy Act (SEPA) requirements in the WAC. An EIS does not approve or deny a proposed rulemaking. It provides a comprehensive and objective evaluation of probable

significant adverse environmental impacts, reasonable alternatives, and mitigation measures that would avoid or minimize impacts. The BPC will use the information in this EIS, along with other publicly available information, to inform a decision on which alternative to adopt in the rulemaking.

1.2 Proposed Rulemaking and Alternatives

1.2.1 Proposed Rulemaking

The proposed rulemaking to amend Chapter 363-116 WAC is part of a package of efforts passed by the Legislature in 2019 to reduce the risk of oil spills and protect Southern Resident Killer Whales (SRKW). Included in that package is legislative direction to conduct a rulemaking that considers changing tug escort requirements throughout Puget Sound.

Tug escort requirements have been part of the marine safety system in Washington state since 1975 and are intended to help prevent catastrophic oil spills from tank vessels. Escort tugs reduce oil spill risk by reducing the chance that a sudden disabling of an underway vessel will result in a grounding.

Note: Unless specified otherwise, the following terminology applies throughout this EIS:

- **"Tug escort"** refers to the act of a tug escorting a target vessel that is specifically affected by this rulemaking.
- **"Escort tug"** refers to the tug that conducts escorts of target vessels. Underway time for an escort tug includes active escort time and time spent commuting to and from an escort job.

The rulemaking will:

- Describe tug escort requirements for the following vessels (referred to as "target vessels" throughout this EIS) operating in the waters east of the line extending from Discovery Island light south to New Dungeness light and all points in the Puget Sound area:
  - Oil tankers of between 5,000 and 40,000 deadweight tons.
  - Articulated tug barges (ATB) and towed waterborne vessels or barges greater than 5,000 deadweight tons that are designed to transport oil in bulk internal to the hull.
- Specify operational requirements for tug escorts, where they are required.
- Specify functionality requirements for tug escorts, where they are required.
- Consider the existing tug escort requirements applicable to Rosario Strait and connected waterways to the east, established in RCW 88.16.190(2)(a)(ii), including adjusting or suspending those requirements, as needed.
- Describe exemptions to tug escort requirements, including whether certain vessel types or geographic zones should be precluded from the escort requirements.
- Make other changes to clarify language and make any corrections needed.

The BPC and Ecology are co-lead agencies under SEPA and share lead agency responsibility. Ecology is the technical lead on the EIS and the BPC is the final decision-maker on the rulemaking. The BPC also appointed the Oil Transportation Safety Committee (OTSC) as an advisory committee of subject matter experts to develop recommendations for the BPC related to the rulemaking and the EIS.

1.2.2 Rulemaking Alternatives to be Assessed in the EIS

Alternatives were selected that could feasibly attain or approximate the rulemaking objectives (see Section 2.1), but at a lower environmental cost or a decreased level of environmental degradation. The OTSC developed a recommended set of alternatives through discussion and by reviewing EIS scoping comments. The BPC voted to accept the alternatives recommended by the OTSC. Alternatives that did not meet the definition of a reasonable alternative were eliminated from further consideration and are discussed in Section 2.9. Ecology then developed an EIS that assessed the alternatives that the BPC voted on. In the description of the EIS analyses, "we" is used to refer to Ecology as the EIS lead, unless otherwise specified. The four alternatives selected to be evaluated in this EIS are:

- Alternative A: No Action
- Alternative B: Addition of Functional and Operational Requirements
- Alternative C: Expansion of Tug Escort Requirements
- Alternative D: Removal of Tug Escort Requirements

More details on the rulemaking and proposed alternatives are in Chapter 2.

1.3 EIS Scope of Analysis

To determine the scope of the EIS, Ecology considered the potential impacts of the rulemaking alternatives, as well as comments received during scoping. The level of detail provided for resources in the sections and appendices of the EIS is intended to focus on probable significant adverse impacts, with some information provided on other impacts. As indicated in WAC 197-11-444, in order to focus the EIS on the significant issues, this EIS includes only those elements identified as potentially having a significant adverse impact on the environment.

This rulemaking could potentially change tug escort activity and the subsequent risk of oil spills in Puget Sound. The EIS Study Area includes the rulemaking alternative boundaries and potential areas for tug escort commutes to and from the alternative boundaries. Section 2.2 has more information on the types of impacts considered and the geographic area analyzed in this EIS (the EIS Study Area).

1.4 State Environmental Policy Act Process

The SEPA process is intended to ensure that environmental values are considered during decision-making actions by state and local agencies. The process helps agency decision-makers, applicants, and the public understand how the proposed rulemaking will affect the environment. The environmental review process in SEPA is intended to work with other regulations and documents to provide a comprehensive review of a proposal. Ecology prepared this EIS under SEPA requirements described in Chapter 43.21C RCW and Chapter 197-11 WAC. Ecology issued a Determination of Significance on February 22, 2023, starting the EIS process.

1.5 EIS Organization

This EIS is organized to provide information in three ways. The Summary provides quick, high-level information on key findings and significant adverse impacts. The EIS chapters provide information on the EIS technical methods, impact analysis, and findings. The appendices contain supplemental information about the EIS and EIS process, including the Scoping Summary Report (Appendix A) and several resource discipline reports. The discipline reports include detailed and technical information about specific resources summarized in the EIS. The discipline reports are the official technical documentation for this EIS and if there is conflicting information between the Summary, EIS chapters, or the discipline reports, the discipline reports are considered the controlling documents.

The EIS is organized as follows:

- Publication and Contact Information, Cover Letter, and Fact Sheet
- Summary
- Draft EIS
    - Chapter 1: Introduction and Background
    - Chapter 2: Proposed Rulemaking Description and Alternatives
    - Chapter 3: Required Permits and Approvals
    - Chapter 4: Affected Environment, Potential Significant Impacts, and Mitigation Measures
    - Chapter 5: Cumulative Impacts
    - Chapter 6: Consultation and Coordination
    - Chapter 7: List of Preparers and Contributors
    - Chapter 8: Distribution List
    - Chapter 9: References
- Appendices
    - Appendix A: Scoping Summary Report
    - Appendix B: Transportation: Vessel Traffic Discipline Report
    - Appendix C: Environmental Health: Releases Discipline Report
    - Appendix D: Water Quality Discipline Report
    - Appendix E: Environmental Health: Noise Discipline Report
    - Appendix F: Plants and Animals Discipline Report
    - Appendix G: Energy and Natural Resources Discipline Report
    - Appendix H: Air Quality and Greenhouse Gases Discipline Report
    - Appendix I: Recreation Discipline Report
    - Appendix J: Visual Resources Discipline Report
    - Appendix K: Tribal Resources Discipline Report
    - Appendix L: Environmental Justice Discipline Report
    - Appendix M: Additional Maps

2. Proposed Rulemaking Description and Alternatives

This section summarizes information about the rulemaking authorized by the 2019 legislative changes made to Chapter 88.16 RCW (Pilotage Act) through the passage of Engrossed Substitute House Bill (ESHB) 1578. It also describes the four alternatives that were developed for consideration in the EIS.

2.1 Purpose and Objectives

In 2019, the Washington State Legislature passed ESHB 1578 to improve oil transportation safety and protect Southern Resident Killer Whales (SRKW) (ESHB 1578, 66th Leg., 2019). The bill directs the Board of Pilotage Commissioners (BPC), in consultation with the Department of Ecology (Ecology), to develop tug escort rules for certain vessels that transport oil in Puget Sound. This rulemaking addresses tug escort requirements for three types of vessels while they are transporting oil: oil tankers of between 5,000 and 40,000 deadweight tons (DWT), and articulated tug barges (ATB) and towed waterborne vessels or barges greater than 5,000 DWT that are designed to transport oil in bulk internal to the hull. We call these vessels the "target vessels" for the rulemaking.

The bill provides direction to the agencies regarding the rulemaking objectives, which we summarize here and use in the EIS.

- **Reduce Oil Spill Risk:** The purpose of this rulemaking is to reduce the risk of a catastrophic[3] oil spill from vessels carrying oil in Puget Sound, by considering tug escort requirements for the target vessels.
- **Minimize Underwater Noise:** The rule should have the goal of avoiding or minimizing additional underwater noise from vessels.
- **Minimize Impacts to Tribal Treaty Fishing:** The rule should have the goal of protecting and minimizing vessel traffic impacts to Tribal treaty fishing areas and respecting treaty-protected interests and fishing rights.
- **Focus Vessel Traffic:** The rule should have the goal of focusing vessel traffic in the existing shipping lanes.
- **Best Achievable Protection:** The rule should be designed to achieve best achievable protection, as defined in RCW 88.46.010.

[3] ESHB 1578 uses the term "catastrophic" oil spill. For this analysis, we focus on the potentially significant spills that could result from a target vessel drift grounding. We also completed trajectory modeling for worst case discharge spill scenarios, which have a specific definition under WAC 173-182-030. See the Environmental Health: Releases Discipline Report (Appendix C) for additional information.

2.2 Location

2.2.1 RCW Geographic Scope

RCW 88.16.260 defines the geographic scope of the rulemaking as waters east of the line extending from Discovery Island light south to New Dungeness light and all points in the Puget Sound area, including the San Juan Islands, connected waterways, and waters south of Admiralty Inlet within Washington's territorial boundaries. This includes the shorelines of most counties in Puget Sound.

2.2.2 EIS Study Area

While the scope of potential rulemaking alternatives is limited to the geographic scope described in the RCW, the EIS Study Area is larger to more fully capture potential impacts (see Figure 1). The EIS Study Area includes all connected marine waters in the Salish Sea[4] network of coastal waterways (including Puget Sound), bounded to the north by the 49th parallel and bounded to the west by a line extending across the Strait of Juan de Fuca from Pike Point to Tongue Point. It includes Canadian waters around Victoria, the southern Gulf Islands, Haro Strait, and Boundary Pass. The EIS Study Area extends west to include Port Angeles, because Port Angeles was identified as a potential commute location for escort tugs. The EIS Study Area includes both:

- The boundaries of the alternatives where tug escort requirements could change under the amended rule, and
- Modeled commute routes of escort tugs to and from the boundary where requirements could change.

The Oil Pollution Section (4.2) discusses potential impacts of an oil spill extending north and west into Canadian waters. Other sections (e.g., 4.7 Air Quality, 4.11 Environmental Justice) also include analyses of nearby coastal areas when relevant to the analysis.

2.2.3 BPC and non-BPC Zones

The ESHB 1587 established tug escort requirements for target vessels in Rosario Strait and connected waters east, which were implemented in September 2020 (RCW 88.16.190(2)(a)(ii)). It also directed the BPC to define geographic zones for the waters in which the rulemaking could apply. These zones, along with some non-BPC zones, were developed to better describe different regions of the waterway for modeling and analysis purposes. Both BPC and non-BPC zones are pictured in Figure 4 below. Figure 4 also includes the boundaries of Alternatives A

[4] The term "Salish Sea" is used here to describe the transboundary waters of the Strait of Juan de Fuca, the Puget Sound, and the Georgia Strait. The name for this waterbody was proposed in 1989 by a marine science professor at Western Washington University to emphasize the region as a single ecosystem. It has since been formally adopted by the Washington State Committee on Geographic Names (Chapter 237-990 WAC) and the British Columbia Geographical Names Office (*BC Geographical Names*, n.d.). It was named for the Coast Salish Tribes who live on or near the Salish Sea on both sides of the U.S.-Canadian border. However, the defined geographic boundary of the Salish Sea also extends into the lands and waters of Tribes that are not Coast Salish, including the Makah Tribe (Nuu-Chah-Nulth). We use the term "Salish Sea" in this analysis, but recognize the diversity of native peoples that have lived in and used these waters since time immemorial.

and C which are described in Sections 2.5 and 2.7. The zones were developed to capture different characteristics and navigational conditions of different parts of the waterway.[5] These zones are used throughout the EIS to describe the distribution of escort tug underway time and any associated environmental impacts. The tug escort requirements that went into effect in September 2020 include the following BPC Zones: Bellingham Channel and Waters East, Guemes Channel and Saddlebags, and Rosario Strait.

[5] Detailed descriptions of the BPC zones can be found on the BPC website (BPC, n.d.)

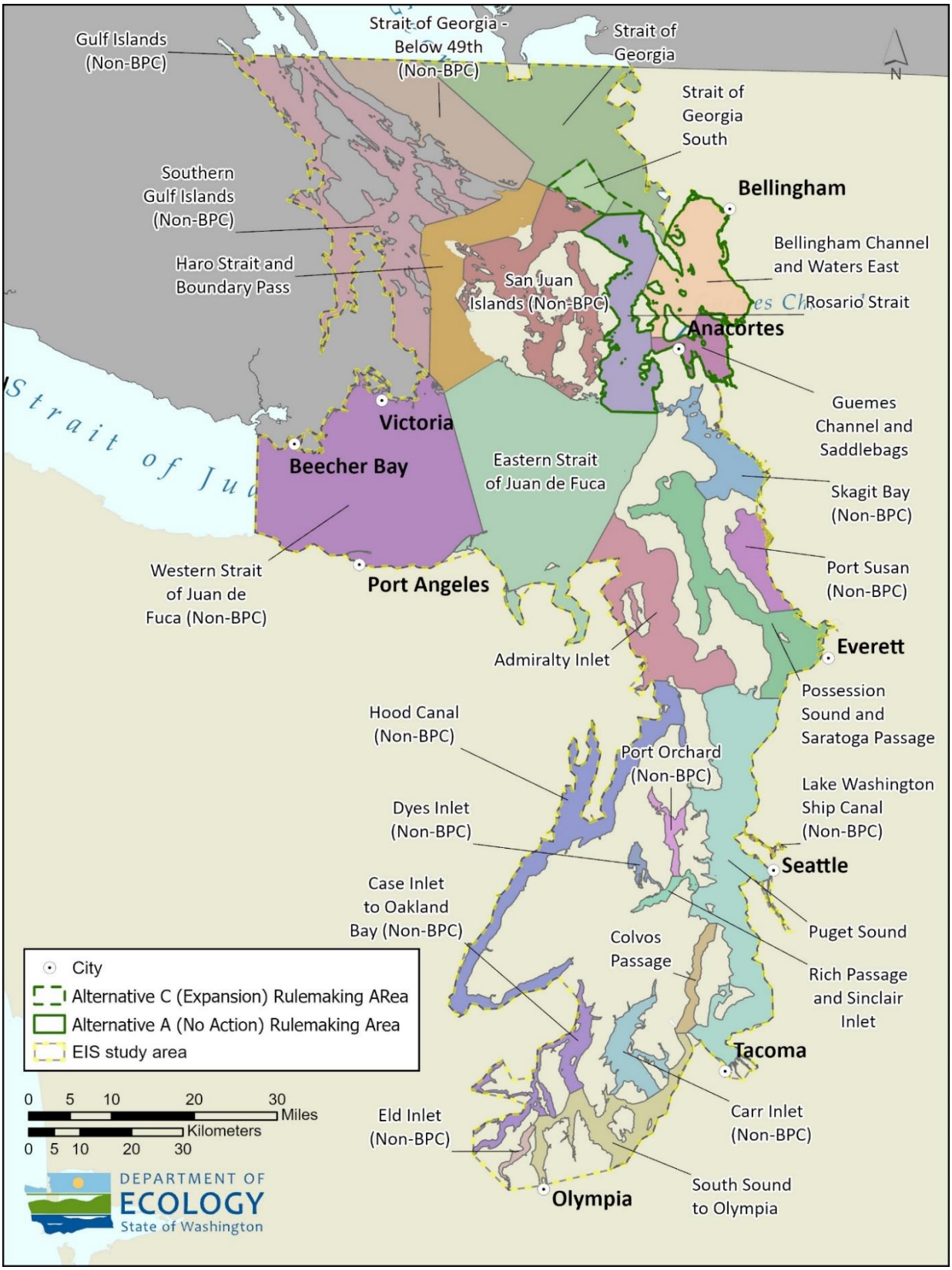


Figure 4. A map of the EIS Study Area showing the boundaries of the BPC and non-BPC zones, as well as the boundaries of Alternatives A and C.

2.3 Proposed Rulemaking

This rulemaking amends WAC 363-116, Pilotage Rules, which describes the training, licensing, and regulation of Washington state maritime pilots, and tug escort requirements for vessels carrying oil in Washington waters. RCW 88.16.260, the authorizing statute for this rulemaking, directs the BPC to adopt tug escort rules that must:

- Address the unique characteristics of Puget Sound;
- Specify operational and functionality requirements for tug escorts, where they are required; and,
- Consider the existing tug escort requirements applicable to Rosario Strait and waters east, established in RCW 88.16.190(2)(a)(ii) in 2020, including adjusting or suspending those requirements, as needed.

Under ESHB 1578, Ecology developed an oil spill risk model to simulate vessel traffic patterns and oil spill risk, including tug escort activity. The bill also requires consultation with treaty Tribes and key stakeholders, including the United States Coast Guard (USCG), the Puget Sound Harbor Safety Committee (PSHSC), ports, local governments, and state agencies before adopting tug escort rules. The model and the consultations inform the EIS.

2.3.1 Tug Escort Requirements

Escort tugs are tugs designed to accompany a larger vessel at speeds over six knots, while maintaining the ability to effect steering or braking control over the larger vessel in the case of a propulsion or steering failure. Tug escort requirements have been part of the marine safety system in Washington state since 1975. They are best suited to intervene in loss of propulsion and loss of steering events (Allan, 2000; ASTM, 2021), which can result in a drift grounding. A drift grounding in this analysis is when a ship loses power and drifts onto the ground.

The target vessels for this rulemaking carry significant amounts of oil as cargo and as fuel. As a result, a target vessel drift grounding is always a serious event. An escort tug can prevent or help avoid these incidents before a drift grounding occurs, thus preventing the potentially catastrophic oil spills referenced in the RCW. Although drift groundings are rare and drift groundings resulting in a spill are even more rare,[6] there have been at least two large spills from a vessel drifting aground on Washington's outer coast.[7] Escort tugs can also serve as an additional set of eyes and equipment to support vessel positioning, situational awareness, and hazard identification (Gray & Hutchinson, 2004).

[6] See Analysis of Tug Escorts Report (Ecology, 2023a), How Drift Groundings Contribute to a Spill (p.23)
[7] Drift groundings associated with large oil spills include the 1964 drift grounding near Moclips, Washington of a towed oil barge after it broke free from its tug and the 1972 drift grounding of a navy ship just south of Cape Flattery. The navy ship broke free while under tow and drifted ashore. Neither event was the result of loss of propulsion or loss of steering.

2.3.2 Collaboration and Advisory Support

RCW 88.16.260 directs the BPC to consult with Ecology on the rulemaking. The agencies entered into an inter-agency agreement, which specifies that Ecology will coordinate the rulemaking process, including the development of this EIS.

The BPC also established the Oil Transportation Safety Committee (OTSC), an advisory group representing diverse maritime interests in the Salish Sea, to analyze key issues and provide recommendations to the BPC Board. Their expertise and recommendations are referenced throughout the EIS. The Board of Pilotage Commissioners is the final decision-maker on this rulemaking.

2.4 Determining Environmental Impact Statement Alternatives

To develop rulemaking alternatives, Ecology and the BPC reviewed the results from the Ecology risk model, vessel traffic trend data, previous vessel traffic risk assessments in the Salish Sea, tug escort requirements from other jurisdictions, the BPC Zone descriptions, and other data and studies on oil pollution and vessel traffic safety in the region. Ecology and the BPC also considered input from Tribes and stakeholders and comments received in the scoping phase. The maritime experts on the OTSC made formal recommendations to the BPC on the final set of alternatives to be considered for the rulemaking and evaluated in this EIS. Alternatives that did not meet the WAC 197-11-786 definition of a reasonable alternative were eliminated from further consideration and are discussed in Section 2.9. These were concepts that did not achieve the rulemaking objectives as described in Section 2.1 or that would have a higher environmental cost or increased level of environmental degradation (WAC 197-11-786).

The BPC identified four alternatives which Ecology evaluated in this EIS: Alternative A (No Action), Alternative B (Addition of Functional and Operational Requirements), Alternative C (Expansion of Tug Escort Requirements), and Alternative D (Removal of Tug Escort Requirements). They differ in their geographic scope and whether functional and operational requirements (FORs) are included. Figure 5 below compares the four alternatives based on geography and FORs.

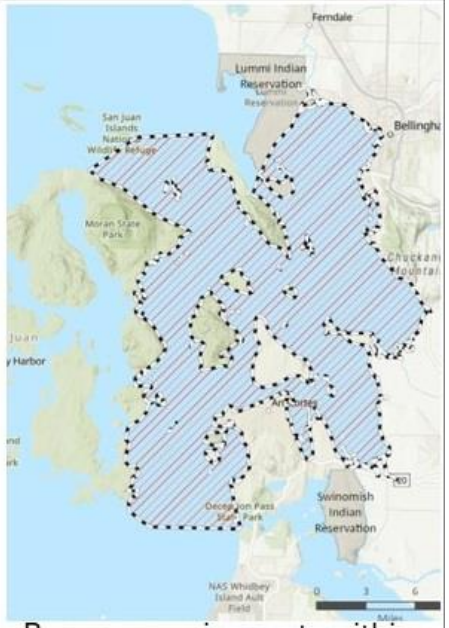
Alternative A (No Action)	Alternative B (Add FORs)	Alternative C (Expansion)	Alternative D (Removal)
			
No change to geographic scope of requirements	No change to geographic scope of requirements	Expand current requirements north to Patos Island	Remove requirements within current boundary
No change to existing functional and operational requirements (FORs)	Add pre-escort conference, minimum horsepower, and propulsion requirements	Add pre-escort conference, minimum horsepower, and propulsion requirements	N/A – tug escort requirements for target vessels are removed

Figure 5. Comparison between the four rulemaking alternatives showing geography (top row) and the inclusion or not of functional and operational requirements (FORs, bottom row).

2.5 Alternative A: No Action

Alternative A is the "No Action Alternative." It represents the most likely future conditions if the proposed rule amendments are not adopted. A no action alternative is a required alternative under WAC 197-11-440. Alternative A does not change the existing tug escort requirements for target vessels in the area established by the statute, RCW 88.16.190(2)(a)(ii), and makes no other changes.

Geography: Rosario Strait and waters east (includes the BPC Zones of Rosario Strait, Bellingham Channel and Waters East, and Guemes Channel and Saddlebags – see Figure 4).

Functional and Operational Requirements: No change from the requirements already listed in RCW 88.16.190. This includes:

- **Minimum horsepower (hp):** Tug escorts must have a minimum of 2,000 hp. The RCW 88.16.190 states that the aggregate shaft horsepower must be equivalent to at least five percent of the deadweight tons of a 40,000 DWT oil tanker.

2.6 Alternative B: Addition of Functional and Operational Requirements (FORs)

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries of the 2019 legislative change or the vessels to which it applies.

Geography: Rosario Strait and waters east (includes the BPC Zones of Rosario Strait, Bellingham Channel and Waters East, and Guemes Channel and Saddlebags – see Figure 4).

Functional and Operational Requirements:

- **Minimum horsepower (hp):** Escort tugs must meet minimum horsepower requirements based on the DWT of the escorted vessel:
  - Escort tugs must have 2,000 hp for vessels greater than 5,000 and less than 18,000 DWT.
  - Escort tugs must have 3,000 hp for vessels equal to or greater than 18,000 DWT.
- **Propulsion specifications:** To ensure sufficient propulsion, escort tugs must have a minimum of twin-screw propulsion.
- **Pre-escort conference:** Prior to beginning the escort, the escort tug and the target vessel (and pilot if present) need to coordinate and discuss safety measures and other standard requirements.

The benefits of the selected functional and operational requirements were reviewed in detail by the members of the OTSC. They were also evaluated for consistency with best achievable protection (BAP) in our cost-benefit analysis and least-burdensome alternatives analysis. The results of this analysis can be found in the Preliminary Regulatory Assessment. This evaluation confirmed that the FORs achieve BAP and strike an appropriate balance between achieving environmental objectives and minimizing compliance burdens (OTSC, 2025). More detail on the FORs is below.

2.6.1 Horsepower

Horsepower is the current measure of escort tug capability in RCW 88.16.190, which requires that oil tankers of 40,000 to 125,000 DWT be escorted by a tug or tugs that have an aggregate shaft horsepower equivalent to at least five percent of the deadweight tons of the escorted oil tanker. Horsepower was selected as a measure of tug capability in this rule due to its current use in RCW, its simplicity to measure, and its relatively static nature over the life of the escort vessel (OTSC, 2024b). The minimum horsepower requirement is intended to ensure that the tugs have sufficient power to intervene to effectively prevent a drift grounding.

Of the 18 tugs identified in the 2021 Vessel Traffic Trend Study (BPC & Ecology, 2021) as performing target vessel escort work, two are between 2,000 and 3,000 horsepower. Ecology reviewed historical AIS data and determined that the escort tugs between 2,000 and 3,000 were only escorting target vessels under 18,000 DWT. The horsepower requirement codifies existing industry practices and ensures that tugs have sufficient power to intervene to prevent a drift grounding (and potential subsequent spill). Because this requirement codifies current conditions, it is not expected to result in significant adverse environmental impacts beyond the impacts described for Alternative A.

2.6.2 Propulsion Specifications

The BPC voted to consider a minimum of twin-screw propulsion system as a requirement for escorts of target vessels, based on the recommendation from the OTSC (BPC, 2024b). A screw is the propeller on the escort tug that provides the thrust through the water (BC Shipping News, 2012). Tugs that have two propellers are called twin screw tugs. Twin screw propulsion systems have more maneuverability than single screw systems.

All of the 18 tugs identified in the 2021 Vessel Traffic Trend Study (BPC & Ecology, 2021) as performing target vessel escort work meet the minimum twin screw propulsion requirement. Because this requirement codifies current conditions, it is not expected to cause significant adverse environmental impacts beyond the impacts described for Alternative A.

2.6.3 Pre-escort Conference

The OTSC also recommended formalizing a requirement for a pre-escort conference between the tug, the escorted vessel, and the pilot, if one is onboard. A pre-escort conference ensures the tug and escorted vessel have a shared understanding of the key elements of the escort operation. The pre-escort conference would be recorded in the logbooks of the participating vessels. The OTSC strongly supported this requirement, emphasizing that it takes minimal time, plays a key role in setting expectations and ensuring consistency across escort operations, and maintains flexibility for professionals to determine specific procedures (OTSC, 2024c). The BPC voted to consider a pre-escort conference requirement based on the OTSC recommendation (BPC, 2024b). The proposed pre-escort conference includes a discussion of:

- Safety.
    - Safety of tug and tank vessel personnel; and
    - Safe working load of the deck fittings on the tank vessel.
- Navigation.

    - Anticipated route and destination;
    - Anticipated speeds during the transit;
    - Active tribal, commercial, and recreational fisheries;
    - Relevant local notice to mariners;
    - Location and approximate time of the escort beginning and end; and
    - Anticipated weather, tides, currents, sea-state, and traffic.
- Operations.
    - Operational status of each vessel and their equipment including any limitations such as speed;
    - Propulsion type and maximum direct bollard pull of the tug;
    - Primary and secondary means of communication (e.g., VHF radio);
    - Availability of appropriate crew members and their roles when responding to an emergency;
    - Relative position, direction of travel, and tethering locations of the tug(s) during the transit;
    - Method of connection of the tug to the tank vessel in an emergency or if tethering (e.g., tug's line, pennant, messenger line, etc.);
    - Whether any training or escort exercise will be performed during the transit; and
    - Any other items to ensure that in the event of a failure or emergency the tank vessel can be kept under control and within the limits of the available channel.

The pre-escort conference would occur while the tug and target vessel are underway. It does not increase or change the distribution of underway time. It is not expected to cause significant adverse environmental impacts beyond the impacts described for Alternative A.

2.7 Alternative C: Expansion of Tug Escort Requirements

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. The expansion area covers approximately 28.9 square miles and is approximately seven miles long end-to-end following the vessel traffic lane. Alternative C includes the FORs outlined in Alternative B.

Geography: The expansion area includes the Strait of Georgia South Zone and a small portion of the Strait of Georgia Zone (see Figure 4). Tug escorts would be required for target vessels in Rosario Strait and connected waters and the expansion area, as bounded by the following lines:

- A line at the northern boundary of the escort area:
    - From Point Migley (48° 44.907' N, 122° 42.912’ W) to
    - Northern entrance to Rosario Strait (48° 46.400’ N, 122° 47.500’ W) to
    - Alden Bank Buoy B (48° 47.063' N, 122° 48.970’ W) to
    - Alden Bank Buoy A (48° 50.390' N, 122° 52.229’ W) to
    - Patos Island Light (48° 47.340' N, 122° 58.282’ W);
- A line from Patos Island to Sucia Island:
    - From Toe Point (48° 47.111' N, 122° 56.452' W) to
    - Lawson Bluff (48° 46.148' N, 122° 54.950' W);
- A line from Sucia Island to Matia Island):

    - From NE tip of Sucia Island (48° 45.989' N, 122° 53.261' W) to
    - North shore of Matia Island (48° 44.973' N, 122° 50.523' W);
- A line from Matia Island to Orcas Island:
    - From E tip of Matia Island (48° 44.741' N, 122° 49.586' W) to
    - Puffin Island Shoal Light (48° 44.604' N, 122° 49.007’ W) to
    - Point Thompson (48° 42.773’ N, 122° 52.745’ W);
- A line crossing Obstruction Pass:
    - From Orcas Island (48° 36.399' N, 122° 48.803' W) to
    - Obstruction Island (48° 36.051' N, 122° 48.803' W);
- A line crossing Peavine Pass:
    - From Obstruction Island (48° 35.487' N, 122° 48.687' W) to
    - Blakely Island near (48° 35.308' N, 122° 48.674' W);
- A line crossing Thatcher Pass:
    - From Blakely Island (48° 31.880' N, 48° 31.880' N) to
    - Decatur Island (48° 31.431' N, 122° 48.552' W);
- A line crossing Lopez Pass:
    - From Lopez Pass Light 2 (48° 28.867' N, 122° 49.092' W) to
    - Lopez Island (48° 28.705' N, 122° 49.178' W);
- A line at the southern boundary of the escort area:
    - From Point Colville (48° 25.306' N, 122° 48.795' W) to
    - Davidson Rock Light (48° 24.797' N, 122° 48.720’ W) to
    - Southern entrance to Rosario Strait (48° 24.000' N, 122° 47.151’ W) to
    - Whidbey Island near West Point (48° 24.000' N, 122° 39.900’ W) to
    - Sares Head (48° 25.540' N, 122° 40.478' W);
- A line across the Swinomish Channel
    - At the Duane Berentson Highway Bridge (48° 27.267' N, 122° 30.851' W), and
- A line across Hale Passage
    - From Portage Point (48° 42.923' N, 122° 39.112' W) to
    - Echo Point (48° 41.807' N, 122° 39.578' W).

The OTSC selected Alternative C for evaluation because simulated drift groundings in the expansion area were prevented at a high rate with the addition of tug escorts (high escort efficacy). The OTSC pilot representatives also agreed that the characteristics of this area make it a good candidate for tug escort requirements (OTSC, 2024a).

Functional and Operational Requirements: The same as those listed under Alternative B (minimum horsepower, propulsion specifications, pre-escort conference).

2.8 Alternative D: Removal of Tug Escort Requirements

Alternative D removes the existing tug escort requirements for target vessels as described in Alternative A. The BPC voted to include this alternative to capture the impacts of the 2020 requirements for tug escort requirements for target vessels. It provides a pre-2020 alternative to compare other alternatives against (BPC, 2024a).

Alternative D removes the requirement for tug escorts for target vessels. However, it does not affect the pre-existing requirements for tank vessels over 40,000 DWT to be escorted east of the line extending between Discovery Island light south to New Dungeness light. Alternative D also does not affect the need for assist services for larger vessels as they come in to port. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area, but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have impacts to the environment, they would be unrelated to this rulemaking and are not considered in this EIS.

Geography: None. Target vessels would no longer require an escort tug.

Functional and Operational Requirements: None. Target vessels would no longer require an escort tug.

2.9 Alternatives Considered and Eliminated

The following alternatives were considered, but for the reasons detailed below did not merit further consideration and are not evaluated further in this EIS. The alternatives considered are split into two categories: geographic zones and functional and operational requirements.

2.9.1 Geographic Zones Considered and Eliminated

- **All BPC Zones:** This alternative would require tug escorts for target vessels across all BPC Zones. It represented the full scope of potential rulemaking and offered the highest oil spill risk reduction. However, this proposed alternative was eliminated because it likely had the highest potential for conflicts with treaty fishing, the largest increase in underwater noise impacts to SRKWs, and added the most vessel traffic. The OTSC also expressed concerns about applying the same requirements to Puget Sound's diverse geography. Ecology's risk model results showed varied benefits across zones, making a blanket requirement inefficient (OTSC, 2024b).
- **Remove 2020 Escort Requirements in Bellingham Channel and Waters East Zone:** This alternative would remove tug escort requirements just in the Bellingham Channel Zone, based on model results showing a lower benefit in that zone. The Pilots representative on the OTSC opposed removing the zones due to high currents and dangerous terrain in the Bellingham Channel Zone. The BPC agreed, concluding that removing the requirement would raise navigational risks and potential oil spill risk, contradicting the rulemaking's objectives (BPC, 2024a; OTSC, 2024b).
- **Maintain Geography, Remove Requirements for Barges and ATBs:** This alternative would keep the same geography as the 2020 requirements, but remove the requirement for ATBs and barges, while maintaining it for tankers. Ecology's modeling showed that the highest oil spill risk reduction benefit came from tankers. This alternative was eliminated because oil tankers represent only a small fraction of overall target vessels (OTSC, 2024a).
- **Expand 2020 Escort Requirements to Haro Strait and Boundary Pass Zone:** This alternative would add tug escort requirements to Haro Strait and Boundary Pass Zone. Ecology's risk model identified the highest potential for risk reduction in terms of oil

volume at risk and escort efficacy in this zone. OTSC members highlighted the environmentally sensitive nature of this zone and risky areas for vessel traffic. However, feasibility concerns were raised about transboundary issues that would require the USCG to work with Canada and agree on an approach. The BPC eliminated this alternative due to implementation challenges, navigational safety concerns, and concerns that target vessel operators may switch routes to avoid the additional cost of tug escort requirements (BPC, 2024a; OTSC, 2024b). The BPC wants to revisit a Haro Strait and Boundary Pass alternative during the next rule update.

- **Expand 2020 Escort Requirements to Haro Strait and Boundary Pass and the Expansion Area:** We also evaluated an alternative that included the Haro Strait and Boundary Pass Zone as well as the expansion zone outlined in Alternative C. The same concerns about transboundary feasibility were raised and it was also eliminated.

2.9.2 Functional and Operational Requirements Considered and Eliminated

- **Minimum of 3,000 Horsepower:** The OTSC considered a minimum 3,000 hp for tugs escorting all target vessels. However, this would have been expensive to implement and the more nuanced approach outlined in Alternative B meets the Best Achievable Protection goal of the rulemaking (OTSC, 2025).
- **Bollard Pull and Bollard Pull Testing:** Bollard pull is a measure of the pulling power of a tug that is often used as a proxy for a tug's ability to control a ship. Bollard pull testing is the process of verifying that the tug can produce the bollard pull it is expected to. This requirement was eliminated due to the variability in tug design, implementation challenges, and the existing industry standards established by the Harbor Safety Committee's Standard of Care (SOC) (OTSC, 2024c).
- **Escort and Auxiliary Equipment**: Escort equipment refers to enhanced equipment for escorting, such as specialized winch systems. Auxiliary equipment means other equipment such as firefighting equipment that tugs could also carry. Enhanced escort equipment was found to be expensive and unnecessary for regional conditions, while firefighting equipment is more suitable for tugs doing other types of work. Escort tugs may not have the space or crew training for firefighting equipment. Space constraints and crew training requirements also make implementation impractical. The OTSC considered requiring specific onboard equipment, such as high-performance winches or emergency towlines, but determined that most tugs operating in the region already adhere to industry best practices, making this redundant (OTSC, 2023).
- **Certification:** There are a variety of industry certifications, such as an escort notation from a classification society. This requirement was deemed too costly, and the number of escort-certified vessels in the region is limited (OTSC, 2024c).
- **Tethering:** A requirement for escort tugs to remain tethered (connected to the escorted vessel by a tow line) at all times was considered to ensure immediate response capability. The OTSC eliminated this idea due to a desire to leave the decision on whether to tether at the discretion of maritime professionals, and had concerns about the

operational feasibility of a blanket requirement particularly in varying weather conditions and waterway constraints (OTSC, 2024c).

- **Deck Fittings:** Deck fitting requirements refer to the locations where the tow line between the tug and the escorted vessel attach. Deck fittings were not pursued as a tug escort requirement due to challenges in assessment, compliance, and enforcement. Their strength varies by vessel age, requiring extensive inspections. Additionally, setting minimum standards would impose significant engineering burdens.
- **Escort Provider Training and Drills:** The OTSC did not pursue escort provider training and drills due to challenges with standardization, feasibility, and cost, as well as industry variability. Pilots and escort providers conduct impromptu and simulator-based training, but setting enforceable standards would be complex and costly. Additionally, some escorted vessels operate under charter agreements, limiting the ability to conduct pre-planned drills. The OTSC determined that voluntary training efforts and industry best practices were a more practical approach (OTSC, 2024c).

3. Required Permits and Approvals

The proposal being evaluated in this non-project EIS is a state rulemaking to change tug escort requirements throughout the Puget Sound and achieve "best achievable protection" against catastrophic oil spills. Escort tug and target vessel operators affected by this rulemaking are required to obtain and comply with various permits, licenses, and approvals, some of which are discussed throughout Section 4 (Affected Environment, Potential Significant Impacts, and Mitigation Measures) of this EIS. However, there are no permits, licenses, or approvals applicable to the rulemaking evaluated in this EIS.

4. Affected Environment, Potential Significant Impacts, and Mitigation Measures

4.1 Transportation: Vessel Traffic

This section describes the existing conditions and potential impacts to vessel traffic in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered changes in escort tug underway time under each alternative and the potential impacts for congestion and navigational safety, dynamics at rendezvous areas, and route switching.

Refer to the Transportation: Vessel Traffic Discipline Report (Appendix B) for more information on the methodology, additional details regarding existing vessel traffic in the EIS Study Area, the full analysis of impacts to vessel traffic under each alternative, and a more comprehensive list of relevant mitigation measures.

4.1.1 Methodology

Ecology reviewed previous vessel traffic risk assessments, technical reports, data, and input from the OTSC, Tribes, and stakeholders to assess vessel traffic and vessel traffic considerations within the EIS Study Area. We then used Ecology's risk model to estimate changes in escort tug underway time under the four alternatives.

Describe Current Vessel Traffic: For the vessel traffic analysis, we provide a brief descriptive overview of current vessel traffic to establish existing conditions in the affected environment. Existing conditions include the implementation of the 2020 amendments to RCW 88.16.190, which expanded requirements for tug escorts in Rosario Strait and waters east (Alternative A). The overview of current vessel traffic includes a review of previous Ecology studies and data, focusing primarily on trends in target vessel and escort tug traffic.

To establish current vessel traffic in the EIS Study Area, we used historical Automatic Identification System (AIS) data from 2023.[8] Historical AIS data gives us insight into real-world vessel movement after the 2020 requirements were implemented. Ecology selected 2023 because it is the most recent complete year of vessel traffic data. The primary metric that historical AIS data provides is underway time for various categories of vessel types.

Simulate Traffic Under Alternatives: To evaluate escort tug underway time across alternatives in a consistent manner, we used a simulated dataset from the Ecology risk model. Unlike AIS data, simulated data allows for modeling of potential future scenarios, including a standardized comparison of Alternative C, for which there is no historical AIS data. For the simulated dataset analysis, we selected the simulation run with the highest amounts of escort tug underway time to ensure that the EIS is not undercounting potential impacts. See the Transportation: Vessel

[8] AIS is an automatic tracking system used on ships and by vessel traffic services for identifying and locating vessels by electronically exchanging data with other nearby ships, AIS base stations, and satellites. Most commercial vessels are required to carry AIS under United States Coast Guard (USCG), IMO, and Transport Canada regulations. Towed barges are not required to carry AIS as they are not self-propelled, although the tugs that move them are required to have AIS.

Traffic Discipline Report (Appendix B) for more details on the risk model methodology, and a comparison between the 2023 historical AIS data and the simulated baseline dataset.

The conditions of Alternatives C and D were modeled from the same baseline simulated data to allow for an equivalent comparison to Alternative A. The following values were calculated for each alternative:

- Number of escort jobs per simulated year.
- Number of escort tug underway minutes actively escorting a target vessel per simulated year.
- Number of escort tug underway minutes commuting to or from an escort job per simulated year.
- Distribution of escort tug underway minutes by BPC Zone for each alternative.

We qualitatively assessed potential navigational safety and congestion impacts, both direct and indirect (e.g., route switching). The OTSC and subject matter experts (SMEs) were asked to comment on concerns regarding navigational safety and interaction with other vessel types. Their comments inform the vessel traffic analysis.

Lastly, Ecology assessed whether those conditions would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 3. Significance thresholds for vessel traffic impacts.

Indicator	Significance Thresholds
Change in escort tug underway time	• Rule change would result in more than a moderate increase in escort tug underway time relative to current vessel traffic under the Alternative A at the level of the EIS Study Area or within any individual zone.
Increase in navigational safety issues and congestion	• Rule change would result in more than a moderate increase in negative outcomes for navigational safety and congestion of the waterways. • SMEs and experts have concerns with the increase in congestion and navigational safety resulting from this change.

4.1.2 Affected Environment

The transboundary waters of the Salish Sea are a large and diverse body of water with a wide variety of vessel traffic. The Strait of Juan de Fuca is the entrance to several large commercial ports on both sides of the US-Canadian border, including the Ports of Seattle and Tacoma in Washington, and Vancouver in British Columbia, which are three of the largest ports on the West Coast. There are several refineries in the region and oil travels by rail, pipeline, and vessel in and out of the area. Vessels transporting oil, as well as the vessels like escort tugs that support their safe passage, are part of the region's existing vessel traffic profile. There is extensive Tribal treaty fishing and First Nation fishing in the region at both commercial and subsistence scales, in addition to non-tribal commercial and recreational fishing. Public and

private ferry systems carry daily commuters and vacationers alike to several locations on a frequent basis. Recreational vessels also contribute to overall vessel traffic.

The Salish Sea is internationally regarded for its ecological, economic, and cultural significance. There has not been a major oil spill in the Salish Sea from collisions or groundings for almost 30 years (Van Dorp & Merrick, 2016).[9] This safety record is a result of a comprehensive safety regime that includes international, federal, and state standards and voluntary measures that support navigational safety and oil spill prevention. The safety regime is sustained through ongoing cooperation among state and federal agencies, Tribes, industry, and environmental and community representatives. A detailed summary of the regulatory and cooperative elements of the safety regime is included in the Transportation: Vessel Traffic Discipline Report (Appendix B). Several vessel traffic risk assessments have been conducted within the EIS Study Area (Badger, 2014; Ecology, 2016a; U.S. Coast Guard, 2017; Van Dorp & Merrick, 2016). These risk assessments identified several higher-risk areas for vessel traffic, including some in the rulemaking area.

4.1.2.1 Vessel Traffic Trends – Target Vessels and Escort Tugs

Ecology collects and publishes data on commercial vessel traffic in Washington waters in an annual report called the Vessel Entries and Transits for Washington Waters (VEAT) Report (Ecology, 2023b). The VEAT data provides an overview of commercial vessel traffic in the region.

Over the past 10 years, the VEAT found that the number of individual oil tankers entering via the Strait of Juan de Fuca, Haro Strait, and Rosario Strait has remained relatively stable, with some inter-annual variation. The Trans Mountain Expansion Project became operational in May of 2024, which could increase the number of tank ship transits by up to 348 per year (see Section 5 Cumulative Impacts for more details on this and other projects). Over the past 10 years, ATB use increased significantly, particularly within Puget Sound, while entering transits have remained relatively stable. The total number of ATB transits increased by 35 percent since 2013 and the number of individual ATBs has more than doubled during the same period (Ecology, 2024e). Towed oil barge transits both into and within the Puget Sound have remained relatively stable since 2013, exhibiting a slight declining trend over the last few years. In 2023, the most recent complete year of VEAT data, there were 586 entering transits of oil tankers, 1,006 ATB transits into or within the Puget Sound, and approximately 2,708 barge transits into and within the Puget Sound (Ecology, 2023b).

In 2021, Ecology assessed the impact of tug escort requirements for target vessels on vessel traffic (BPC & Ecology, 2021). We found that the new escort requirement did not appear to cause tankers 5,000 to 40,000 DWT to switch routes from Rosario Strait to Haro Strait. Five of the 79 transits by ATBs might have switched routes in order to travel through Haro Strait in the year after the requirements went into effect. Our analysis suggests that route switching in response to the new requirements happened most commonly with barges (BPC & Ecology,

[9] The 2015 VTRA is referring to the barge grounding on Clements Reef in 1994, which resulted in an estimated 29,936 gallons spilled. The 2015 VTRA defines a major spill as over 10,000 gallons.

2021). We found that 11 of the 16 total barge transits through Haro Strait in the year after the requirements were implemented may have been in response to the new requirements.

The 2021 assessment also included a review of escort tugs. Ecology found that 18 individual tugs were observed providing escort activities in the first year after the new requirements went into effect. The report found that tug transits in Rosario Strait and waters east increased by 49.56 percent in the year after the new requirements were implemented, going from 6,062 transits in Year 1 to 9,066 transits in Year 2.

4.1.2.2 Historical AIS Traffic in the EIS Study Area

We used AIS data from 2023 to provide a general description of vessel traffic in the EIS Study Area.[10] Because this AIS data is from 2023, it is consistent with the conditions of Alternative A and includes the 2020 tug escort requirements for target vessels. In 2023, there were 62,473,688 minutes of underway time from vessels that carry AIS in the EIS Study Area (Ecology, 2024b). Recreational vessels and car ferries together contribute to over 60 percent of all AIS traffic underway time in this region. Escort and assist tugs make up a small portion of all AIS traffic; approximately 3.89 percent of total underway minutes in 2023.[11] This includes tugs escorting target vessels, escorting oil tankers over 40,000 DWT, assisting vessels, and other underway time of those tugs.

In 2023, there were 1,233,517 minutes of underway time for target vessels, with the majority of that coming from ATBs and barges (see Table 4). This is approximately 1.97 percent of all AIS underway time in 2023.

Table 4. Historical underway minutes by target vessel type.

Target Vessel Type	Historical AIS Underway Minutes
Oil Tanker – Chemical	41,215
Oil Tanker – Crude	867
Oil Tanker – Product	13,715
ATB	657,606
Towed Oil Barge	520,114
Total	**1,233,517**

AIS data shows that vessel traffic has some seasonal variation within the EIS Study Area. Most of that variation comes from recreational traffic and is unaffected by this rulemaking.

[10] Up to 75 percent of all recreational and fishing vessels do not transmit AIS. However, these vessels are not the focus of the rulemaking and have different patterns and distribution compared to large commercial vessels. For the purpose of this analysis, we compare escort tug underway time to historical AIS traffic.

[11] Escort/assist tugs are a single category in our AIS data. These are tugs that generally do not operate with an assigned tow. Instead, they assist and/or escort other vessels. These tugs typically perform both assist and escort work. For the purposes of this assessment, escort tugs include tugs that are purpose built for escorting as well as multi-purpose tugs that do tug escort work and meet the existing requirements for that work.

4.1.3 Findings for Alternative A (No Action)

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

4.1.3.1 Impacts from Implementation

Simulation Results and Discussion: Under the conditions of Alternative A, our modeling showed an estimated 610,107 minutes of escort tug underway time per simulated year associated with target vessels. This is approximately 0.96 percent of total underway time for all AIS traffic (2023 AIS data) and includes:

- Active Escort Time: 224,418 underway minutes per simulated year.
- Commute Time: 385,689 underway minutes per simulated year.

Active escorting represents 36.78 percent of the escort tug underway time associated with target vessel escorts, with commutes making up the remaining 63.22 percent. Under Alternative A, there are a total of 1,537 individual escort jobs[12] of target vessels per simulated year. This is approximately 4.21 escort jobs per day or approximately 128 escort jobs per month.

Figure 6 shows the distribution of simulated escort tug traffic under Alternative A. The underway minutes shown in the map are influenced by the number of escort tugs passing through each grid cell as well as the amount of time they spend in the grid cell. The highest concentration of escort tug traffic is within the Alternative A boundary. Escort tug underway time is further concentrated around major refineries in Anacortes, which has the highest concentration of escort tug traffic for target vessels in the EIS Study Area. This is consistent with historical AIS distribution of target vessels, which typically carry oil to, from, and between refineries.

[12] Each escort job includes a commute to the rendezvous point with the target vessel and a return commute from the rendezvous point at the end of the escort job.

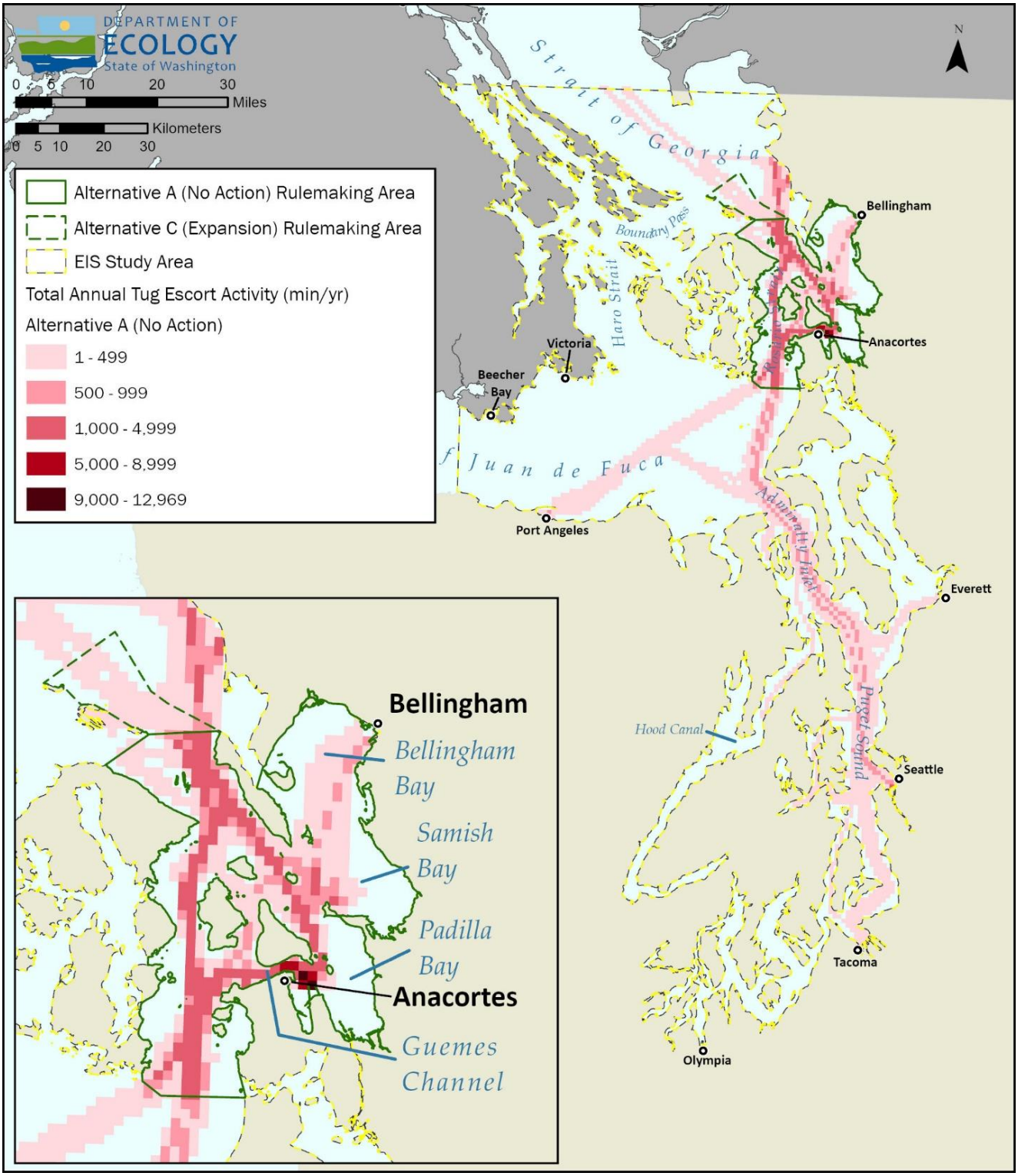


Figure 6. Simulated escort tug activity under Alternative A and B

A breakdown of escort tug underway time for Alternative A is included in Table 5. Only those zones with a modeled change in underway time in the different alternatives are included in this table (see Appendix B Transportation: Vessel Traffic Discipline Report for all other zones). Escort tug underway time associated with target vessels is displayed in three ways: in underway hours per day, as a percentage of the total historical AIS traffic within that zone, and as a percentage of the total escort/assist tug traffic within the individual zone. Showing the target vessel escort tug activity as a proportion of total escort/assist tug traffic shows where the implementation of the 2020 requirements has had the biggest impact on the amount of tug underway time spent in any individual zone.

Under Alternative A, escort tug underway time associated with target vessels accounts for 18.67 percent of all escort and assist tug underway time across the EIS Study Area. The zones with the highest amount of escort tug underway time from this proposed rulemaking are the zones where tug escorts for target vessels are required: Rosario Strait, Bellingham Channel, and Guemes Channel, and Saddlebags Zones. The escort tug underway time occurring in the other zones is due to escort tugs passing through on their way to or from escorting target vessels. Rosario Strait is the only zone where escort tug underway time associated with target vessels makes up over 50 percent of total escort/assist tug underway time.

As described in Table 5, escort tug underway time associated with target vessels makes up less than one percent of total AIS vessel traffic. However, in individual zones, target vessel escort tugs can make up a larger portion of overall AIS traffic. Rosario Strait Zone sees the highest proportion of target vessel escort tug underway time relative to overall AIS traffic at 9.49 percent. In the other zones, target vessel escort tug underway time makes up less than 3.5 percent of all AIS vessel underway time. Despite the escort tug underway time in individual zones, maritime experts in the OTSC did not identify concerns around navigational safety and/or congestion under the Alternative A conditions.

Table 5. Modeled escort tug underway time by zone and for the EIS Study Area in Alternative A, as compared to 2023 historical AIS traffic underway time and all escort/assist tug underway time.

Zone	Target Vessel Escort Tugs: Hours/Day of Underway Time	Target Vessel Escort Tug Activity: % of Historical AIS Vessel Traffic	Target Vessel Escort Tug Activity: % of all Escort/Assist Tug Activity
Rosario Strait	9.38	9.49%	63.08%
Bellingham Channel	3.46	2.53%	45.90%
Guemes Channel and Saddlebags	4.81	3.35%	38.86%
Eastern Strait of Juan de Fuca	1.94	2.15%	26.25%
San Juan Islands	0.02	0.01%	17.81%
Strait of Georgia South	0.02	0.24%	10.59%
Strait of Georgia	1.88	1.88%	10.50%
Puget Sound	3.08	0.42%	5.53%
EIS Study Area (all zones)	**27.86**	**0.96%**	**18.76%**

Other Potential Impacts to Vessel Activity: At the start of an escort job, escort tugs meet their target vessel at the boundary of the area where escorts are required. The tug needs to be in place at these rendezvous points before the target vessel arrives. This can mean that escort tugs spend time waiting at these rendezvous points prior to beginning the escorted transit. A higher concentration of escort tugs in these rendezvous point areas is also evident in the heat map for Alternative A (see Figure 6). Several Tribes have treaty-reserved fishing rights near the northern boundary of the Rosario Strait Zone, where the presence of escort tugs waiting at rendezvous points may result in negative interactions with treaty fishing vessels (see Section 4.10 Tribal Resources and Appendix K for more information).

A potential indirect impact of the tug escort rule is that target vessels could switch to the Haro Strait/Boundary Pass route, rather than using Rosario Strait, to avoid the tug escort requirements. This would increase traffic through Haro Strait and Boundary Pass, which has also been identified as a high-risk area for vessel traffic. It would also mean that target vessels carrying oil would be moving through that area without a tug escort. Our previous analysis showed that this is most likely to occur with towed oil barges, although the total number of affected transits is small for all target vessel types (BPC & Ecology, 2021).

4.1.3.2 Mitigation Measures

Escort tugs are required to adhere to all relevant federal traffic safety measures, including but not limited to use of AIS; compliance with USCG regulations; navigation rules (COLREGs); participation in vessel traffic services (VTS); traffic separation schemes and VTS Special Areas; pilotage; and regular vessel inspections. Although any vessel traffic incident could have high consequences, these measures help ensure that the risk remains low in the EIS Study Area.

In addition to these requirements, Ecology recommends that escort tugs continue to follow the SOCs outlined by the PSHSC. We recommend that the PSHSC extend the applicable portions of the Tanker Escort SOC to the escorting of target vessels (PSHSC, 2023).

4.1.3.3 Significant and Unavoidable Adverse Impacts

Under Alternative A, escort tug underway time associated with the proposed rule represents less than 1 percent of total AIS traffic in the EIS Study Area. This was calculated based on the highest-traffic scenario simulation, so this figure is a higher-end estimate of the contribution of escort tug traffic associated with target vessels in the EIS Study Area. Escort tug underway time associated with target vessels makes up a small portion of total historical AIS traffic in each individual zone and overall.

We estimate that escort tugs would be actively escorting target vessels 37 percent of the time, during which their potential impact to vessel traffic is dwarfed by that of the target vessel. Our analysis also shows that escort tugs are primarily transiting within the existing shipping lanes, which are areas specifically designated and managed to support vessel traffic.

Importantly, escort tugs have different operating characteristics and spill potential than deep draft vessels. Deep draft vessels are much larger, carry more fuel (see Appendix C Environmental Health: Releases Discipline Report for more information), are less maneuverable, have longer stopping distances, and are more affected by wind and current.

Although some target vessels may use the Haro Strait and Boundary Pass route rather than the Rosario Strait route in response to the requirements, the total number of these transits is relatively small. OTSC experts did not express concerns about navigational safety and congestion associated with Alternative A. Alternative A would not have significant or unavoidable adverse environmental impacts on vessel traffic.

4.1.4 Findings for Alternative B (Addition of FORs)

4.1.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Alternative B would result in the same impacts as under Alternative A since it would not affect traffic levels. Alternative B could also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of a catastrophic oil spill.

4.1.4.2 Mitigation Measures

Escort tugs under Alternative B would be required to adhere to all federal vessel traffic requirements. Ecology recommends they continue to follow the applicable SOCs identified for Alternative A in Section 4.1.3.2 (Mitigation Measures). Ecology also recommends that the PSHSC extend the applicable portions of the Tanker Escort SOC to the escorting of target vessels.

4.1.4.3 Significant and Unavoidable Adverse Impacts

As stated in Section 4.1.4.1 (Impacts), Alternative B would not change vessel traffic impacts relative to Alternative A. Impacts would be similar to those described in Section 4.1.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A. Alternative B would not have significant or unavoidable adverse environmental impacts on vessel traffic.

4.1.5 Findings for Alternative C (Expansion)

4.1.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

The expansion area covers approximately 28.9 square miles and is approximately 7 miles long end-to-end following the vessel traffic lanes. It includes a portion of the formally designated traffic lanes (see Figure 7). The expansion area includes Alden Bank and Clements Reef, which have been identified as higher risk areas for vessel traffic. Clements Reef is in a high-current area and was the site of a tank barge grounding resulting in an oil spill in 1994.

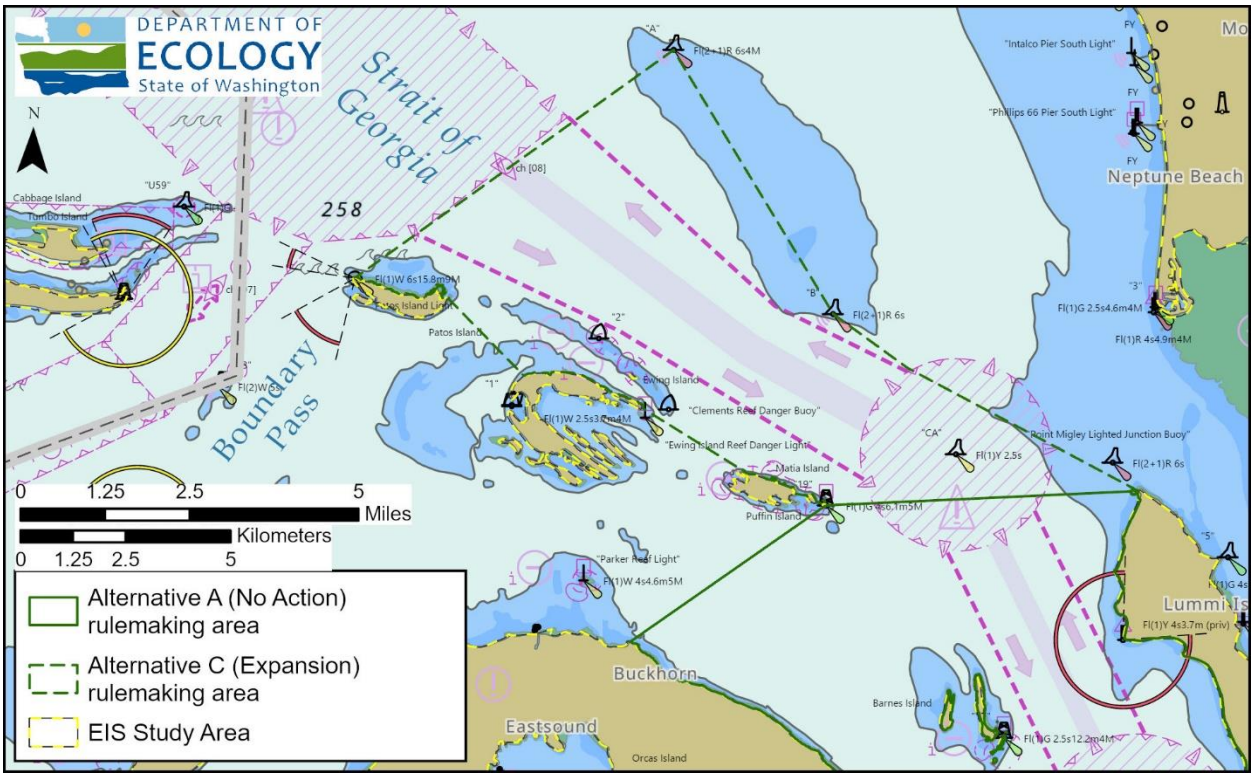


Figure 7. Nautical chart showing the traffic lanes in the expansion area with the expansion area boundary overlaid.

Simulation Results and Discussion: Under conditions of Alternative C, our modeling showed an estimated 624,784 minutes of escort tug underway time per simulated year associated with target vessels. This is an increase of 14,677 underway minutes per simulated year over Alternative A, or a 2.41 percent increase in underway time. The number of escort jobs in Alternative C is the same as the number of escort jobs in Alternative A.[13] Escort tug underway time under Alternative C represents approximately 0.99 percent of total underway time for all AIS traffic (2023 AIS data). This includes:

- Active Escort Time: 245,305 underway minutes per simulated year. This is a 9.3 percent increase in active escorting underway time over Alternative A.
- Commute Time: 379,479 underway minutes per simulated year. This is a 1.61 percent reduction in overall underway minutes of commute time over Alternative A.

The time spent actively escorting represents 39.26 percent of the escort tug traffic associated with target vessel escorts, with commutes making up the remaining 60.74 percent. Although total underway time goes up in Alternative C, both the time spent commuting and the proportion of time spent commuting is reduced. This suggests that Alternative C makes more efficient use of escort underway time than Alternative A.

[13] Escort jobs are dependent upon target vessel movement and the expansion area is adjacent to the boundaries of the current requirements. While some of the escort jobs may be longer, changing commuting and actively escorting underway time, the number of transits is unchanged.

The net increase in tug escort tug underway time would occur primarily within and near the expansion area, while escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figures 8 and 9). There is an additional concentration of escort tug underway time between the Ferndale refinery area and the northern boundary of the proposed expansion area indicating the potential increase in commutes to and from those locations at the beginning or conclusion of an escort job. We also see a slight reduction in commute activity within Bellingham Bay and between Anacortes and Cherry Point via Hale's Passage in Alternative C.

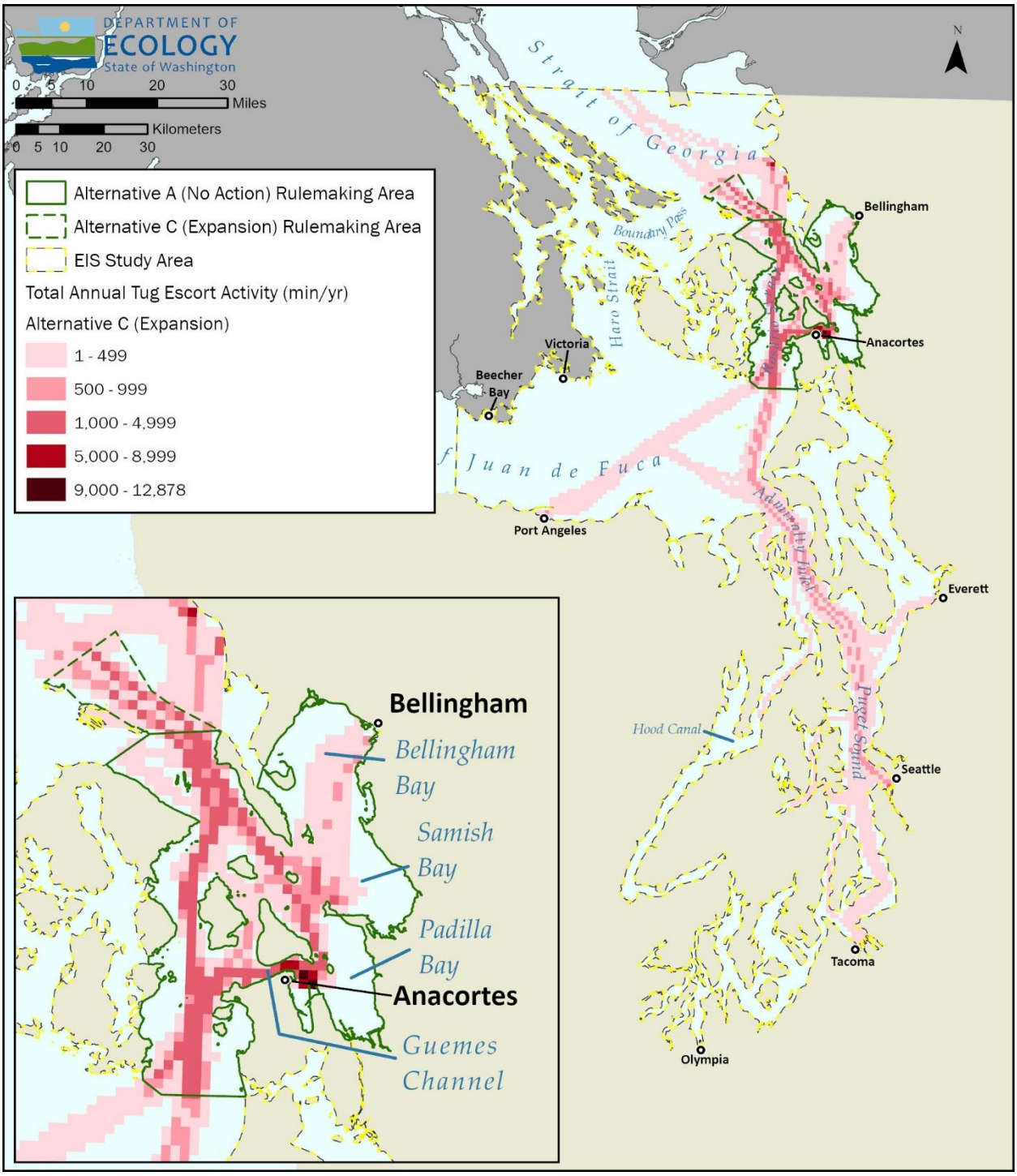


Figure 8. Simulated escort tug activity under Alternative C.

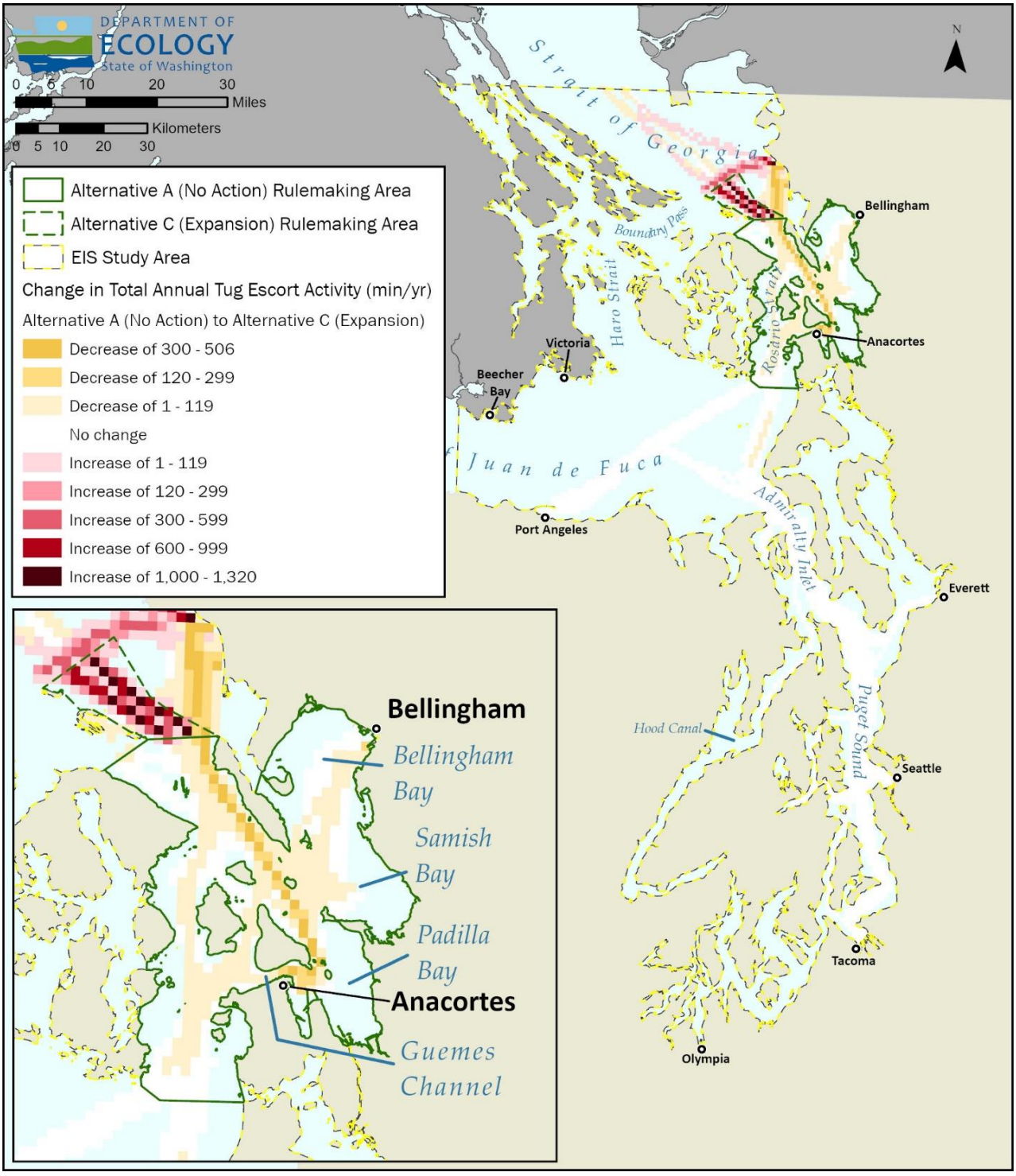


Figure 9. Simulated change in escort tug activity between Alternative A and Alternative C. An additional accessible version of this map is available in Appendix M.

A breakdown of escort tug underway time for Alternative C is included in Table 6 below by underway hours per day. Only those zones with a modeled change in underway time in the different alternatives are included in this table (see Appendix B for all other zones). Escort tug underway time associated with target vessels is displayed in three ways: in underway hours per day, as a percentage of the total historical AIS traffic within that zone, and as a percentage of the total escort/assist tug traffic within the individual zone. Showing the escort tug activity associated with target vessels as a proportion of total escort/assist tug traffic shows where the implementation of the 2020 requirements has had the biggest impact on the amount of total tug underway time spent in any individual zone.

The zones with the highest amount of target vessel escort underway time are the Rosario Strait, Bellingham Channel, and Guemes Channel and Saddlebags Zones. This is unchanged from Alternative A. Under Alternative C, there are increases in the Strait of Georgia South and Strait of Georgia Zones, consistent with the location of the expanded requirements.

The change in underway time for escort tugs associated with target vessels in the Strait of Georgia South Zone is a 7,047 percent increase over Alternative A (from 340 underway minutes per year in Alternative A to 24,301 underway minutes per year in Alternative C). This is roughly equivalent to going from just under one minute of escort tug underway time per day to just over one hour of escort tug underway time per day. Ecology estimates that it would take an escort tug approximately an hour to transit through the expansion area in the shipping lanes. This means that in the Strait of Georgia South Zone, there was one tug transit roughly every other month under Alternative A and approximately one transit per day under Alternative C.

The percentage increase is so large because there is very little escort tug traffic in this zone under current conditions. However, there are regular target vessel transits in this zone that would require a tug escort under Alternative C. 2023 AIS data shows 9,026 minutes of underway time from transits of ATBs and towed oil barges through the Strait of Georgia South Zone. All of these transits, a total of 9,026 minutes, would require a tug escort under Alternative C, which would be approximately 37 percent of the modeled escort tug underway time for the Strait of Georgia South Zone (24,301 minutes). If we assume that the escort tugs are actively commuting approximately one third of the time they spend in the Strait of Georgia South Zone, this means that a tug would be commuting on its own through the Strait of Georgia South Zone for an hour roughly twice every three days.

In the Strait of Georgia Zone, there is a 19.04 percent increase in underway time just for escort tugs escorting target vessels (from 41,276 escort tug underway minutes per year in Alternative A to 49,113 escort tug underway minutes per year in the Alternative C). This is equivalent to a change from just under two hours (1.88 hours per day) of underway time per day in Alternative A to just over two hours (2.24 hours per day) of underway time per day in Alternative C. The Strait of Georgia Zone experienced 120,462 minutes of underway time from target vessels in 2023, a small portion of which transited through the expansion area. The higher overall level of vessel traffic in the Strait of Georgia Zone means that escorting traffic is a relatively minor contributor of vessel traffic in all alternatives.

Under Alternative C, Rosario Strait Zone would likely see a small decrease (2.62 percent) in underway time associated with target vessel escorts as tugs may commute from more efficient

locations to and from escort jobs. Bellingham Channel, Sinclair Island, and Waters to the East Zone also sees a small decrease in underway time (10.67 percent).

Table 6. Modeled escort tug underway time by zone and for the EIS Study Area in Alternative C, as compared to 2023 historical AIS traffic underway time and all escort/assist tug underway time.

Zone	Target Vessel Tugs: Hours/ Day of Underway Time	Target Vessel Escort Tug Activity: % of Historical AIS Vessel Traffic	Target Vessel Escort Tug Activity: % of all Escort/Assist Tug Activity
Strait of Georgia South	1.11	14.68%	89.43%
Rosario Strait	9.13	9.27%	62.46%
Bellingham Channel	3.09	2.27%	43.11%
Guemes Channel and Saddlebags	4.65	3.25%	38.08%
Eastern Strait of Juan de Fuca	1.94	2.15%	26.22%
San Juan Islands	0.01	0.01%	14.26%
Strait of Georgia	2.24	2.24%	12.26%
Puget Sound	3.07	0.42%	5.52%
EIS Study Area (all zones)	**28.53**	**0.99%**	**19.12%**

Due to the increases in underway time in the expansion area, Ecology solicited input from the OTSC regarding any potential navigational safety and congestion issues. The OTSC did not raise any specific concerns with the increase in vessel traffic under Alternative C. The Pilots' representative indicated that while there are some safety concerns for target vessels in this area (e.g., Alden Bank, Clements Reef), these are unlikely to be an exceptional navigational safety risk for escort tugs.

Other Potential Impacts to Vessel Activity: Under Alternative C, tug and target vessel dynamics at the southern boundary rendezvous point are likely to remain the same as in Alternative A. For the northern boundary, a shift in waiting behavior is possible. Alternative C could disperse the locations where escort tugs wait for their target vessels. As shown in Figures 8 and 9, there are two places where target vessels could enter the expanded rulemaking area. One is at the northwestern boundary of the expansion area and the second is at the northern end of Rosario Strait. The OTSC Pilot representative suggested that it is more likely that tugs would wait in nearby but more protected areas (near Neptune Beach or in coves like Echo Bay on Sucia Island) until closer to when the target vessels arrive. While there could still be some waiting at the northern boundary, it is likely to occur for shorter durations of time. Overall, there is likely to be more dispersed waiting at rendezvous points on the northern end of the rulemaking boundary under Alternative C.

Route switching as described under Alternative A is possible. The expansion area is much smaller than the geographic scope of current requirements, so major changes from the switching seen under Alternative A are unlikely.

4.1.5.2 Mitigation Measures

Escort tugs under Alternative C would be required to adhere to all federal requirements. Ecology recommends that they continue to follow the applicable SOCs identified for Alternative A in Section 4.1.3.2 (Mitigation Measures). Ecology also recommends that the PSHSC extend the applicable portions of the Tanker Escort SOC to the escorting of target vessels.

4.1.5.3 Significant and Unavoidable Adverse Impacts

Under Alternative C, escort tug underway time still represents less than one percent of total AIS traffic in the EIS Study Area. This was calculated based on the highest-traffic scenario simulation, so this figure is a higher-end estimate of the contribution of escort tug traffic associated with target vessels in the EIS Study Area. Escort tug underway time associated with target vessels still makes up a small portion of total historical AIS traffic in all zones, although there are increases in the Strait of Georgia South and Strait of Georgia Zones.

Particularly in the Strait of Georgia South Zone, there would be moderate increases in escort tug underway time. While the relative increase in escort tug underway time is dramatic, the absolute numbers are small. Although this is not a crowded part of the waterway, it does see regular target vessel transits. It is part of the formally designated vessel traffic lanes and is set up to safely accommodate vessel traffic.

In the Strait of Georgia Zone, relative increases are less dramatic, as this zone has much higher levels of existing vessel traffic. Because the escort tugs are moving, the impacts described for the expansion area would be transitory in nature. The increases in escort tug underway time are minor to moderate in these two zones.

Despite the relative increase in underway time, Alternative C does not represent a meaningful increase in vessel traffic and we did not identify any navigational safety or congestion issues that are likely to result from the expansion. The OTSC selected Alternative C for evaluation because simulated drift groundings in the expansion area were prevented at a high rate with the addition of tug escorts. This matches the OTSC's targeted approach to selecting alternatives with minimal increases in traffic that still provided an oil spill reduction benefit.

4.1.6 Findings for Alternative D (Removal)

4.1.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have impacts to the environment, they would be unrelated to this rulemaking and are not considered in this EIS.

Although the target vessel transits would continue to occur, there would be zero individual escort jobs per simulated year because the requirement would be removed. This is a reduction of 1,537 escort jobs per simulated year.

Alternative D represents a 0.96 percent reduction in total underway minutes for all AIS vessel traffic and an 18.76 percent reduction in total escort and assist tug underway minutes, as escort of non-target vessels and assist work is unchanged. The reduction in escort tug underway time would be largest in the zones with current tug escort requirements for target vessels (Rosario Strait, Bellingham Channel, and Guemes Channel and Saddlebags Zones).

Maritime experts in the OTSC did not identify other concerns with navigational safety and/or congestion under conditions of Alternative D.

Alternative D removes all escort requirements for target vessels, so there would be no rendezvous points associated with the target vessels near the rulemaking area. Under Alternative D, it is possible that some vessels could switch back to Rosario Strait from the Haro Strait/Boundary Pass route, slightly increasing the number of target vessels in this waterway.

4.1.6.2 Mitigation Measures

Requiring escort tugs mitigates (reduces) the risk of oil spills from target vessels. However, Alternative D removes the tug escort requirements for target vessels. This would minimally reduce any potential congestion, but would leave areas identified as high-risk without the additional safety measure of escort tugs. Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for required and/or recommended mitigation measures that provide comprehensive management of the risk of oil spills in the EIS Study Area that could reduce potential impacts to plant and animal resources.

4.1.6.3 Significant and Unavoidable Adverse Impacts

Alternative D would see a less than 1 percent reduction in total AIS traffic in the EIS Study Area, concentrated in the rulemaking area. This was calculated based on the highest-traffic scenario simulation, so this figure is a higher-end estimate of the reduction. This may be a small benefit for overall navigational safety and congestion. However, Alternative D could cause a slight increase in the number of towed barges and ATBs using the Rosario Strait route. The OTSC experts did not express concerns about navigational safety and congestion associated with Alternative D. Alternative D would not have significant or unavoidable adverse environmental impacts to vessel traffic.

4.2 Environmental Health: Releases (Oil Pollution)

This section describes the existing conditions and potential impacts of the rulemaking alternatives on oil pollution risk in the EIS Study Area. There are many ways oil can be spilled. This analysis focuses on the subset of oil pollution incidents that could be affected by tug escort rules or additional tug escorts. Since tug escort requirements are best suited to preventing drift grounding events (and associated spills), this report focuses on describing the relative frequency of target vessel drift groundings. The report also describes the incident rate associated with escort tugs. The analysis considers the impacts of oil spills on archaeological and ecological resources. Detailed discussions of the impacts of oil on specific resources (e.g., plants and animals, recreation) are covered in those sections.

Refer to the Environmental Health: Releases Discipline Report (Appendix C) for more information on the methodology, additional details regarding existing oil pollution risk in the EIS Study Area, the full analysis of impacts to oil pollution risk under each alternative, and a more comprehensive list of relevant mitigation measures.

4.2.1 Methodology

Ecology identified and reviewed historical and simulated data, previous technical reports, and other available information regarding oil pollution risk in the EIS Study Area. Ecology also reviewed Tribal and stakeholder input received from the scoping and workshop phases.

Baseline Conditions: Ecology established baseline conditions in the affected environment by reviewing literature and historical data to provide an overview of current trends in how oil is transported by vessel in the EIS Study Area. This review focused on the types and volumes of oil transferred by target vessels and escort tugs. Ecology requires that vessels and facilities that transfer large quantities of oil over water provide advance notice of transfer (ANT) to the agency. We used ANT data to inform the description of baseline conditions.

Target Vessel Drift Grounding Probability: Ecology assessed the target vessel drift grounding probability using Ecology's risk model (Ecology, 2025a) for each rulemaking alternative. This analysis focuses on drift grounding frequency because escort tugs are generally considered best suited to intervene in these events (Allan, 2000; ASTM, 2021). Since the proposed rule is not changing any aspect of the vessel traffic system other than tug escort requirements, we assume that other spill events from target vessels remain unaffected for this analysis.

One of the model outputs is designed to represent the likelihood of drift groundings. It is informed by historical loss of propulsion frequency, ocean bathymetry, currents, distance from navigational hazards, and other factors described in more detail in the model report on the tug escort analysis (Ecology, 2023a). We modeled estimated probability rates for loss of propulsion incidents, drift grounding incidents, and oil spills from drift groundings for each alternative.

Target vessel drift grounding rates are presented using a measure of probability called a "recurrence interval." Recurrence intervals are most commonly used to describe flood magnitude and probability. For example, a "100-year flood" means that a flood of that magnitude has a 1 percent chance of occurring in any given year (U.S. Geological Survey, 2018). Recurrence intervals are not predictive of how frequently a specific event will occur or the

number of years between such an event. Recurrence intervals are useful for describing low-probability events like oil spills because they put probability into a more easily understandable format.

Escort Tug Incident Rate: Ecology also analyzed the frequency of incidents associated with the escort tugs themselves. For the escort tug analysis, we used an incident rate per underway minute that was developed to support the Tug Escort Analysis (Ecology, 2023a). Ecology developed these rates based on recorded incidents involving tugs in the US and Canadian waters of the Salish Sea from 2002 to 2019.[14] Table 7 below shows these rates.

Table 7. Probability of tug incidents per operating minute and per one million operating minutes. These rates are used in the EIS calculations.

Incident Type	Probability	# of incidents per operating minute	# of incidents per 1,000,000 operating minutes
Allisions/Collisions	2.31×10^{-7}	0.0000002310	0.231
Groundings	7.12×10^{-8}	0.0000000712	0.0712
Sinking/Capsize	1.78×10^{-8}	0.0000000178	0.0178
Other	1.09×10^{-6}	0.0000010900	1.09

The scope of the escort tug incident analysis is broad – it looks at reportable collisions, groundings, oil spills, equipment malfunctions, fires, and other types of incidents. This is in contrast to the evaluation of target vessels, which focuses on a single incident type: drift groundings.

Worst Case Discharge Trajectory Scenarios: To evaluate worst case discharge trajectories, Ecology selected eight potential spill locations and developed worst case spill scenarios for each location. A worst case discharge is defined as "a spill of the vessel's entire cargo and fuel complicated by adverse weather conditions" (WAC 173-182-030(73)(c)). The spill locations were based on modeled drift grounding locations for target vessels and areas with high amounts of underway time for escort tugs. We used the General NOAA Operational Modeling Environment (GNOME) trajectory modeling tool to model spill scenarios at these locations (NOAA Office of Response and Restoration, n.d.). Ecology also provided the spill trajectories to the Department of Archaeology and Historic Preservation (DAHP). The DAHP cross referenced the geographic extent of the trajectory models with their internal database of known archaeological sites for inclusion in the EIS. The Environmental Health: Releases Discipline Report (Appendix C) includes

[14] The vessel categories that we used to calculate incidents included tugs that aren't specifically escort tugs. For the USCG MISLE database we included incidents associated with vessels classified as "towing vessels," including "harbor/ship assist (tug)," "pushing ahead (towboat)," "pushing ahead/hauling alongside," "ship/harbor assist," "towing astern," and "towing behind (tug)." For the Canadian MARSIS database, we included incidents associated with vessels with length greater than 50 feet classified as "tug."

detailed descriptions of the trajectories performed and potential impacts associated with each scenario.

Ecology also reviewed historical incident data from 2017-2023 to complement the model data. This review indicated that incidents with target vessels and escort tugs are rare, but did not show any other patterns or trends that are useful for the analysis. This data is not used in the determinations of significance. Finally, Ecology assessed whether each alternative would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 8. Significance thresholds for oil pollution risk impacts.

Indicator	Significance Thresholds
Target Vessels: Frequency of Drift Groundings	• Rule change results in a meaningful increase in the relative frequency of drift groundings from target vessels potentially resulting in spills. • This increase results in a reasonable likelihood of an increased frequency, severity, and/or extent of oil spills.
Escort Tugs: Incident Rate	• Rule change results in a meaningful increase in the relative frequency of incidents from tug escorts that could result in spills. • This increase results in a reasonable likelihood of an increased frequency, severity, and/or extent of oil spills.

4.2.2 Affected Environment

4.2.2.1 Oil Movement Over Water in Washington State

Between 2021 and 2023, there was an average of over 10 billion gallons of oil transferred over water by vessel in Washington state (Ecology, 2024d). During that time, the vast majority (around 96 percent) of oil transferred in Washington waters by vessel was oil carried as cargo, and only 4 percent was oil carried as fuel. Over 77 percent of these transfers occurred in Whatcom or Skagit County, where four of the State's five petroleum refineries are located. These refineries are within or near the rulemaking area.

Since 2012, an average of 46 percent of the oil moving through the state by vessel, pipeline, and rail has been crude oil (Ecology, 2019a). Between 2021 and 2023, crude oil accounted for 40 percent of transfers over water by volume. The products with the next highest volume were gasoline (18 percent) and low sulfur diesel (14 percent). Together, crude oil, gasoline, and low sulfur diesel accounted for over 70 percent of all oil transferred by vessel in Washington waters between 2021 and 2023.

We assessed transfers of oil over water involving oil tankers (all sizes), ATBs, towed oil barges, and tugs (all types) between 2021-2023.

- **Oil Tankers:** Oil tankers were involved in 11.84 percent of total transfers and 64.1 percent of the volume of oil transferred over water involved a tanker. Crude oil accounted for over 60 percent of all oil transferred by tankers, followed by gasoline,

diesel, bunker oils, jet fuel/kerosene, and cat feed/VGO, which all together made up over 97 percent of oil transferred by tankers.

- **Tank Barges:** Transfers involving a tank barge happened more frequently, but with smaller total volumes. 30.52 percent of all transfers over water involved a tank barge. Bunker oils accounted for 31.08 percent of the oil volume of all transfers involving a tank barge, followed by diesel products, gasoline and ethanol, jet fuel/kerosene, and cat feed/VGO (94 percent collectively).
- **ATBs:** 7.82 percent of all transfers over water involved an ATB. Gasoline and ethanol accounted for nearly half (46.97 percent) of the oil volume of all transfers involving ATBs, followed by diesel products, jet fuel/kerosene, bunker oil, cat feed/VG), and cutter stock (96.25 percent collectively).
- **Tugs:** Tugs were involved in 3.53 percent of all oil transfers over water in Washington state and one tenth of one percent of the total oil transferred by volume. 98.95 percent of all transfers involving a tug were for fueling and 99.36 percent of the total oil transferred were diesel products.

4.2.2.2 Environmental Trade-Offs and Spill Response

When an oil spill happens, the damage it causes to the environment is related to the habitat and shoreline type, the presence of wildlife, plants, and animals, the amount and type of oil spilled, and weather and ocean conditions (NOAA, 2025). Choosing a response method or set of methods is dependent on the specific conditions of the oil spill and always involves tradeoffs (NOAA, 2010). Spill response and clean-up never removes 100 percent of the spilled oil (NOAA, 2025) and typical recovery rates can be much lower, depending on the specific conditions of the incident.

It is difficult to estimate how much oil can be recovered from any given spill. It depends on what type of oil is spilled (gasoline, diesel, crude, etc.), where it is spilled, how it behaves after being spilled, how quickly it evaporates, and how much time has elapsed since the spill occurred, among other factors. The individual Discipline Reports discuss the specific impacts of oil pollution on resource types. A detailed discussion of oil spill response options, their environmental trade-offs, and their applicability to shoreline types in the EIS Study Area is included in the Environmental Health: Releases Discipline Report (Appendix C).

4.2.2.3 Oil Spills from Target Vessels and Escort Tugs

For target vessels, our analysis focuses on drift groundings and the spills that could result from them. A drift grounding is one specific type of incident that escort tugs are well-suited to address (Allan, 2000; ASTM, 2021). Based on a review of actual incident data from 2002-2019,

Ecology found that there were only two drift groundings in the US and Canadian waters of the Salish Sea,[15] neither of which resulted in a spill (Ecology, 2023a).

An important assumption of this analysis is that, while drift groundings are rare events, a target vessel drift grounding can produce a catastrophic spill. Target vessels carry significant amounts of oil as cargo and as fuel, and as a result, a target vessel drift grounding is always a serious event.

Escort tugs carry significantly lower volumes of oil than target vessels, meaning that there is a lower potential spill magnitude from escort tugs. Between 2017 and 2023, Ecology identified five incidents involving vessels identified as escort and assist tugs. These five incidents resulted in a total of five gallons of oil reaching the water.

Ecology also assessed several worst case discharge (WCD) spill scenarios that could occur under each alternative. A WCD spill resulting from a drift grounding in any location would be a low probability but high consequence event. For the purposes of this trajectory modeling, all spills (both target vessel and escort tugs) are assumed to be worst case discharge spills. Current tug escort requirements for target vessels contribute to:

1. Reducing the probability of a WCD from a drift grounding of target vessels within the current rulemaking boundary (Rosario Strait and connected waters east).
2. Increased probability of a WCD from escort tugs within the current rulemaking boundary area and along commute routes.
3. No impact on the probability of a WCD from target vessels outside the current rulemaking boundary.

All of the spill trajectories we modeled would result in significant consequences for the region. Trajectories showed oil reaching the San Juan Islands, the coastline of the North Puget Sound, and into Canada near the Gulf Islands, Vancouver, and Victoria, depending on the spill origin point. Most of the spill trajectories we modeled would result in oiling of shorelines with higher habitat sensitivity, complicating clean-up. Target vessels may also carry a variety of oil types, which vary in their environmental impacts and cleanup challenges.

Sensitive ecological resources and their habitats, including several species listed under the Endangered Species Act (ESA) would be affected by spills of this magnitude, with potential impacts varying by spill origin point and time of year. Many ecological resources also have cultural and/or economic importance to Tribes. Tribal treaty fishing would also be impacted in

[15] We identified four records as potential covered vessel drift groundings in the Model Domain. Only two of them actually resulted in a drift grounding:

- (Grounding) February 6, 2004 propulsion failure and grounding of fishing vessel ALASKA MIST (8836259) near Shilshole Bay.
- (Grounding) June 30, 2005 loss of propulsion of car ferry QUEEN OF OAK BAY (7902283). The vessel struck 28 berthed pleasure craft before grounding.
- December 23, 2008 blackout aboard the car ferry QUEEN OF NANAIMO (6404375). The vessel anchored in Long Harbour, B.C. for repairs. The vessel did not ground.
- March 27, 2018 propulsion failure of the container ship SEAMAX NORWALK (9290464) in Haro Strait. The vessel anchored to avoid grounding.

the event of a WCD. A major oil spill that reaches the shoreline anywhere in this region will likely affect archaeological resources. Oil spills and clean-up activities can impact archaeological resources. Based on DAHP's analysis, the spill scenarios would affect between 143 and 288 coastal archaeological resources depending on the spill origin location. Significant impacts to water quality and recreation would also be likely if a worst case discharge event occurred.

Refer to the Environmental Health: Releases Discipline Report (Appendix C) for additional details regarding existing oil pollution risk in the EIS Study Area. More detailed descriptions of the impact of oil spills on specific elements of the environment (i.e., plants and animals) are included in those specific Discipline Reports.

4.2.3 Findings for Alternative A (No Action)

4.2.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

Target Vessels: Table 9 shows recurrence interval estimates for target vessels for three types of events under Alternative A: loss of propulsion (LOP), drift groundings, and oil spills from drift groundings. Results are presented by zone, as well as for the entire EIS Study Area (all zones). Table 9 also includes a drift grounding rate, which is how frequently loss of propulsion incidents result in a drift grounding. Under the conditions of Alternative A, our modeling shows that a target vessel loss of propulsion in the EIS Study Area is a 5-year event. This means that there is a 1-in-5 chance that this occurs in any given year. A target vessel drift grounding is a 186-year event within the EIS Study Area, meaning that there is a 1-in-186 chance that a drift grounding occurs in any given year. The modeling found that target vessels in the EIS Study Area have a drift grounding rate of 2.8 percent, which means that approximately 2.8 percent of all losses of propulsion result in a drift grounding.

Under Alternative A, tug escort requirements within the Alternative A boundary provide an additional protective measure against a major spill from a target vessel drift grounding. Compared to Alternative D, a drift grounding from target vessels is 11.84 percent less likely to occur under the conditions of Alternative A within the EIS Study Area. Just within the boundaries of Alternative A, drift groundings are 90.50 percent more likely to occur without the current tug escort requirements than with them.

Table 9. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative A

Zone	1 LOP per # of Years	1 Drift Grounding per # of Years	1 Oil Spill from Drift Grounding per # of Years	Drift Grounding Rate (estimated drift groundings/LOP)
Bellingham Channel	175 Years	8,470 Years	1,160,289 Years	2.07%
Guemes Channel and Saddlebags	156 Years	4,046 Years	556,774 Years	3.83%
Rosario Strait	136 Years	16,931 Years	2,319,352 Years	0.80%
Strait of Georgia	53 Years	7,180 Years	983,572 Years	0.74%
Strait of Georgia South	1,554 Years	49,007 Years	6,713,249 Years	3.17%
All Zones	5 Years	186 Years	25,546 Years	2.8%

Escort Tugs: Overall, incidents from escort tugs under Alternative A have a probability of less than one occurrence (0.86) per year. This data is presented in probability/year, rather than as a recurrence interval. These probabilities include multiple potential incident types ranging from equipment malfunctions and small fueling spills to collisions, groundings, and explosions. Because of this, these numbers are higher than those presented for the target vessels, which only assess one specific incident type (loss of propulsion and drift grounding). Between 2017 and2023, Ecology's incident data showed that there were 5 incidents from escort tugs in the EIS Study Area (Ecology, 2024f). This is an incident frequency of around 0.71 per year, which is close to but lower than the calculated incident frequency (0.86 per year). This makes sense because escort tug underway time increased after September of 2020 due to the new requirements, so incident frequency would be lower between 2017 and August of 2020.

Oil Spill Impacts: Any large oil spill in the rulemaking area is likely to affect both ecological and archaeological resources. Alternative A reduces the likelihood of oil spills from target vessels within the rulemaking area compared to Alternative D. We conducted spill trajectory modeling to estimate the geographical extent of worst case discharge oil spill impacts. Alternative A reduces the risk of a target vessel spill at the modeled James Island, Hat Island, and North Peapod Island locations. These spills could impact the Strait of Georgia, west to Victoria, south to Whidbey Island, and most of Rosario Strait, Bellingham, Samish, and Padilla Bays, affecting ecological resources and hundreds of known archaeological sites. Alternative A also increases the risk of an incident from an escort tug which could result in a spill at the modeled Anacortes and Southern Rendezvous locations. These spills could impact bays and islands of Lopez Island, Burrows Bay, including Allen and Burrows Islands, the southern coast of Guemes Island, Saddlebag and Hat Islands, Samish Island and Chuckanut Bay, affecting ecological resources and hundreds of known archaeological sites.

Refer to the Environmental Health: Releases Discipline Report (Appendix C) for the full analysis of oil spill risk from implementation of Alternative A. Impacts of oil spills on plants and animals, water quality, recreation, visual resources, and Tribal resources are covered in those sections.

4.2.3.2 Mitigation Measures

Escort tugs mitigate (reduce) the risk of oil spills from target vessels. Escort tug requirements in Alternative A provide an additional layer of risk reduction in what has been identified as a higher-risk area for vessel traffic safety (U.S. Coast Guard, 2017). Escort tugs and target vessels are required to adhere to all relevant federal and state vessel traffic safety and oil pollution prevention, preparedness, and response measures. Escort tugs are required to comply with the existing vessel traffic safety measures outlined in the Transportation: Vessel Traffic Discipline Report (Appendix B) as well as the requirements outlined under 46 CFR Chapter I Subchapter M.

Specific requirements for target vessels include but are not limited to the existing standards for double hulls and specifications for tank location and vessel construction, crew training requirements, contingency planning, drill and inspection requirements, and vessel traffic safety measures outlined in the Transportation: Vessel Traffic Discipline Report (Appendix B).

In addition to these requirements, Ecology recommends escort tugs and target vessels continue to follow the SOCs outlined by the PSHSC (PSHSC, 2023). Ecology also recommends that the PSHSC extend the applicable SOCs to 5,000 to 40,000 DWT escorts.

Together, these measures enhance oil spill prevention and help ensure that the probability of a spill from target vessels remains low in the EIS Study Area.

4.2.3.3 Significant and Unavoidable Adverse Impacts

Under the conditions of Alternative A, a target vessel drift grounding in the EIS Study Area has a 186-year recurrence interval. Within the individual zones of Alternative A where tug escorts are currently required for target vessels, the probability of a drift grounding is lower still, ranging from a 4,046-year to a 16,931-year recurrence interval. Under Alternative A, target vessel drift grounding frequency is low, particularly in comparison to Alternative D.

Escort tug underway time associated with target vessels under Alternative A can also pose an oil pollution risk. Under Alternative A, there are approximately 610,107 total annual escort tug underway minutes associated with the escort of target vessels. This translates to a combined incident rate of 0.86 incidents/year from the escort tugs themselves. Recent incident data shows a similar but slightly lower rate: five incidents involving escort tugs in the EIS Study Area in six years resulting in five gallons of oil reaching the water. While the conditions of Alternative A include the potential for spills from the escort tugs, these spills are not anticipated to be frequent or catastrophic. Alternative A is not expected to have significant or unavoidable adverse impacts on environmental health from oil pollution.

4.2.4 Findings for Alternative B (Addition of FORs)

4.2.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, tug escort requirements would result in the same impacts as under Alternative A. Alternative B could also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of impacts from a catastrophic oil spill. Any large oil spill in the rulemaking area is likely to affect both ecological and archaeological resources.

4.2.4.2 Mitigation Measures

Escort tugs under Alternative B would be required to adhere to the same federal and state regulations as described in Section 4.2.3.2 (Mitigation Measures). Ecology also recommends that escort tugs and target vessels continue to implement the same SOCs and best management practices identified for Alternative A.

4.2.4.3 Significant and Unavoidable Adverse Impacts

The addition of FORs under Alternative B does not meaningfully change incident frequency for target vessels or escort tugs over those described in section 4.2.3.3 (Significant and Unavoidable Adverse Impacts) under Alternative A. Alternative B may provide a small and unquantified reduction in risk by standardizing best practices. Alternative B has no significant or adverse unavoidable impacts to environmental health from oil pollution.

4.2.5 Findings for Alternative C (Expansion)

4.2.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9 **Error! Reference source not found.**). Alternative C also includes the FORs included in Alternative B.

Target Vessels: Table 10 shows recurrence interval estimates for target vessels for three types of events under Alternative C: loss of propulsion, drift groundings, and oil spills from drift groundings. It also includes a drift grounding rate, which is how frequently loss of propulsion incidents actually result in a drift grounding. All five zones relevant to the rulemaking are included in Table 10 along with the combined estimates for the EIS Study Area (all zones).

Alternative C slightly reduces the overall risk of a drift grounding within the EIS Study Area and provides risk reduction benefits to the expansion area. The addition of the expansion area reduces the overall risk of a drift grounding by a target vessel within the EIS Study Area from a recurrence interval of 186 years (Alternative A) to a recurrence interval of 189 years, a decrease of 1.6 percent. Adding tug escorts for target vessels to the Strait of Georgia South Zone reduces

the modeled risk of a loss of propulsion event becoming a drift grounding or an oil spill to near zero, although the real-life risk is never truly zero. By adding tug escorts to the corner of the Strait of Georgia Zone, drift groundings are reduced from a probability of one every 7,180 years (Alternative A) to a probability of one every 8,024 years.

Table 10. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative C.

Zone	1 LOP per # of Years	1 Drift Grounding per # of Years	1 Oil Spill from Drift Grounding per # of Years	Drift Grounding Rate (estimated drift groundings/LOP)
Bellingham Channel	175 Years	8,470 Years	1,160,289 Years	2.07%
Guemes Channel and Saddlebags	156 Years	4,046 Years	556,774 Years	3.83%
Rosario Strait	136 Years	16,931 Years	2,319,352 Years	0.80%
Strait of Georgia	53 Years	8,025 Years	1,099,263 Years	0.66%
Strait of Georgia South	1,554 Years	0 Years[16]	0 Years[3]	0.00%
All Zones	5 Years	189 Years	25,830 Years	**2.79%**

Oil Spill Impacts: The expansion of the tug escort requirement to the Strait of Georgia South Zone reduces the modeled risk of drift grounding to near zero. In the Strait of Georgia Zone, the expansion of the requirements reduces the risk of a drift grounding by 10.52 percent. While any oil spill in this region would have significant impacts to ecological and archaeological resources, these impacts would be less likely to occur due to this additional protective measure. This is a benefit to the environment and to resources on both sides of the U.S.-Canada border in the area near the expansion area.

We conducted spill trajectory modeling to estimate the geographic extent of worst case discharge oil spill impacts. In addition to maintaining the risk reduction provided under Alternative A, Alternative C also reduces the risk of a target vessel spill at the modeled Matia Island and Clark Island locations. These spills could impact most of the Southern Gulf Islands, parts of Victoria, the San Juan Islands, all of Rosario Strait, Bellingham and Samish Bays, Lummi Island, and the coast north of Neptune Beach including waters and shorelines to the U.S.-Canadian border, affecting ecological resources and hundreds of known archaeological sites. Alternative C also increases the risk of an incident from an escort tug which could result in a spill at the Expansion Corridor location and in the expansion area generally. A spill at this location could impact Point Roberts in particular and could extend through the northern part of the San Juan Islands, as far north as Burrard Inlet, as far south as Victoria, and west along the Gulf

[16] The real-life risk of a loss of propulsion event becoming a drift grounding is never zero. A zero risk only exists under modeled conditions.

Islands to Valdes Island, affecting ecological resources and hundreds of known archaeological sites.

Escort Tugs: Under Alternative C, there are 624,784 escort tug underway minutes. Including the expansion area, incidents from tugs engaged in escorting target vessels still result in less than one (0.88) incident per year. This is an increase in frequency of 2.41 percent from Alternative A, consistent with the increased amount of escort tug underway time necessary to meet the expanded requirements. The likelihood of an oil spill from an escort tug is slightly higher under Alternative C than Alternative A. Ecological resources, as well as identified archaeological resources from a spill in the expansion area (225 sites identified from Expansion Corridor spill trajectory) would be at slightly elevated risk. However, tugs carry far less oil than target vessels and historical data shows that most spills from tugs are small.

4.2.5.2 Mitigation Measures

Escort tugs under Alternative C would be required to adhere to the same federal and state regulations as described in Section 4.2.3.2 (Mitigation Measures). Ecology also recommends that escort tugs and target vessels continue to implement the same SOCs and best management practices identified for Alternative A.

4.2.5.3 Significant and Unavoidable Adverse Impacts

Under Alternative C, the probability of a drift grounding from the target vessels in the EIS Study Area has a 189-year recurrence interval. This is a decrease in frequency of 1.6 percent compared to Alternative A. Most of this additional decrease is in the Strait of Georgia and Strait of Georgia South Zones. Alternative C reduces the probability of drift groundings from target vessels.

Escort tug underway time associated with target vessels under Alternative C also poses an oil pollution risk. In Alternative C, escort tug underway time increases by 2.41 percent over Alternative A. This underway time translates to an incident rate of 0.88 incidents per year from the escort tugs themselves, a corresponding 2.41 percent increase in hazard probability over Alternative A. While the consequences of a spill from an escort tug could be severe, the probability of such an event is quite low under Alternative C.

Alternative C is not anticipated to have significant or unavoidable adverse impacts on environmental health from oil pollution.

4.2.6 Findings for Alternative D (Removal)

4.2.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. Removing tug escort requirements changes the oil spill risk for target vessels as described below. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs would continue to have an oil pollution risk to the environment, they would be unrelated to this rulemaking.

Target Vessels: The elimination of tug escort requirements would increase the probability of a target vessel drift grounding. Under Alternative D, target vessel drift grounding probability changes from a 186-year event (Alternative A) to a 167-year event, an increase of 11.84 percent across the EIS Study Area. The probability of an oil spill from a drift grounding would also increase (from a 25,546-year event to a 22,841-year event).

Table 11 shows recurrence interval estimates for target vessels for three types of events for the Alternative D: loss of propulsion, drift groundings, and oil spills from drift groundings. It also includes a drift grounding rate, which is how frequently loss of propulsion incidents result in a drift grounding.

Because the change in risk is limited to just three zones, the rate of change for each of those zones is much higher when assessed individually. For Guemes Channel and Saddlebags Zone, target vessel drift grounding frequency increases by 52.07 percent over Alternative A with the removal of all target vessel tug escort requirements. In Bellingham Channel Zone, the modeled increase in target vessel drift grounding frequency is 112.50 percent with the removal of all target vessel tug escort requirements. In Rosario Strait Zone, target vessel drift grounding frequency increases by 204 percent with the removal of all target vessel tug escort requirements.

Table 11. Probabilities presented as recurrence intervals for target vessel loss of propulsion, drift groundings, and oil spills from drift groundings for Alternative D.

Zone	1 LOP per # of Years	1 Drift Grounding per # of Years	1 Oil Spill from Drift Grounding per # of Years	Drift Grounding Rate (estimated drift groundings/LOP)
Bellingham Channel	175 Years	3,986 Years	546,018 Years	4.39%
Guemes Channel and Saddlebags	156 Years	2,662 Years	364,613 Years	5.85%
Rosario Strait	136 Years	5,569 Years	762,932 Years	2.44%
Strait of Georgia	53 Years	7,180 Years	983,572 Years	0.74%
Strait of Georgia South	1,554 Years	49,007 Years	6,713,249 Years	3.17%
All Zones	5 Years	167 Years	22,841 Years	3.16%

Oil Spill Impacts: Alternative D would remove tug escort requirements for target vessels, which currently provide a protective measure against a major oil spill from a target vessel drift grounding. Alternative D increases the risk of spills occurring within the rulemaking area. A worst case discharge spill in these locations could have a trajectory that reaches north into the Strait of Georgia, west to Victoria, south to Whidbey Island, and covers most of Rosario Strait, Bellingham, Samish, and Padilla Bays, depending on the specific origin point.

Any large spill in the rulemaking area is likely to impact both ecological and archaeological resources. A major oil spill from a target vessel in the EIS Study Area would impact marine mammals, finfish, aquatic invertebrates, birds, terrestrial and semi-aquatic animals, intertidal and aquatic plants, and protected ecological areas and special aquatic habitats. Catastrophic oil

spills could result in direct mortality to these resources or other long-lasting health effects that in turn decrease overall species abundance and diversity (Byrnes & Dunn, 2020; Frasier et al., 2020; Murawski et al., 2016; NOAA Fisheries, 2024a). Depending on the time of year, impacts to ESA-listed species such as SRKWs and salmonids could be devastating. Most of the spill trajectories we created would result in oiling of shorelines with higher habitat sensitivity, complicating clean-up.

Archaeological resources from spill scenarios within the rulemaking boundary would be at higher risk under Alternative D than under any other alternative. This includes the following spill locations: James Island (232 sites identified), North Peapod Island (235 sites identified), and Hat Island (153 sites identified). A spill at these locations could reach north into the Strait of Georgia, west to Victoria, South to Whidbey Island, and cover most of Rosario Strait, Bellingham, Samish, and Padilla Bays, depending on the specific origin point. These spills would affect ecological resources and hundreds of known coastal archaeological sites. The sites affected by spills at Matia Island (296 sites identified) or Clark Island (217 sites identified) would also be at higher risk under Alternative D than Alternative C.

Escort Tugs: Removing escort requirements for target vessels would remove all incident risk associated with those specific escort jobs. This removes 100 percent of the incident risk associated with the specific escort minutes under Alternative A, which equates to reduction of less than one (0.86) incident per year. While incidents from these vessels could still occur, they would not be associated with tugs engaged in the escort of target vessels as currently required.

4.2.6.2 Mitigation Measures

Escort tugs mitigate (reduce) the risk of a spill from target vessels. However, Alternative D removes the tug escort requirements for target vessels. Target vessels themselves would adhere to the same recommended mitigation measures, including continued participation in the PSHSC SOCs as those identified for Alternative A in Section 4.1.3.2 (Mitigation Measures). Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for required and/or recommended mitigation measures that reduce the risk of oil spills in the EIS Study Area.

4.2.6.3 Significant and Unavoidable Adverse Impacts

Under Alternative D, the probability of a drift grounding of a target vessel in the EIS Study Area has a 167-year recurrence interval. This is an increase in probability of 11.84 percent from Alternative A across the EIS Study Area. Within the removal area where tug escorts are currently required for target vessels, Alternative D increases the probability of a target vessel drift grounding by 90.50 percent. This is a meaningful increase in the relative frequency of spills both at the scale of the EIS Study Area and within the rulemaking boundary.

The existing safety regime and the current escort tug requirements as outlined in the Mitigation Section (4.2.3.2) contribute to keeping the probability of a major spill event low. However, the consequences from a spill from a target vessel could be severe. Ecology's trajectory modeling of worst case discharge incidents in the Alternative D boundary shows that the impacts of a spill in this area would have devastating environmental consequences. Therefore, Alternative D has a significant and unavoidable adverse impact to environmental health from oil pollution, based on

the increase in target vessel drift grounding risk and the potential scope of impacts if a spill did occur.

The removal of the tug escort requirements under Alternative D removes underway time for escort tugs and therefore their associated incident risk. While these individual tugs will likely continue to operate in the Puget Sound, they will not be escorting target vessels as is currently required. Alternative D eliminates this specific source of oil pollution risk. Therefore, Alternative D does not have a significant and adverse impact to environmental health from oil pollution from escort tugs.

4.3 Water Quality

This section describes the existing conditions and potential impacts on marine water quality in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered water pollutant levels, the sources and causes of water pollution, and the ecological impacts of poor water quality in the EIS Study Area. The analysis is focused on marine surface waters and does not evaluate marine sediments or groundwater.

Refer to the Water Quality Discipline Report (Appendix D) for more information on the methodology, additional details regarding existing water quality in the EIS Study Area, the full analysis of impacts to water quality under each alternative, and a more comprehensive list of relevant mitigation measures.

4.3.1 Methodology

Ecology reviewed scientific literature, technical reports, data, and Tribal and stakeholder input regarding marine waters and existing water quality conditions within the EIS Study Area. This analysis includes the main pollutants impacting water quality, and how existing marine vessel and tug escort activity affects water quality. This section focuses on existing water quality parameters and standards and the influence of water quality on ecological resources as well as environmentally sensitive and protected areas that are at greatest risk of impacts associated with the rulemaking. Ecology contacted maritime subject matter experts to better understand tug escort activity, including escort tug discharges and other pollutants sources like bottom paint, within the EIS Study Area.

Additionally, Ecology reviewed the results of vessel activity simulations to determine how tug escort activity is projected to change under the rulemaking alternatives (see Appendix B for details). Further, Ecology used available information to characterize how current tug escort requirements affect water quality conditions and considered how conditions would change under each alternative. Finally, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 12. Significance thresholds for water quality impacts.

Indicator	Significance Thresholds
Water quality standards	• Reasonable likelihood of a chronic and recurring increase in the frequency, severity, and/or extent of numeric or narrative water quality criteria; or • Meaningful increase in the relative frequency and/or volume of spills, resulting in a reasonable likelihood of an increased frequency, severity, and/or extent of acute water quality criteria.
Harmful Algal Blooms (HABs)	• Reasonable likelihood of a chronic and recurring increase in the frequency, severity, and/or extent of recurring HABs.
Water-quality-dependent habitats or activities	• Substantial degradation of water quality in protected habitats; or • Reasonable likelihood of disruption of Tribal, recreational, and/or commercial activities that are dependent on water quality.

4.3.2 Affected Environment

Marine water quality across the EIS Study Area is highly variable due to differences in water circulation patterns, water temperatures, wind, precipitation, and sources of inflow (Levin et al., 2011). Ecology has previously identified high nutrient levels (and subsequently lower dissolved oxygen), ocean acidification, high bacteria levels, and toxic chemicals as the primary water quality issues in Puget Sound (Ecology, 2024c). Certain water bodies within the EIS Study Area are 303(d) listed—i.e., have impaired uses due to elevated pollutant levels—and thus require implementation of water quality improvement programs such as a total maximum daily load (TMDL). Most of these 303(d)-listed water bodies are impaired due to dissolved oxygen, fecal coliform, or enterococci (Ecology, 2024h, 2024g) and most approved TMDLs are targeted toward fecal coliform and dissolved oxygen. The 303(d)-listed water bodies within the rulemaking areas are mainly found along the shores of densely populated areas and within bays.

Over the past several decades, nutrients, pathogens, and toxic pollutants introduced to Puget Sound from anthropogenic sources and activities, such as from wastewater treatment plants, septic systems, fertilizers, and agricultural runoff, are believed to have degraded the water quality (Ecology, 2016b). Additionally, rising water temperatures from climate change can result in decreased dissolved oxygen levels, HABs, and adverse effects on aquatic life and those dependent on marine resources.

Ecology previously identified the need for a No Discharge Zone (NDZ), a geographical area in which vessel sewage discharges (both untreated and treated) are prohibited, primarily due to bacterial impacts to shellfish aquaculture and harvesting areas, recreational swimming opportunities, and water quality impairments (Ecology, 2016b). Almost all of the EIS Study Area is located within the NDZ and all of the rulemaking areas are within the NDZ.

Washington's marine waters support Tribal treaty fishing rights and cultural practices (see Appendix K for further discussion), support habitat for a vast array of species, produce income from maritime sector economic activities, and provide recreational opportunities. Vessels that

use the EIS Study Area include recreational boaters as well as commercial vessels such as container ships, tank barges, ATBs, ferries, cruise ships, and commercial and factory fishing vessels.

Based on the results of previous Ecology studies analyzing pollutants and major pathways, as well as vessel permit regulations, escort tugs are estimated to contribute minor pollutant loads into the EIS Study Area in comparison to other more abundant vessel types and almost negligible pollutant loads on a larger watershed scale. Approved operational discharges from escort tugs may include graywater (e.g., shower and sink drains); bilgewater; ballast water; deck runoff; lubrication discharges from oil sea interfaces, and leaching of anti-fouling coating. While these discharges are regulated by EPA's 2013 Vessel General Permit (VGP), they contain various pollutants such as bacteria and pathogens, nutrients, metals, oil, grease, and other toxics that can result in incremental adverse impacts on water quality over time. Escort tugs may also discharge treated sewage in areas of the EIS Study Area that fall outside the NDZ, and untreated sewage in areas outside the NDZ that are more than 3 miles from shore.

Additionally, oil spills from target vessels or escort tugs would have a negative impact on water quality. The extent and severity of the impact of such spills is dependent on factors such as the nature and amount of oil, proximity to the shoreline and sensitive areas, location and timing of a spill, the trajectory, and available response options.

Climate change is expected to impact water quality through declining dissolved oxygen levels, decreased summer streamflow, increased water temperatures (and subsequently increased stratification), changes to circulation, ocean acidification, and more frequent and toxic HABs. Despite the projected worsening of many water quality parameters under future climate change scenarios, the impact of escort tug discharges to marine surface water quality would remain minor at the watershed scale.

4.3.3 Findings for Alternative A (No Action)

4.3.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

Under Alternative A, escort tugs would continue to discharge sewage, graywater, bilgewater, ballast water, lubricants from oil-to-sea interfaces, deck runoff, and leaching of anti-fouling coatings. These discharges could result in minor and localized water quality impacts. For example, graywater discharges could contribute to higher concentrations of pollutants such as bacteria, pathogens, oil and grease, detergent and soaps, metals, solids, and nutrients. These discharges, if occurring in poorly flushed areas, could contribute to eutrophication (abnormally high nutrient levels) and lower dissolved oxygen levels. Continued discharges of treated or untreated sewage to the west of the NDZ could contribute to higher concentrations of pollutants such as nutrients, metals, solids, toxics, endocrine disrupters, and pathogens.

Certain waters in this area are currently impaired due to bacteria and/or dissolved oxygen, so continued discharges of treated sewage could contribute to worsening water quality, HABs,

eutrophication, and subsequent fish kills. Further, it is possible that more escort tug activity near Anacortes could continue to contribute incrementally to the existing copper impairment in the nearby Cap Sante Marina due to copper leaching from anti-fouling coatings. Additionally, ballast water intakes and discharges could transport aquatic invasive species and algae that may contribute to HABs, as well as change ambient water temperature in the area of discharge.

Ecology estimates that escort tug underway time associated with this alternative represents approximately 0.96 percent of all AIS vessel underway time in the EIS Study Area. Other vessel types (recreational, fishing, passenger, cargo, tank vessel, etc.) are anticipated to have greater impact on water quality than escort tugs. These other vessel types have a higher proportion of underway time and larger number of crewmembers and/or passengers onboard, and therefore have a higher potential impact on water quality. Escort tugs would continue to manage operational discharges in accordance with all applicable conditions of the VGP. Compliance with the VGP is expected to regulate discharges in such a way as to not cause exceedances of water quality standards.

Based on information from maritime subject matter experts, ballast water discharges from escort tugs in the EIS Study Area occur infrequently (typically only for maintenance or inspection) and are often municipal water which does not require treatment (33 CFR § 151.2025(a)(1)). Therefore, escort tug ballast water discharges are not anticipated to have meaningful impacts on water quality. Water-quality-dependent habitats and activities and environmentally sensitive and protected areas are not expected to experience significant water quality impacts.

Escort tug activity under Alternative A would continue to have beneficial impacts related to oil spill risks, resulting in a modeled 1-in-186 chance that a target vessel drift grounding occurs in any given year throughout the EIS Study Area and a once-every-25,546-years risk of a drift grounding resulting in an oil spill that could negatively impact water quality. In this alternative, escort tugs have an incident rate of 0.86 per year. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much less than the volume carried by target vessels (fuel and cargo).

4.3.3.2 Mitigation Measures

Escort tugs are required to adhere to the NDZ and to vessel discharge requirements, including those imposed through the VGP. Further, escort tugs must comply with all relevant federal and state vessel traffic safety and oil pollution prevention, preparedness, and response measures as well as with existing vessel traffic safety measures and requirements outlined under 46 CFR Chapter I, Subchapter M.

Target vessels must comply with all relevant federal and state vessel traffic safety and oil pollution prevention, preparedness, and response measures as well as with additional oil pollution prevention, preparedness, and response requirements, which are further outlined in Appendix C. Target vessels follow traffic safety measures that are outlined in Appendix B.

In addition to these requirements, Ecology recommends that escort tugs and target vessels continue to implement the PSHSC's SOCs, as well as any relevant marina- and port-specific requirements and best practices aimed at reducing water quality impacts.

4.3.3.3 Significant and Unavoidable Adverse Impacts

Under Alternative A, existing escort tug activities may continue to result in minor and localized water quality impacts. However, discharges, releases, and spills are not likely to cause chronic or recurring water quality standard exceedances, or HABs, or disrupt water quality-dependent habitats and activities throughout the EIS Study Area. Therefore, Alternative A would not have significant or unavoidable adverse impacts on water quality.

4.3.4 Findings for Alternative B (Addition of FORs)

4.3.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, escort tugs would have the same impacts as those described under Alternative A. Alternative B would also result in a minor but unquantified reduction in the risk of oil spills from target vessels due to drift groundings, but would not be expected to change the escort tug incident rate of 0.86 per year.

4.3.4.2 Mitigation Measures

Escort tugs and target vessels under Alternative B would be required to adhere to the same mitigation measures described under Section 4.3.3.2 (Mitigation Measures). This includes compliance with existing federal and state regulations for vessel traffic safety and oil pollution as well as the requirements of the NDZ and the VGP. Ecology also recommends continued participation in the PSHSC SOCs and other port and/or marina-specific requirements and best practices aimed at reducing water quality impacts.

4.3.4.3 Significant and Unavoidable Adverse Impacts

Alternative B would not result in significant and unavoidable adverse impacts on water quality as the anticipated types and quantities of tug escort wastewater and incidental discharges and the frequency of spills would not meaningfully change relative to Alternative A.

4.3.5 Findings for Alternative C (Expansion)

4.3.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, escort tugs would continue to produce the same types of discharges as under Alternative A; however, minor changes in the locations and quantities of certain

discharges or releases may occur. The slight increase in underway time would not be expected to meaningfully influence the amount or frequency of escort tug discharge generation. The FORs would not have any impact on the type, quantity, or frequency of escort tug discharges relative to Alternative A.

The rulemaking expansion area under Alternative C is entirely within the NDZ; therefore, no additional impacts related to escort tug sewage discharges other than those discussed for Alternative A would occur. No additional 303(d)-listed water bodies are within the rulemaking expansion area under Alternative C; therefore, no additional impaired waters would be directly affected. Because escort tug underway time could shift slightly north under this alternative, there is a slight decrease in tug activity throughout the majority of the existing rulemaking area. This could result in minor benefits to water quality in the region, particularly near Anacortes and Cap Sante Marina (3.26 percent reduction in underway time). While the geographic area where the risk of incidental spills or discharges of oil and grease could occur would increase, continued compliance with VGP requirements and best management practices is expected to control discharges in such a way as to not cause an exceedance in water quality standards.

Alternative C would potentially decrease the risk of drift groundings (to a 1-in-189 chance that a target vessel drift grounding occurs in any given year) and decrease the risk of drift grounding resulting in an oil spill from target vessels (to once every 25,830 years), thereby minimizing the potential to adversely affect water quality due to oil spills. Conversely, the expanded range of tug escort requirements and increase in escort tug activity would slightly increase the escort tug incident rate from 0.86 to 0.88 per year. The expansion area includes environmentally sensitive and protected areas. Trajectory modeling suggests that tug escort requirements in the expansion area would decrease the risk of these areas being impacted by an oil spill from a target vessel.

4.3.5.2 Mitigation Measures

Escort tugs and target vessels under Alternative C would be required to adhere to the same mitigation measures described under Section 4.3.3.2 (Mitigation Measures). This includes compliance with existing federal and state regulations for vessel traffic safety and oil pollution as well as the requirements of the NDZ and the VGP. Ecology also recommends continued participation in the PSHSC SOCs and other port and/or marina-specific requirements and best practices aimed at reducing water quality impacts.

4.3.5.3 Significant and Unavoidable Adverse Impacts

Although Alternative C may result in minor changes in the locations and quantities of certain discharges, it would not have significant or unavoidable adverse impacts on water quality. Discharges, releases, and spills are not likely to cause chronic or recurring water quality standard exceedances, or HABs, or disrupt water quality-dependent habitats and activities throughout the EIS Study Area.

4.3.6 Findings for Alternative D (Removal)

4.3.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have a minor impact on water quality from discharges and associated pollutants, they would be unrelated to this rulemaking.

Therefore, discharges from escort tug activity under this rulemaking and the associated pollutants typically present in these discharges are anticipated to decrease under Alternative D, resulting in a minor benefit to water quality in the EIS Study Area. However, as discussed in Section 4.3.2 (Affected Environment), the existing escort tug activity is not likely a substantial contributor to water quality concerns in the EIS Study Area. Therefore, a significant improvement in water quality under Alternative D is not anticipated. Water-quality dependent habitats and activities and environmentally sensitive and protected areas are not expected to experience a significant benefit from Alternative D.

Under Alternative D, the probability of a target vessel drift grounding would increase by 11.84 percent within the EIS Study Area and by 90.50 percent within the rulemaking area, compared to Alternative A. This means that a catastrophic spill from a target vessel drift grounding is more likely to occur. Acute water quality impacts could occur as a result of a catastrophic oil spill. Worsening water quality resulting from oil spills would occur at the spill origin point and within the spill trajectory path, which would impact those dependent on the impacted environmentally sensitive and protected areas in the EIS Study Area.

A discussion of each modeled spill and the distribution of impacts is presented in the Appendix C. While the risk of major spills from target vessels would increase under Alternative D, the elimination of tug escort activity would also result in an eliminated risk of tug escort incidents.

4.3.6.2 Mitigation Measures

Escort tugs mitigate (reduce) the risk of a spill from target vessels; however, Alternative D removes the tug escort requirements for target vessels. The mitigation measures described in Alternative A in Section 4.3.3.2 (Mitigation Measures), would only apply to target vessels under Alternative D.

4.3.6.3 Significant and Unavoidable Adverse Impacts

Alternative D would result in significant and unavoidable adverse impacts on water quality in the EIS Study Area due to the increased risk of catastrophic oil spills from target vessels. While the probability of such an event would remain low, the increased probability of a catastrophic oil spill and the resulting environmental consequences would be reasonably likely to result in adverse effects beyond a moderate level to water quality in the EIS Study Area.

4.4 Environmental Health: Noise

This section describes the existing conditions and potential impacts to underwater and airborne noise levels in the EIS Study Area resulting from the four rulemaking alternatives. The analysis also considered how the changes in noise levels would potentially impact wildlife (e.g., marine mammals and finfish) and human receptors.

Refer to the Environmental Health: Noise Discipline Report (Appendix E) for more information on the methodology, additional details regarding existing underwater and airborne noise in the EIS Study Area, the full analysis of impacts to underwater and airborne noise under each alternative, and a more comprehensive list of relevant mitigation measures.

4.4.1 Methodology

Ecology reviewed scientific literature, technical reports, data, and Tribal and stakeholder input regarding existing noise within the EIS Study Area, focusing primarily on underwater and airborne noise related to marine vessel activity. Ecology reviewed the results of vessel activity simulations to determine how tug escort activity is projected to change under the rulemaking alternatives (see Appendix B for details).

Ecology also reviewed data from previous studies and other technical sources associated with marine vessel activities to examine how different vessel categories contribute to the underwater soundscape in the EIS Study Area. Ecology assessed the underwater noise distributions for several vessel activity simulations. These simulations estimated the existing annual spatial and temporal distribution for tug escorts, and how underway times and routes are modeled to change under the rulemaking alternatives (see Appendix B Transportation: Vessel Traffic Discipline Report for details).

JASCO Applied Sciences (JASCO) conducted underwater acoustic noise modeling using Acoustic Real-Time Exposure Model Incorporating Ambient (ARTEMIA) to assess how tug escort requirements would affect the underwater soundscape for each alternative. The model incorporated data from several vessel types[17] that account for vessel category, size, and speed (MacGillivray et al., 2022). The model was run for one week of vessel traffic data in the summer (July) and in the winter (January) to compute sound levels. Sound levels were then compared against the National Marine Fisheries Services' (NMFS) behavioral acoustic disturbance threshold for marine mammals (120 dB broadband sound pressure level [SPL])[18] and finfish (150 dB broadband SPL) for continuous noise sources (NMFS 2024) to assess potential impacts.

[17] Vessel data included the following ten categories: cargo vessels at anchorage, bulk carriers, container ships, fishing, tankers, passenger, recreational, ferry, tugs and tug-and-barge combos, and vehicle carriers.

[18] Ecology also considered using a threshold of 110 dB in the SRKW echolocation band, as highlighted by Tennessen et al. (Tennessen et al., 2024) to be of particular relevance when examining potential impact on foraging. However, Ecology's analysis determined that this threshold is anticipated to be exceeded less often than the 120 dB broadband threshold since the echolocation band encompasses a smaller frequency range that does not include predominant ship noise frequencies, and therefore contains less acoustic energy. This suggests that using the 120 dB broadband threshold results is a more environmentally conservative analysis because it identifies more instances where vessel underwater noise could be affecting marine mammal behavior.

The model focused on seven selected locations that could be exposed to noise from escort tugs under existing conditions and/or one of the rulemaking alternatives. Each of the seven locations are also biologically sensitive due to their high importance to Southern Resident Killer Whales (SRKW) and/or use by humpback whales, gray whales, minke whales, or harbor porpoise. The seven selected wildlife receptor locations are shown in Figure 10 and described in Table 13.

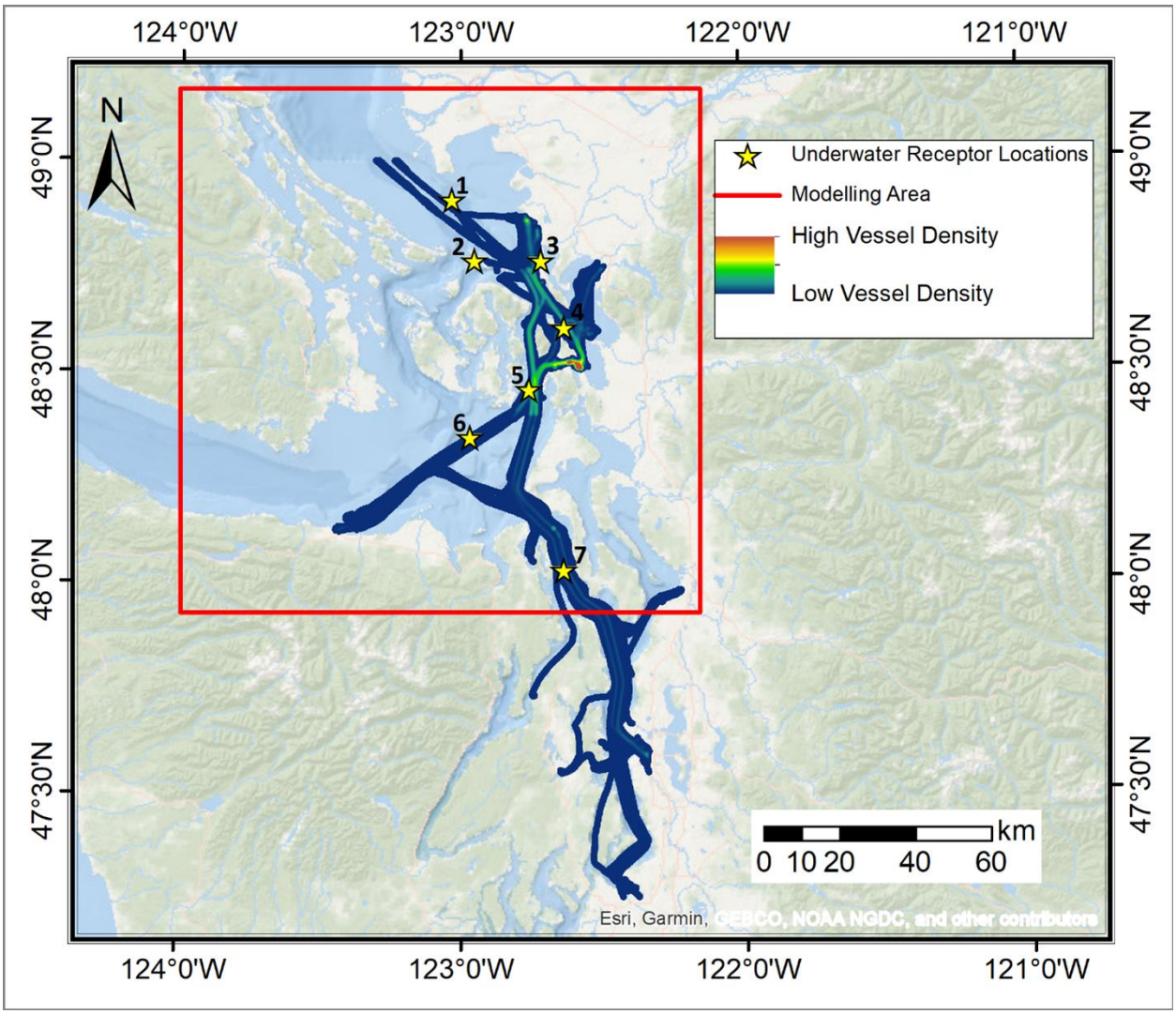


Figure 10. Map of modeling area with key acoustic receptor locations and density tracks of the tug escorts affected by the rulemaking.

Table 13. Key underwater noise receptor locations and rationale for their selection.

Key Receptor Location	Rationale for Selection
1 – Strait of Georgia	Near proposed expansion area and an area of intensive SRKW activity[a]
2 – Boundary Pass	Near proposed expansion area and an area frequented by SRKW,[a] humpback whales[b] and harbor porpoises[c]
3 – Lummi Bay	Near proposed expansion area
4 – Anacortes	Close to a moderate amount of target tug traffic and an area frequented by SRKW[a,d] and harbor porpoises[c]
5 – Rosario Strait	Close to a moderate amount of target tug traffic and an area frequented by SRKW,[a,d] gray whales[e] and harbor porpoises[c]
6 – Haro Strait	An area of intensive activity for SRKW,[a,d] humpback whales[b] and minke whales[e]
7 – Puget Sound	Close to current target tug route and an area frequented by SRKW,[d] humpback, and gray whales[b]

Source: a – DFO (Pacific Region) (2021), b – Olson et al. (2024), c – Anderson et al. (2023), d – Olson et al. (2018), e – Shields et al. (2024)

Lastly, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 14. Significance thresholds for noise impacts.

Indicator	Significance Thresholds
Underwater sound levels exceeding the NMFS acoustic disturbance thresholds	• Tug escort requirements contribute to at least a 10 percent increase in the area where received noise (ensonified area) is above the NMFS acoustic disturbance threshold compared to without tug escort requirements (Alternative D). • Tug escort requirements contribute to at least a 10 percent increase in the occurrence of periods during which received noise levels are above the NMFS acoustic disturbance thresholds compared to without tug escort requirements (Alternative D).
Highest and median underwater sound levels	• Tug escort requirements contribute to the highest received levels (95th percentile) increasing by greater than 3 decibels (dB) compared to without tug escort requirements (Alternative D). • Tug escort requirements contribute to the median received levels (50th percentile) increasing by greater than 3 dB compared to without tug escort requirements (Alternative D).
Airborne operational noise levels exceeding noise standards	• Reasonable likelihood of a chronic and recurring increase in the frequency, severity, and/or extent of noise standard exceedances in populated communities, due to source noise from escort tugs, compared to without tug escort requirements (Alternative D).

4.4.2 Affected Environment

The Salish Sea, including the EIS Study Area, is a high marine vessel traffic area for both commercial and recreational vessels (MacGillivray et al., 2024). Busy marine shipping routes pass through this area, including local and international shipping lanes to the Ports of Seattle, Tacoma, and Vancouver, British Columbia, as well as numerous passenger and cargo ferry routes, and several types of tugs. These inland waters are also popular for recreational and fishing vessels, as well as whale watching and other ecotourism traffic.

Many marine wildlife species that are found in the EIS Study Area are sensitive to underwater noise. Marine mammals are particularly sensitive to underwater noise due to their use of sound for vital life functions. Animals in the EIS Study Area at elevated risk of being impacted by underwater noise due to their reliance on sound and/or their abundance in the EIS Study Area include SRKW, West Coast Transient killer whales (also known as Bigg's killer whales), humpback whales, harbor porpoises, gray whales, minke whales, finfish (e.g., salmon, herring, etc.), and diving seabirds.

The SRKW are found year-round in the intercoastal waterways of British Columbia and Washington state (70 FR 69903) but are less common in winter (Gaydos & Pearson, 2011). However, SRKW presence in fall and winter in the Salish Sea has remained consistent or even

increased in recent years (Shields et al. 2024). Birds could also be affected by airborne noise. See Section 4.5 (Plants and Animals) and Appendix F for more information on the marine life species present in the EIS Study Area and anticipated impacts to plant and animal resources from the rulemaking.

The waters in the EIS Study Area are biologically rich and diverse and serve as major shipping corridors for commercial vessels and contain popular recreational boating areas. As such, numerous studies have been conducted to better understand the effects of anthropogenic noise on wildlife—notably, on SRKW, due to their extremely vulnerable population status. Several recent reports have confirmed negative impacts from vessels and their noise on SRKW. Examples include increased acoustic masking, which reduces their communication and echolocation abilities, disrupted foraging, and reduced prey captures (R. E. Burnham, 2023; Foote et al., 2004; Holt et al., 2021).

Studies have also shown behavioral and physiological changes in humpback and gray whales due to vessel noise (R. Burnham & Duffus, 2019; Dahlheim & Castellote, 2016; Fournet et al., 2018; Miller et al., 2000; Moore & Clarke, 2023; Sprogis et al., 2020). As stated in Section 4.4.1 (Methodology) and described in additional detail in Appendix E, NMFS has established acoustic thresholds representing underwater noise levels at which the behavior of marine wildlife would be expected to be disturbed. These thresholds vary depending on the type of wildlife exposed to the noise since marine species have different hearing ranges and susceptibilities to hearing damage and behavioral disturbances (NMFS 2023b, NMFS 2023a). The NMFS has established marine mammal and finfish acoustic disturbance thresholds of 120 and 150 dB broadband SPL, respectively, for continuous noise sources (NMFS 2023b, NMFS 2023a).

A recent local study (Matei et al. 2024) conducted in Puget Sound revealed that tug traffic can contribute up to approximately 19 percent to overall underwater noise in the area. MacGillivray et al. (2024b) had consistent findings, with tugs ranked the second and third highest contributing vessel category in the SRKW communication and echolocation bands, respectively, in the Salish Sea.

While underwater noise is a primary ecological concern, marine vessel activity also contributes to airborne noise levels in the EIS Study Area. Marine vessel airborne noise primarily comes from the auxiliary engines, with other on-vessel sources include exhaust, ventilation systems, and occasional whistle use (e.g., foghorns).

4.4.3 Findings for Alternative A (No Action)

4.4.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

Under Alternative A, escort tugs would continue to produce underwater noise, including at biologically important locations. The intensity, duration, and frequency of underwater noise impacts depend on the location, time of year, and whether the tug is actively escorting a target vessel or transiting on its own. To assess the noise impacts specifically from tug escort

requirements, Ecology conducted underwater noise modeling for scenarios both with and without the tug escort requirements. The difference between the two modeling results represents the impact attributable to continued tug escort requirements under Alternative A. **Error! Reference source not found.** presents the total number of minutes per week where the received broadband sound pressure level (SPL) is above the NMFS acoustic disturbance thresholds for marine mammals (120 dB SPL), with (Alternative A) and without (Alternative D) tug escorts. **Error! Reference source not found.** presents the average ensonified area, where the received sound would be above 120 dB SPL with and without tug escorts.

Table 15. Modeled number of minutes (per week) above the 120 dB threshold under existing conditions, with and without tug escorts.

Key Receptor Location		Winter	Winter	Summer	Summer
		With Tug Escorts (Alt. A)	Without Tug Escorts (Alt. D)	With Tug Escorts (Alt. A)	Without Tug Escorts (Alt. D)
1	Strait of Georgia	366	366	3	3
2	Boundary Pass	15	15	42	42
3	Lummi Bay	134	119	4	4
4	Anacortes	162	126	210	192
5	Rosario Strait	926	782	604	483
6	Haro Strait	498	498	293	277
7	Puget Sound	1,144	1,133	1,326	1,220

Table 16. Modeled average total area ensonified above the 120 dB threshold under existing conditions, with and without tug escorts.

Scenario	Winter – Ensonified Area	Summer – Ensonified Area
With Tug Escorts (Alt. A)	118.4 km^2	80.7 km^2
Without Tug Escorts (Alt. D)	116.2 km^2	78.0 km^2

Ecology's underwater noise modeling indicated that SPLs from marine vessel traffic (including a combination of escort tugs and other vessel types) at all seven biologically important receptor locations periodically exceed the NMFS marine mammal behavioral disturbance acoustic threshold (i.e., 120 dB broadband SPL) during both seasons. At the Rosario, Anacortes, and Lummi receptor locations, these exceedances in winter and/or summer occur at least 10 percent more frequently with current tug escort requirements (Alternative A) compared to without tug escort requirements (Alternative D). This portion of underwater noise is attributable to the tug escort requirements, which would continue under Alternative A.

The modeling results indicate that tug escort requirements under Alternative A have a fairly substantial contribution to the local soundscape. Underwater noise from continued tug escort requirements under Alternative A would have the potential to result in negative impacts on marine mammals. Some possible impacts from continued underwater noise could include displacement of marine mammals; alteration of calling rates, intensities, or other forms of

communication; effects on foraging behavior and orientation; stress; and/or physical injury in extreme cases. The modeling suggests these impacts could occur notably in Rosario Strait in both seasons and Anacortes and Lummi only in summer and only for marine mammals. Numerous species of marine mammals frequent those locations, particularly SRKW, Bigg's killer whales, humpback and gray whales.

Additionally, under Alternative A, underwater noise could negatively affect the behavior of finfish. Tug escort requirements under Alternative A are also responsible for over ten percent more exceedances of the NMFS 150 dB finfish behavioral disturbance threshold compared to without tug escort requirements (Alternative D). However, the counts of these exceedances (both with and without tug escorts) are very low.[19] For example, tug escort requirements under Alternative A only account for three minutes per week of noise over the NMFS 150 dB finfish behavioral threshold.

Ecology also reviewed the median and highest noise levels with tug escort requirements (Alternative A) and without (Alternative D). Under Alternative A, the largest increases due to the inclusion of tug escort requirements occurred at Rosario Strait for both median and highest noise levels, accounting for an increase of up to 1.7 dB and 2.8 dB respectively.

Lastly, under Alternative A, escort tugs would continue to emit airborne noise. While underway, escort tugs produce continuous airborne noise from their auxiliary engines, exhaust, and ventilation systems. Because escorting is done in relative close proximity, noise from the escort tug may be difficult to distinguish from that of the target vessel while escorting.

Escort tugs also produce intermittent noise from whistles or bells in certain circumstances, such as when maneuvering near other vessels, leaving a dock or berth, or operating in areas where visibility is limited (e.g., due to night, fog, or visual obstructions). Routine maintenance and repair activities can also be a source of noise while escort tugs are anchored or while out of service in a shipyard. However, escort tug activity primarily occurs far enough from the shoreline that these continued activities would not generally be expected to meaningfully influence perceived noise levels in shoreline communities within the EIS Study Area.

4.4.3.2 Mitigation Measures

Escort tugs are required to adhere to all applicable federal requirements regarding vessel traffic safety and navigation within the established traffic separation scheme and under the vessel traffic service. Escort tugs are also required to adhere to all applicable requirements regarding airborne noise, including the noise standards established under RCW 79A.60.130.

[19] It should be noted that the noise model used a receptor depth of 10 meters due to the particular focus on marine mammals, specifically SRKW. Therefore, a receptor at a greater water depth than 10 meters would experience lower sound levels due to the increased distance between the source (vessel) and the receptor (animal). In other words, there would be fewer or no exceedances of the thresholds for animals closer to the seafloor. However, while sound levels infrequently exceeded the NMFS finfish behavioral threshold, recent research (van der Knaap et al. 2022, Ogurek et al. 2024) indicates that there could still be potential for behavioral impacts to finfish, particularly where fish 'hotspots' overlap with high vessel traffic areas (e.g., Puget Sound).

There are both federal (76 FR 20870) and state (RCW 77.15.740) requirements to maintain a certain distance from killer whales; 200 yards under federal regulations and 1,000 yards under state regulations. The state regulations also include vessel speed requirements. These measures help reduce noise and vessel disturbance-related impacts to marine mammals (see Appendix F for additional details). At both the federal and state levels, these requirements have an exemption for vessels operating in conjunction with the vessel traffic service, which includes escort tugs and target vessels. Ecology encourages tugs and target vessels to comply with these distance and speed regulations where safe and feasible to do so. Ecology also recommends that the PSHSC consider developing an SOC for escort tugs that encourages them to maintain 1,000-yard distance from killer whales where safe and feasible to do so.

Several studies have shown that noise levels substantially decrease during vessel traffic slowdowns (Joy et al. 2019, Matei et al. 2024, Port of Vancouver 2024). Voluntary vessel slowdowns aimed at reducing impacts to marine mammals have been run out of the Port of Vancouver's Enhancing Cetacean Habitat and Observation (ECHO) Program and the Quiet Sound program in Washington State. Both voluntary slowdown programs in the Salish Sea have reduced underwater sound intensity levels by up to 50 percent, or 3 dB by slowing large commercial vessel traffic to 11 or 14.5 knots, depending on the vessel type (Matei et al. 2024, Port of Vancouver 2024). Ecology recommends escort tugs continue their participation in these and any future voluntary slowdowns aimed at reducing noise and disturbance impacts to marine mammals. The displacement of vessel traffic routes away from biologically sensitive locations could also result in substantial reductions in noise levels (Vagle and Neves 2019, Burnham and Vagle 2023). However, this may not be feasible in the rulemaking area due to narrow shipping lanes.

The PSHSC SOC on tanker escorts recommends that in Rosario Strait, escort speed should not exceed ten knots. Ecology recommends that the PSHSC extend this SOC to the escort of target vessels and that escort tugs and target vessels continue to reduce speed to reduce underwater noise impacts.

The use of hybrid-electric vessels may help reduce vessel noise levels (Robert Allan Ltd. 2024). However, Ecology recognizes that the technological readiness for deployment of electric tugs for escort work in the Salish Sea is not yet in place. Ecology recommends that escort tug companies consider a transition to hybrid electric and eventually electric tugs, when the cost and technology make this feasible, in order to further reduce underwater noise impacts of their operation. Lastly, regarding airborne noise, Ecology recommends that escort tug operators follow best practices to limit unnecessary and nighttime airborne noise, according to guidelines set by the USCG and PSHSC (PSHSC, 2023; USCG, 2016).

4.4.3.3 Significant and Unavoidable Adverse Impacts

Alternative A would result in significant and adverse noise impacts in the EIS Study Area due to the substantial contribution to underwater noise from tug escort requirements, particularly within modeled biologically important areas for marine mammals. As discussed in Section 4.4.3.1 (Impacts from Implementation), Ecology's underwater noise modeling indicates that tug escort requirements in Alternative A do make a significant contribution to underwater noise in certain modeled biologically important areas—specifically, Rosario, Anacortes, and Lummi in winter and Rosario in summer. Tug escort requirements in Alternative A cause the NMFS 120 dB marine mammal behavioral disturbance to be exceeded at least 10 percent more frequently at these locations than without the current tug escort requirements.

Tug escort requirements under Alternative A also cause the NMFS 150 dB finfish behavioral disturbance threshold to be exceeded over 10 percent more frequently in certain areas. However, the counts of these exceedances (both with and without tug escorts) are very low. Further, while the noise model is based on a receptor depth of 10 meters, most finfish of concern are found at greater depths. Therefore, the underwater noise from tug escort requirements is not expected to result in meaningful exceedances of the threshold at the depths where finfish of concern are likely to be found and thus is not expected to result in significant impacts on finfish.

Lastly, regarding airborne noise, continued tug escort requirements under Alternative A would not be expected to result in a chronic or recurring increase in the frequency, severity, and/or extent of airborne noise standard exceedances in populated communities. Therefore, Alternative A would not result in significant and adverse impacts related to airborne noise in the EIS Study Area.

4.4.4 Findings for Alternative B (Addition of FORs)

4.4.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. The horsepower requirement codifies existing industry practices and all of the identified escort tugs meet the propulsion requirement. The FORs are not expected to change the underwater noise impacts over those described in Alternative A.

4.4.4.2 Mitigation Measures

No additional mitigation measures than those included for Alternative A (Section 4.4.3.2) have been identified for Alternative B. Escort tugs would be required to adhere to existing federal vessel traffic safety requirements and state noise standards. Ecology recommends that escort tugs continue to participate in PSHSC SOCs, voluntary underwater noise reduction measures, maintain distance from killer whales where safe to do so, and consider transitions to hybrid electric vessels when feasible to do so. We also recommend that the PSHSC consider extending and/or creating new SOCs as described in Section 4.4.3.2.

4.4.4.3 Significant and Unavoidable Adverse Impacts

Alternative B would result in significant and unavoidable adverse impacts to noise levels in the EIS Study Area due to the substantial contribution to underwater noise from tug escort requirements, which would be the same as those discussed in Section 4.4.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

4.4.5 Findings for Alternative C (Expansion)

4.4.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, total underwater noise from the tug escort requirements would increase compared to existing conditions. However, Ecology's noise modeling showed that Alternative C would only minimally change the underwater sound levels at most modeled locations when compared to Alternative A. Alternative C would not result in additional exceedances of the NMFS 120 dB (**Error! Reference source not found.** and **Error! Reference source not found.**) or 150 dB behavioral disturbance acoustic thresholds as compared to Alternative A.

Table 17. Modeled number of minutes (per week) above the 120 dB threshold under Alternative A and Alternative C.

Key Receptor Location		Winter	Winter	Summer	Summer
		Alternative A	Alternative C	Alternative A	Alternative C
1	Strait of Georgia	366	366	3	3
2	Boundary Pass	15	15	42	42
3	Lummi Bay	134	134	4	4
4	Anacortes	162	162	210	210
5	Rosario Strait	926	926	604	604
6	Haro Strait	498	498	293	293
7	Puget Sound	1,144	1,144	1,326	1,326

Table 18. Modeled average total area ensonified above the 120 dB threshold under Alternative A and Alternative C.

Scenario	Winter – Ensonified Area	Summer – Ensonified Area
Alternative A	118.4 km^2	80.7 km^2
Alternative C	118.6 km^2	80.6 km^2

The median and highest noise levels increased slightly at only two locations (Boundary Pass and Lummi Bay - which are adjacent to the expansion area), and only in winter. Specifically, median

noise levels increased by 0.6 dB at Lummi Bay, and highest noise levels increased by 0.4 dB at Boundary Pass. The relative increase observed in winter and not in summer is attributed to higher noise levels from recreational vessel traffic in summer that mask the smaller changes in noise produced as a result of the expanded tug escort requirements. This small increase would result in no additional threshold exceedances and only very minor changes in the average ensonified area, where the received sound would be above 120 dB SPL.

Since noise levels under Alternative C reach the marine mammal and finfish behavioral disturbance acoustic thresholds, there is potential for the noise to have negative impacts on marine mammals and fish, with some additional negligible to minimal impacts on marine mammals and finfish within and near the rulemaking expansion area.

Lastly, under Alternative C, the changes in escort tug activity described above could result in additional perceptible airborne noise impacts to shoreline communities located near the rulemaking expansion area, especially near Cherry Point. However, the majority of the increase in escort tug activity would take place far from the shoreline (i.e., within the expanded rulemaking area), and escort tug activity near certain communities (e.g., Anacortes, Neptune Beach) would decrease under Alternative C.

4.4.5.2 Mitigation Measures

Mitigation measures for Alternative C are largely the same as those included for Alternative A (Section 4.4.3.2). Escort tugs would be required to adhere to existing federal vessel traffic safety requirements and state noise standards. Ecology recommends that escort tugs continue to participate in PSHSC SOCs, voluntary underwater noise reduction measures, maintain distance from killer whales where safe to do so, and consider transitions to hybrid electric vessels when feasible to do so. We also recommend that the PSHSC consider extending and/or creating new SOCs as described in Section 4.4.3.2.

Specifically for Alternative C, our recommendation to extend the Tanker Escort SOC includes both extending the overall applicability and speed recommendations to the escort of target vessels, and including the expansion area.

4.4.5.3 Significant and Unavoidable Adverse Impacts

Alternative C would result in significant and unavoidable adverse impacts to noise levels in the EIS Area due to the substantial contribution to underwater noise from tug escorts, which would be similar to those discussed in Section 4.4.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

4.4.6 Findings for Alternative D (Removal)

4.4.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. Target vessel movement would be unaffected by this alternative. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to contribute to underwater noise across the EIS Study Area, those impacts are unrelated to this rulemaking and

are not considered. Our analysis for Alternative D focuses on the change in underwater noise associated with the removal of tug escort requirements for target vessels in the current rulemaking area.

Under this alternative, underwater noise and the resulting impacts to marine mammals would be substantially reduced in comparison to existing conditions (those described under Alternative A). As discussed in Section 4.4.3.1 (Impacts from Implementation), the existing tug escort requirements are a substantial contributor to underwater noise, with potential impacts to marine mammals and finfish at some modeled locations in the EIS Study Area.

The number and duration of exceedances of the NMFS marine mammal 120 dB threshold would be reduced under Alternative D compared to Alternative A, presenting a possibility for a substantial improvement in the underwater soundscape at some locations. The underwater noise model predicted changes in median noise levels at all seven biologically sensitive receptor locations under Alternative D during winter and/or summer. The NMFS thresholds for both marine mammals and finfish would still be exceeded, but these exceedances would not be attributable to tug escort requirements under this rulemaking. See the "without tug escorts" portions of **Error! Reference source not found.** and **Error! Reference source not found.** for the model outputs for Alternative D.

Under Alternative D, median noise levels would decrease by at least 0.1 dB at all seven receptor locations in at least one season compared to Alternative A. Highest noise levels would decrease for at least five receptor locations in winter and/or summer. The removal of tug escort requirements would reduce noise-related impacts at all receptor locations, resulting in benefits to important animal resources such as through reduced risk of noise-related injury and stress; expanded area use; and improved communication, orientation, foraging, mating, and defense. Refer to Section 4.5 (Plants and Animals) for more details on overall impacts to wildlife.

Lastly, under Alternative D, elimination of the tug escort requirements for target vessels would eliminate airborne noise contributions from escort tugs. However, because these existing noise impacts are not substantial, improvements in airborne noise levels would not be expected to be significant.

4.4.6.2 Mitigation Measures

No noise-related mitigation measures have been identified for Alternative D.

4.4.6.3 Significant and Unavoidable Adverse Impacts

Due to the reduction in underwater and airborne noise, Alternative D would not result in significant and unavoidable adverse noise impacts.

4.5 Plants and Animals

This section describes the existing conditions and potential impacts to plant and animal resources in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered protected areas and special aquatic habitats, as well as species that use the marine or nearshore environment, including special-status species.

Refer to the Plants and Animals Discipline Report (Appendix F) for more information on the methodology, additional details regarding existing plants and animals in the EIS Study Area, the full analysis of impacts to plants and animals under each alternative, and a more comprehensive list of relevant mitigation measures.

4.5.1 Methodology

Ecology reviewed scientific literature, technical reports, data, and Tribal and stakeholder input to identify plant and animal resources in the EIS Study Area that could be impacted by the proposed rulemaking. We also researched the threats to these resources, and how vessel and escort tug activity affect these resources. This section focuses on the plant and animal resources that are of greatest conservation concern; that have particular ecological, economic, cultural, Tribal, or social importance; and/or that are at greatest risk of impacts associated with the rulemaking. Ecology contacted maritime subject matter experts to better understand escort tug activity, including anchoring practices and strike risks. Additionally, Ecology reviewed the results of vessel activity simulations to determine how escort tug activity, including escort tug speeds, is projected to change under the rulemaking alternatives. Ecology assessed how simulated escort tug activity related spatially to plant and animal resources. Ecology used available information to characterize how current escort tug activity contributes to existing threats to plant and animal resources and considered how these impacts would change under each alternative. Finally, Ecology assessed whether those impacts would likely result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 19. Significance thresholds for plants and animal resources impacts.

Indicator	Significance Thresholds
All plant and animal resources	• Reasonable likelihood of an increase in the frequency, severity, and/or extent of adverse impact beyond a moderate level – such as through mortality or injury to special-status species; noise exposure; damage, loss, or degradation of sensitive habitats or protected ecological areas (including from oil spills); or disturbances/disruptions to species or their nests – that are expected to affect the viability of a population/ecosystem; or • Reasonable likelihood of an increase in the frequency, severity, and/or extent of adverse impacts that conflict with the provisions of approved local, regional, or state wildlife management plans or policies.
Marine mammals	• An increase of at least 10 percent in the occurrence of periods during which received noise levels are above the NMFS marine mammal acoustic disturbance threshold.[a]

a – NMFS established a threshold of 120 dB broadband sound pressure level to represent the underwater noise level at which the behavior of marine mammals would be expected to be disturbed, as discussed in Section 4.4 (Environmental Health: Noise) and Appendix E.

4.5.2 Affected Environment

Plant and animal resources in the EIS Study Area include marine mammals, finfish, aquatic invertebrates, birds, terrestrial and semi-aquatic animals, intertidal and aquatic plants, and protected ecological areas and special aquatic habitats. Marine mammals considered in this analysis include, but are not limited to, Southern Resident Killer Whales (SRKWs) (*Orcinus orca*), West Coast Transient (WCT) killer whales (also known as Bigg's killer whales), humpback whales (*Megaptera novaeangliae*), harbor porpoises (*Phocoena phocoena*), and gray whales (*Eschrichtius robustus*).

The SRKW were evaluated in-depth as they are considered a cultural icon and are critically endangered. The SRKW population consists of only approximately 73 individuals and is estimated to decrease by 1 percent per year (Center for Whale Research, 2024; Orca Conservancy, 2024; Williams et al., 2024). SRKWs are found year-round in the intercoastal waterways of British Columbia and Washington state (70 FR 69903) but are rarer in winter (Gaydos & Pearson, 2011). However, SRKW presence in fall and winter in the Salish Sea has remained consistent or even increased in recent years (Shields et al. 2024). Figure 11 shows the total number of unique SRKW sightings in different parts of the EIS Study Area from 1999 to 2022 based on The Whale Museum Orca Sightings and NOAA Fisheries (2024b) data.

The EIS Study Area contains critical habitat designated for SRKW, humpback whale, Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), bocaccio (*Sebastes paucispinis*), yelloweye rockfish (*Sebastes ruberrimus*), and green sturgeon (*Acipenser medirostris*). Additionally, nearly the entire EIS Study Area has been designated as Essential Fish Habitat (EFH) for groundfish and coastal pelagic species, and several seagrass areas, canopy kelp areas, and estuaries throughout the EIS Study Area have been designated as groundfish Habitat Areas of Particular Concern (HAPCs).

These plant and animal resources face a variety of threats. Marine vessels currently contribute to impacts to plant and animal resources associated with noise, strikes and other physical interactions, water quality, physical impacts to habitat, air emissions, and artificial lighting. Existing escort tug activity has a fairly substantial contribution to the local soundscape in some modeled locations and thus can contribute to underwater noise-related injury and disturbances to certain animals. While escort tugs have the potential to injure or kill marine mammals if struck, Ecology's review of available information suggests that escort tugs do not contribute substantially to collisions with marine mammals. Escort tug activity is likely to have negligible to insubstantial contributions to other vessel-related threats to plant and animal resources (e.g., airborne noise, water quality, physical impacts to habitat, air emissions, and artificial lighting). See Section 4.1.3 (Findings for Alternative A) for additional discussion of these existing impacts that would continue under Alternative A.

The three main threats to marine mammals, particularly SRKWs, are limited prey availability, vessel traffic noise, contaminants, and other disturbances (NOAA Fisheries, 2023a). Vessel noise and physical vessel interaction often intersect. Vessels within 100 meters of SRKW have a clear, substantial effect on whale behavior, and could have substantial effects on the behavior of whales up to 400 meters away (Lusseau et al., 2009). For example, vessels in close proximity to SRKWs can affect respiration rates and swim speed and directness, and whales have also been found to perform surface active behaviors (e.g., breaches, tail or fin slaps) when closely approached by a vessel (Joy et al., 2019; Noren et al., 2009). Additionally, boats within 400 yards of SRKWs disturb their foraging (Holt et al., 2021). Furthermore, female SRKWs have been found to be more sensitive to vessel traffic and may stop foraging completely when in close proximity to vessels, which could have subsequent negative effects on reproduction (Holt et al., 2021; NOAA Fisheries, 2021).

Even though individual interferences with prey acquisition from interaction with vessels may be short term, if SRKWs are regularly obtaining less food than they need, frequent impacts on individuals could cumulatively result in population-level effects in areas with excessive marine vessels (Lusseau et al., 2009).

Climate change is a unique and ongoing threat to plant and animal resources in the EIS Study Area which can exacerbate other existing threats. Lack of food is a limiting factor for SRKW (who primarily eat salmon) and other marine mammals. Finfish in the EIS Study Area, particularly salmon due to their anadromous nature and reliance on multiple habitat types, have been and/or continue to be threatened by climate change, overharvesting, habitat loss, and predation. Climate change is decreasing water levels in streams and increasing water temperatures, severe flood risks, and carbon dioxide levels, all of which threaten salmon survival (Governor's Salmon Recovery Office, 2022). Finfish populations are impacted faster than they are able to adapt to the fluctuating conditions of climate change (Puget Sound Partnership, 2024).

Climate change is also affecting aquatic invertebrates through more frequent heat waves and warmer water temperatures (Puget Sound Partnership, 2024). Warmer water temperatures also increase HABs, which could result in more frequent and/or longer closures of shellfish harvest areas to prevent human consumption of contaminated shellfish (Epps, 2024;

Washington State Department of Health, 2024). Ocean acidification increases as carbon dioxide levels in the ocean rise, affecting shell formation in animals., that require calcium carbonate to form shells (i.e., shellfish) (Ecology, 2024a). These impacts on shellfish have subsequent effects to Tribal, commercial, and recreational industries (Ecology, 2024a).

Sea level rise due to climate change is expected to increase in Puget Sound, which would exacerbate impacts to important seabird habitat including marshes, shorelines, and nesting sites. Sea level rise increases erosion and water inundation of coastal areas, which can cause habitat loss or otherwise harm marine birds (Mauger et al., 2015).

The combination of these threats together and projected worsening of certain stressors in the future from climate change and habitat loss is expected to exacerbate impacts to plants and animals in the future.

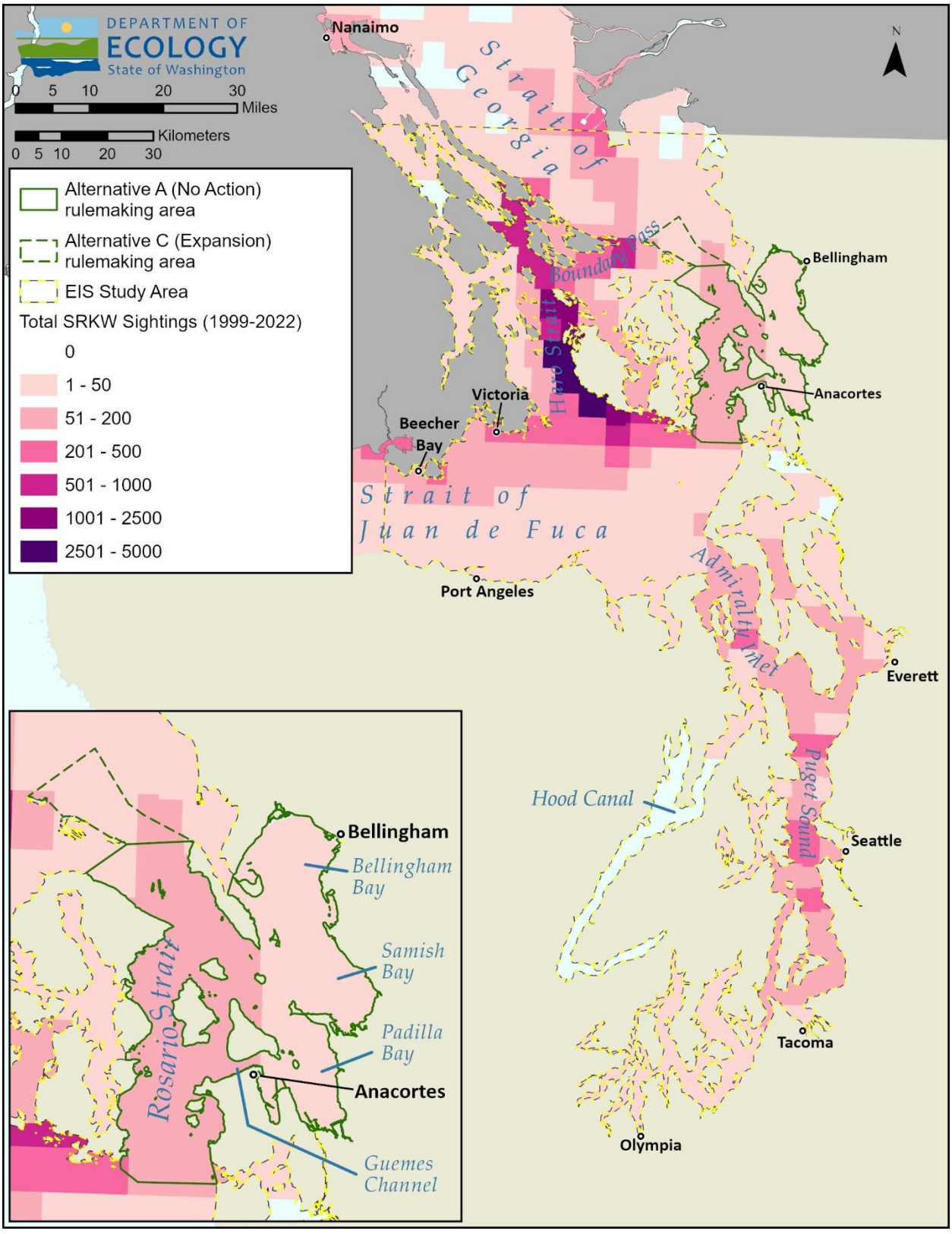


Figure 11. Sum of unique SRKW sightings from 1999 to 2022 based on The Whale Museum Orca Sightings and NMFS Fisheries (2024b) data.

4.5.3 Findings for Alternative A (No Action)

4.5.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii). Under Alternative A, tug escort requirements would continue to have a substantial contribution to underwater noise impacts at certain locations, and negligible to insubstantial contributions to other vessel-related threats to plant and animal resources (e.g., airborne noise, strike risk, water quality, physical impacts to habitat, air emissions, and artificial lighting).

Ecology's underwater noise modeling indicates that existing tug escort requirements have a fairly substantial contribution to the local soundscape, contributing to more frequent exceedances of noise impact thresholds in certain locations. These impacts would continue under Alternative A. Specifically, all seven biologically-sensitive receiver locations periodically exceed the 120 dB NMFS marine mammal behavioral disturbance threshold. At five of the seven modeled locations, noise from existing tug escort requirements contributes to more frequent exceedances of the 120 dB noise threshold. At three of the seven modeled locations, these exceedances occur at least 10 percent more frequently when noise from current tug escort requirements is included (Alternative A) compared to when it is excluded (Alternative D), which meets the significance threshold. Those three locations are Rosario Strait in winter and summer, Anacortes in winter, and Lummi Bay in winter. Additionally, the total modeled area where underwater noise can exceed 120 dB and the median and highest noise levels at most modeled locations is greater when noise from tug escort requirements is included (Alternative A) compared to when it is excluded (Alternative D).

Since noise levels exceed the behavioral threshold for marine mammals in areas of high biological importance, underwater noise from continued tug escort requirements under Alternative A would have the potential to result in negative impacts on marine mammals at those locations. Some possible impacts from continued underwater noise could include displacement of marine mammals; alteration of calling rates, intensities, or other forms of communication; effects on foraging behavior and orientation; stress; and/or physical injury in extreme cases (R. E. Burnham, 2023; Byrnes & Dunn, 2020; Holt et al., 2021; Joy et al., 2019; Lusseau et al., 2009; NOAA Fisheries, 2021, 2023b, 2023c, 2024a; Noren et al., 2009; Williams et al., 2024).

Additionally, the underwater noise model showed that Alternative A would result in additional brief exceedances of the NMFS behavioral disturbance acoustic threshold for finfish (i.e., 150 dB broadband SPL) at two of the modeled locations (i.e., Rosario Strait and Puget Sound). However, because the exceedances are so infrequent, and because the model focused on shallow depths (10 meters) tailored to marine mammals, it is expected that finfish would experience fewer or no exceedances of that behavioral disturbance threshold. While sound levels infrequently exceed the NMFS finfish behavioral threshold, recent research (Ogurek et al., 2024; van der Knaap et al., 2022) indicates that there could still be potential for behavioral impacts to finfish, particularly where fish 'hotspots' overlap with high vessel traffic areas. Refer

to Section 4.4 (Environmental Health: Noise) and Appendix E for additional information regarding the underwater noise modeling and results.

Existing escort tug activity has a minor potential for marine mammal strike risks. These impacts would continue under Alternative A. While all vessel sizes and types can strike marine mammals, vessels traveling at speeds greater than 10 knots are more likely to result in marine mammal mortality in the event of a ship strike (Conn & Silber, 2013; DFO, 2021; Kite-Powell et al., 2007; Laist et al., 2001; NOAA Fisheries, 2024c). Currently and historically, a high level of escort tug activity has occurred in areas where marine mammals, specifically SRKWs, are known to congregate (e.g., the southern reaches of Rosario Strait). Escort tugs exceed 10 knots during approximately 30.2 percent of their underway time and their mean speeds exceed 10 knots throughout most of the EIS Study Area as shown in Figure 12 and Figure 13 The potential for relatively frequent interactions and/or strikes between escort tugs and SRKWs or other marine mammals is possible. However, despite these conditions and this strike potential, Ecology has not identified any information indicating that tugs—and, more specifically, the escort tugs affected by this rulemaking—have caused any marine mammal strikes in the EIS Study Area.

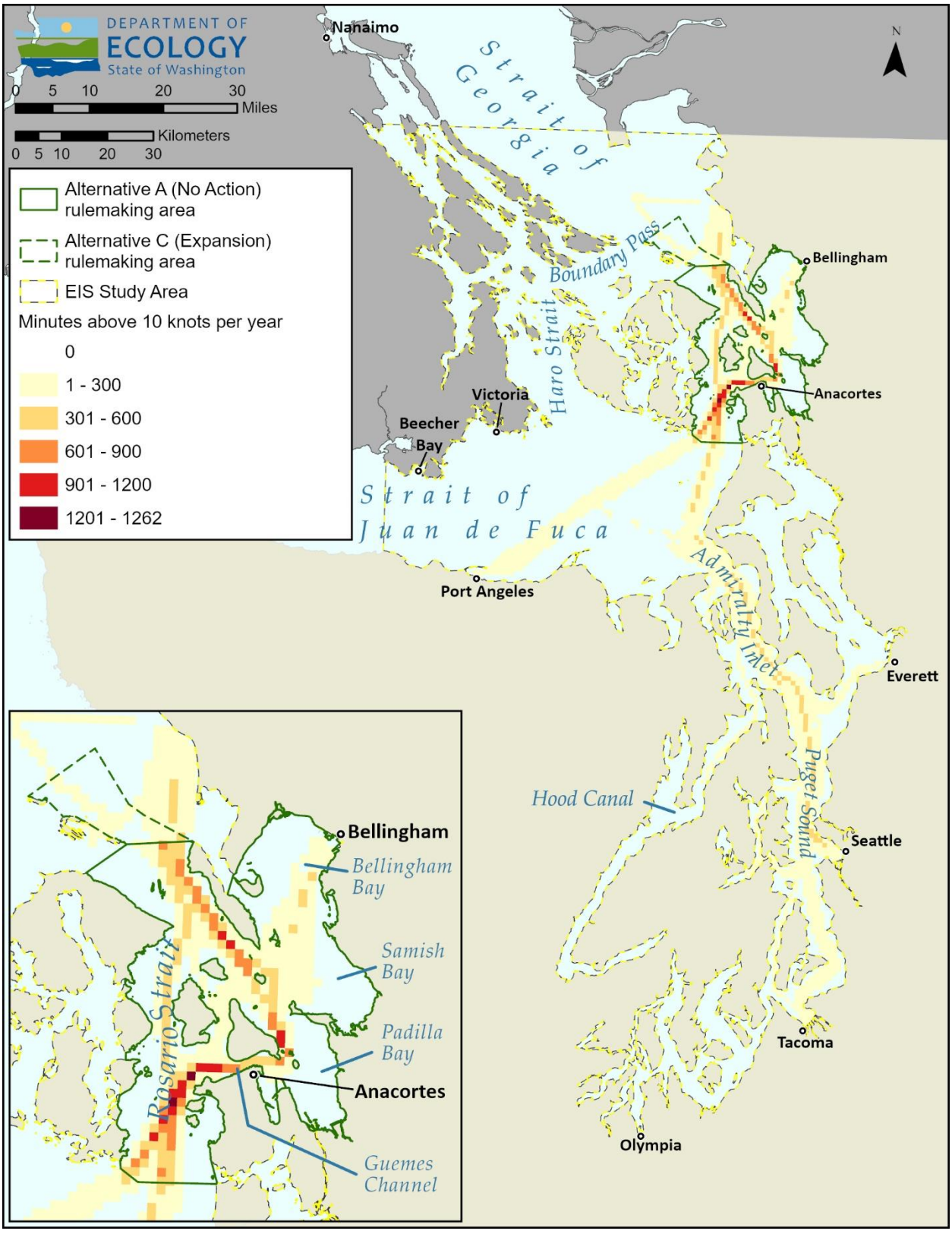


Figure 12. Minutes per year escort tugs travel at speeds exceeding 10 knots in the EIS Study Area – Alternative A.

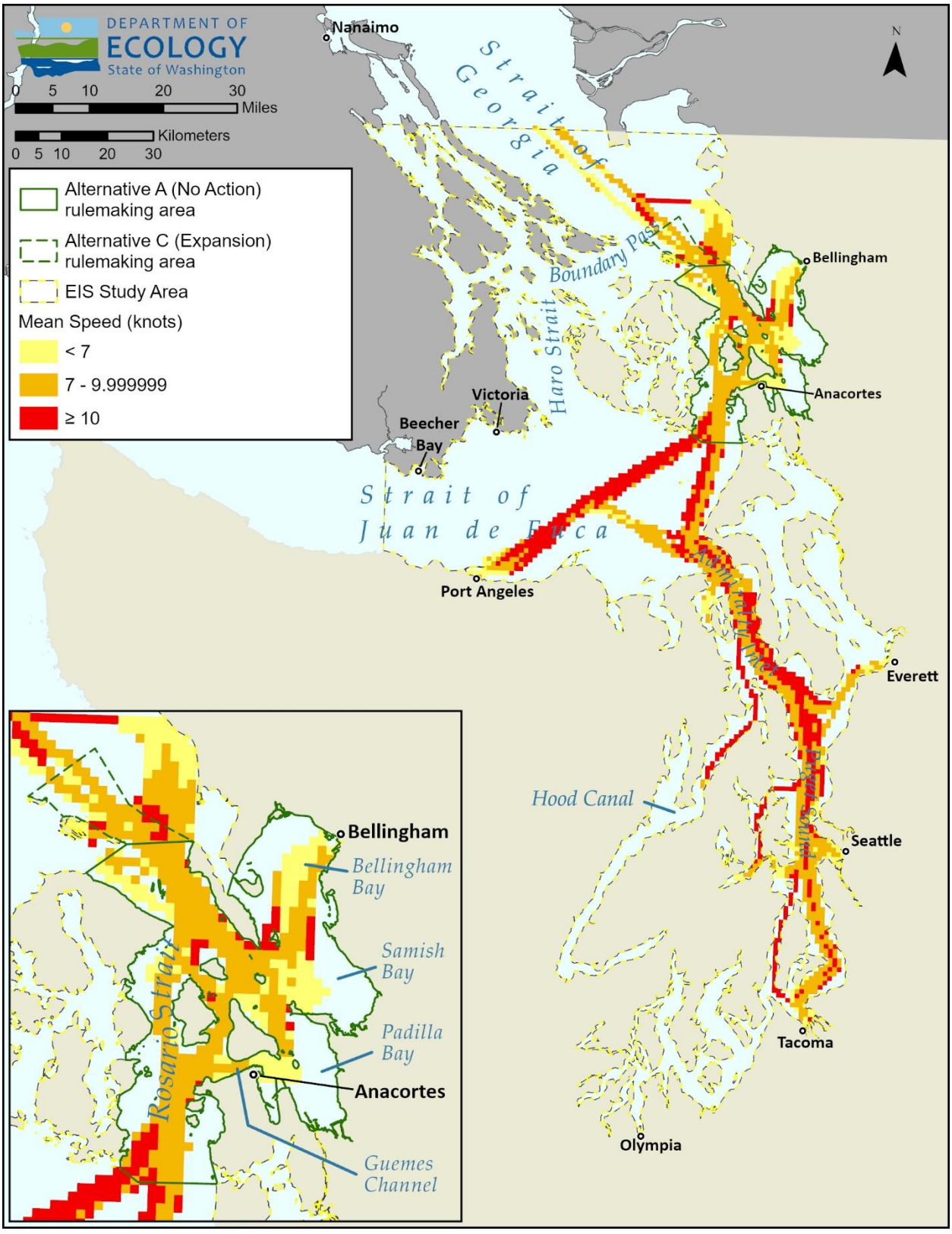


Figure 13. Mean speed by escort tugs throughout the EIS Study Area – Alternative A.

Escort tugs under Alternative A would continue to have negligible to minor contributions to water quality, airborne noise, physical disturbances to habitat, air emissions, and artificial light. Refer to Sections 4.3 (Water Quality), 4.4 (Environmental Health: Noise), 4.7 (Air Quality and Greenhouse Gases), and 4.9 (Visual Resources) as applicable for additional information related to these types of impacts. Escort tug activity would continue to have beneficial impacts to oil spill risk, compared to the risks when tug escort requirements are removed under Alternative D. While the probability of a target vessel drift grounding is rare, a catastrophic oil spill could negatively impact plant and animal resources as discussed in Section 4.1.6 (Findings for Alternative D).

In Alternative A, escort tugs have an incident rate of 0.86 per year. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much less than the volume carried by target vessels (fuel and cargo). Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for additional information regarding oil spill risks. Despite the projected worsening of many threats to plant and animal resources under future climate change scenarios, the impact of escort tugs to plant and animal resources—other than those impacts associated with underwater noise— would be expected to remain minor at the ecosystem scale.

4.5.3.2 Mitigation Measures

Escort tugs are required to adhere to all applicable federal and state requirements regarding vessel traffic safety, oil pollution prevention, marine mammal protection, and vessel discharges.

In addition to these requirements, Ecology recommends escort tugs implement recommended (voluntary) mitigation measures related to reducing vessel noise, preventing vessel strikes, minimizing pollutants, and other practices to protect plant and animal resources—while underway when safe and appropriate. These include:

- Keeping a safe distance from killer whales consistent with federal (200 yards) and state (1,000 yards) requirements, when safe and feasible to do so. Both state and federal regulations have exemptions for vessels operating in conjunction with the vessel traffic service, which includes escort tugs and target vessels. Ecology further recommends that the PSHSC consider developing an SOC for escort tugs that encourages them to maintain 1,000-yard distance from killer whales where safe and feasible to do so.
- Reducing speed when near killer whales and other marine mammals when safe and feasible to do so.
- Participating in voluntary vessel slow-down measures such as those managed by the ECHO Program and Quiet Sound.
- Following other Be Whale Wise Guidelines to avoid and reduce impacts to killer whales and other marine mammals (Be Whale Wise, 2024).
- Having at least one other crew member, other than the boat operator, on the bridge of an escort tug when it is tethered to a target vessel (PSHSC, 2023), who can look out for plant and animal resources to avoid.
- Ensuring escorting speeds do not exceed 10 knots when in Rosario Strait (PSHSC, 2023).

- Regularly cleaning and maintaining vessels and associated equipment (e.g., hulls, propeller blades, etc.) (Puget Sound Partnership & Governor's Salmon Recovery Office, 2022).
- Supporting programs and/or applying for and maintaining certification in programs aiming to protect the environment, such as the Green Marine program or the Quiet Sound program (Puget Sound Partnership & Governor's Salmon Recovery Office, 2022).
- Encouraging or requiring escort tug operators to take trainings to promote wildlife awareness, such as those provided by the Vancouver Fraser Port Authority or Be Whale Wise (Puget Sound Partnership & Governor's Salmon Recovery Office, 2022).
- Considering options for tugs to safely adopt and use the Whale Report Alert System.
- Encouraging the transition to hybrid electric and fully electric propulsion systems as technological readiness and cost make this feasible.

Ecology encourages tugs and target vessels to comply with these distance, speed, and marine mammal protection regulations where safe and feasible to do so. Ecology also recommends that escort tugs continue to implement the PSHSC's SOCs, contained within the Puget Sound Harbor Safety Plan, which could further minimize the potential of spills and discharges of oil, toxics, and other pollutants near and in surface waters.

4.5.3.3 Significant and Unavoidable Adverse Impacts

Alternative A would result in significant and unavoidable adverse impacts to marine mammals in the EIS Study Area due to the substantial contribution to underwater noise from escort tugs. Ecology's noise modeling suggests that noise from tug escort requirements in certain biologically important areas is contributing to an "increase of at least 10 percent in the occurrence of periods during which received noise levels are above the NMFS acoustic disturbance thresholds," which is a significant impact as defined in Section 4.5.1 (Methodology).

4.5.4 Findings for Alternative B (Addition of FORs)

4.5.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, escort tugs would result in the same impacts as under Alternative A. Alternative B would also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of catastrophic water quality impacts.

4.5.4.2 Mitigation Measures

No additional mitigation measures than those included for Alternative A in Section 4.5.3.2 (Mitigation Measures) have been identified for Alternative B. Escort tugs would be required to adhere to federal and state requirements regarding vessel traffic safety, oil pollution, marine mammal protection, and vessel discharges. Ecology recommends that escort tugs participate in a suite of recommended mitigation measures to avoid or reduce impacts to marine mammals, other wildlife, and sensitive habitats.

4.5.4.3 Significant and Unavoidable Adverse Impacts

The addition of FORs in Alternative B would not change the anticipated types or quantities of threats to plant and animal resources relative to Alternative A. Alternative B would result in significant and unavoidable adverse impacts to marine mammals in the EIS Study Area due to the substantial contribution to underwater noise from tug escorts, which would be the same as those discussed in Section 4.5.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

4.5.5 Findings for Alternative C (Expansion)

4.5.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, the mean escort tug speed would remain the same in most areas, with minor projected changes in mean speeds (increases and decreases) in limited portions of the Strait of Georgia and Rosario Strait. Furthermore, the amount of time escort tugs travel above 7 and 10 knots[20] would either remain the same or decrease in nearly the entire rulemaking area, other than the expansion area and portions of the Strait of Georgia outside of the rulemaking area (see Figure 14). As such, Alternative C could result in minor changes in the locations, frequencies, and quantities of certain threats—such as noise, discharges and releases, vessel strike risks, air emissions, and artificial light. Ecologically important areas, such as critical habitat, EFH, HAPCs, and the San Juan Islands National Wildlife Refuge are located within and/or directly adjacent to the rulemaking expansion area under Alternative C, and additional areas of higher cetacean activity are also present in areas where tug escort activity and speed would increase. Increased escort tug activity and speed in these areas could increase the threats to these resources, particularly strike risks. However, any increases in threat risks associated with airborne operational noise, water quality, vessel strikes, wakes, air emissions, or artificial light under Alternative C are anticipated to be minor and localized. In areas where modeled escort tug underway time decreases, there could be minor benefits to plant and animal resources from these threats.

[20] For cetaceans, it is widely understood that vessels traveling at or above 10 knots present the greatest risk of inflicting serious harm or death if a vessel collision occurs (Conn & Silber, 2013; DFO, 2021; Kite-Powell et al., 2007; Laist et al., 2001; NOAA Fisheries, 2024c). Washington state has also established rules that make it unlawful for vessels to approach within 1,000 yards of an SRKW; however, if circumstances arise in which the vessel operator realizes they are within 400 to 1,000 yards of an SRKW, they must attempt to slowly navigate away from the SRKW at speeds of 7 knots or less (RCW 77.15.740). Therefore, Ecology used speed thresholds of 7 knots and 10 knots as reference points for discussing potential strike risks from tug escorts. Refer to the Plants and Animals Discipline Report (Appendix F) for more information.

Ecology's underwater noise modeling showed that exceedances of the NMFS 120 dB SPL and 150 dB SPL behavioral disturbance thresholds under Alternative C would be the same as under Alternative A. Median and highest noise levels in winter would increase slightly at only two locations (Boundary Pass and Lummi Bay), which are adjacent to the expansion area. Potential underwater noise impacts to marine mammals and finfish at these locations may therefore be slightly greater than under Alternative A. Refer to Section 4.4 (Environmental Health: Noise) and Appendix E for additional information regarding the underwater noise modeling and results.

Alternative C would decrease the risk of target vessel drift groundings across the EIS Study Area (with benefits concentrated in the rulemaking expansion area), resulting in a lower risk of catastrophic impacts to plant and animal resources due to oil spills. Conversely, the increase in tug escort activity would slightly increase the escort tug incident rate from 0.86 per year to 0.88 per year. Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for additional information regarding oil spill risks, including discussion of Ecology's trajectory modeling to identify areas with elevated potential to be impacted by spills.

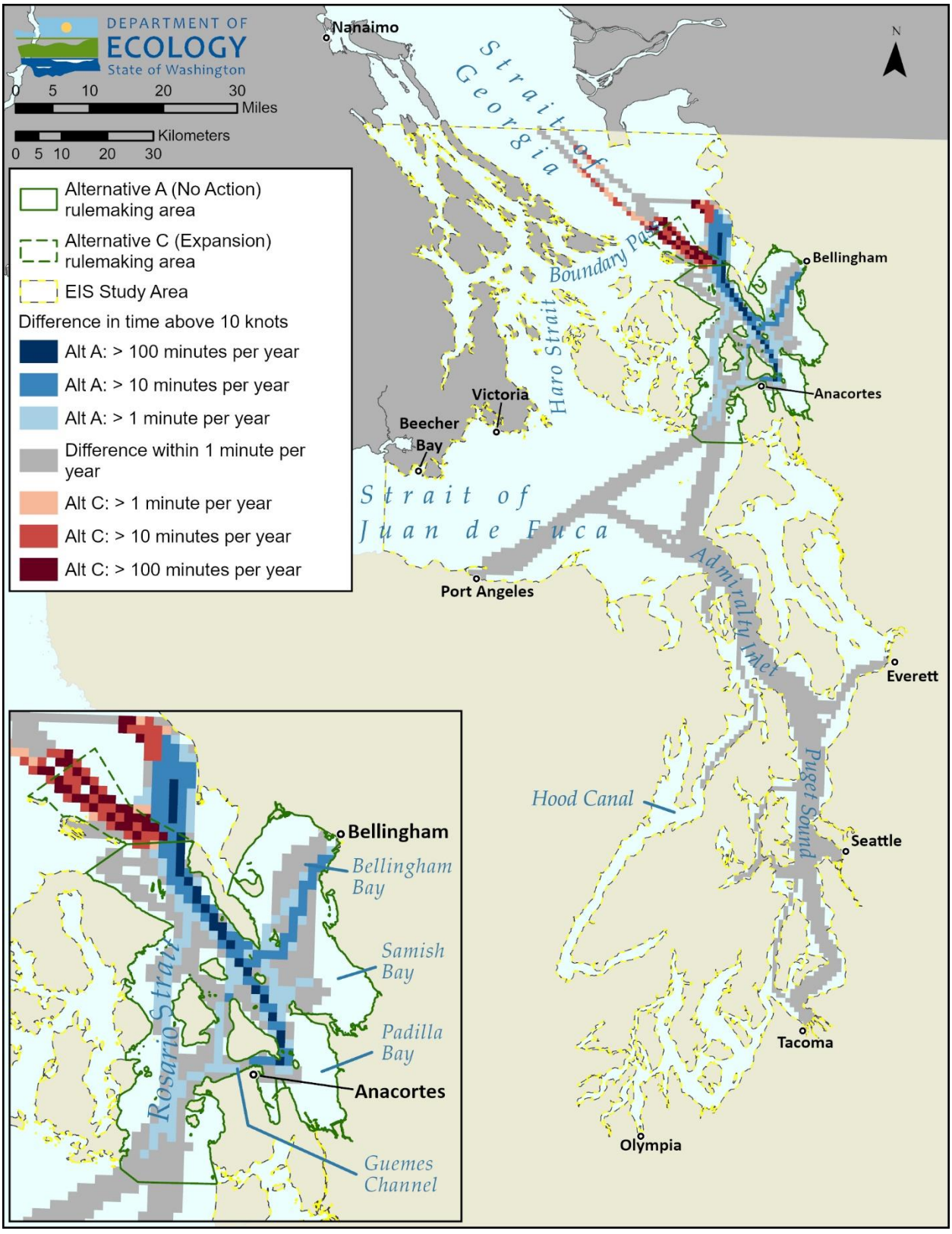


Figure 14. Time that escort tugs travel at speeds exceeding 10 knots – Change from Alternative A to Alternative C. An additional accessible version of this map is available in Appendix M.

4.5.5.2 Mitigation Measures

Mitigation measures for Alternative C are largely the same as those included for Alternative A in Section 4.5.3.2 (Mitigation Measures)) have been identified for Alternative C. Escort tugs would be required to adhere to federal and state requirements regarding vessel traffic safety, oil pollution, marine mammal protection, and vessel discharges. Ecology recommends that escort tugs participate in a suite of recommended mitigation measures to avoid or reduce impacts to marine mammals, other wildlife, and sensitive habitats.

Specifically for Alternative C, our recommendation to extend the Tanker Escort SOC includes both extending the overall applicability and speed recommendations to the escort of target vessels, and including the expansion area.

4.5.5.3 Significant and Unavoidable Adverse Impacts

Alternative C would result in significant and unavoidable adverse impacts to marine mammals in the EIS Study Area due to the substantial contribution to underwater noise from tug escorts, which would be similar to those discussed in Section 4.5.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

4.5.6 Findings for Alternative D (Removal)

4.5.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have impacts to plants and animals, they would be unrelated to this rulemaking and are not considered in this EIS.

Ecology modeled predicted changes in underwater noise at seven selected biologically important locations under Alternative D. The results of the noise modeling showed that noise levels would be expected to decrease at certain modeled times and locations (notably Rosario Strait and Puget Sound), including fewer and/or shorter exceedances of the 120 dB SPL NMFS marine mammal behavioral threshold in some of these modeled locations. This would result in a substantial reduction in noise-related threats to marine mammals in these areas, resulting in benefits to important animal resources such as through reduced risk of noise-related injury and stress; expanded area use; and improved communication, orientation, foraging, mating, and defense. Refer to Section 4.4 (Environmental Health: Noise) and Appendix E for additional information regarding the underwater noise modeling and results.

As discussed above, existing escort tug activity is not likely a substantial contributor to other threats to plant and animal resources in the EIS Study Area (e.g., underwater noise disturbances to other animals, airborne operational noise, discharges and releases, strike risks from escort tugs, wakes, air emissions, and artificial lighting). Alternative D would therefore result in minor reductions in these other threats.

Under Alternative D, the elimination of tug escort requirements would result in an eliminated risk of escort tug incidents associated with this proposed rule. However, the probability of a

target vessel drift grounding would increase by 11.84 percent within the EIS Study Area (relative to Alternative A) and by 90.50 percent within the rulemaking area. This would result in an increased risk of catastrophic oil pollution impacts to sensitive plant and animal resources in the EIS Study Area, including special-status species, protected ecological areas, and special aquatic habitats. Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for additional information regarding oil spill risks, including discussion of Ecology's trajectory modeling to identify areas with elevated potential to be impacted by a target vessel oil spill.

A major oil spill from a target vessel in the EIS Study Area would impact marine mammals, finfish, aquatic invertebrates, birds, terrestrial and semi-aquatic animals, intertidal and aquatic plants, and protected ecological areas and special aquatic habitats. Catastrophic oil spills could result in direct mortality to these resources or other long-lasting health effects that in turn decrease overall species abundance and diversity (Byrnes & Dunn, 2020; Frasier et al., 2020; Murawski et al., 2016; NOAA Fisheries, 2024a). Oil exposure can result in cell damage and can negatively affect reproduction, immune and respiratory function, locomotion, circulatory and cardiovascular systems, neurological function and behavior, feeding, and metabolism and growth rates of various species, among other impacts (Murawski et al., 2016; Takeshita et al., 2021). Furthermore, oil spills can reduce fishery productivity and result in fishery closures, which have cultural, recreational, and economic implications (Murawski et al., 2016).

4.5.6.2 Mitigation Measures

Escort tugs mitigate (reduce) the risk of a spill from target vessels. However, Alternative D removes the tug escort requirements for target vessels. Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for required and/or recommended mitigation measures that lower the risk of oil spills in the EIS Study Area that could reduce potential impacts to plant and animal resources.

4.5.6.3 Significant and Unavoidable Adverse Impacts

Alternative D would result in significant and unavoidable adverse impacts to marine mammals, finfish, aquatic invertebrates, birds, terrestrial and semi-aquatic animals, intertidal and aquatic plants, and protected ecological areas and special aquatic habitats in the EIS Study Area due to the increased risk of major oil spills from target vessels. The increased probability of a catastrophic oil spill would be reasonably likely to result in adverse effects beyond a moderate level due to mortality or injury of special-status species and damage, loss, or degradation of sensitive habitats or protected ecological areas that could affect the viability of a population and the ecosystem in the EIS Study Area.

4.6 Energy and Natural Resources

This section describes the existing conditions and potential impacts to energy and natural resources in the EIS Study Area from the rulemaking alternatives. Fuel (typically marine diesel) is the primary energy input associated with the implementation of the rule. The analysis estimates maritime fuel use in the EIS Study Area using fuel transfer data collected by Ecology. The study area for energy and natural resources includes all locations where transfers of fuel over water occurred in Washington state.

Refer to the Energy and Natural Resources Discipline Report (Appendix G) for more information on the methodology, additional details regarding existing energy use in the EIS Study Area, the full analysis of impacts to energy use under each alternative, and a more comprehensive list of relevant mitigation measures.

4.6.1 Methodology

Ecology reviewed technical reports and data regarding maritime fuel transfers and escort tug fuel use within the EIS Study Area. During scoping, industry shared that while there has been a fuel increase since the 2020 tug escort requirements were implemented, it has not been a significant change from previous fuel use. The public also identified a transition to alternative fuels as an important consideration.

Ecology primarily reviewed Advance Notice of Transfer (ANT) data to provide an estimate of maritime fuel use in Washington state (Ecology, 2024d). Ecology requires that vessels and facilities that transfer large quantities of oil over water provide advance notice of transfer to the agency (Ecology, n.d.) (WAC 173-180-215). Both escort tugs and target vessels under this rulemaking participate in oil transfers over water. Escort tugs do not carry oil as cargo and are typically the receiving vessel in an over-water transfer. The target vessels carry oil as cargo and can be either the delivering vessel or the receiving vessel. In cases where target vessels are transferring as a delivering vessel, they are required to provide advance notice of the transfer. We used ANT data for fueling transfers to provide an estimate of maritime fuel use in Washington State.[21]

We worked with Ecology subject matter experts with experience in the tug industry to estimate a rate of fuel use for escort tugs. Tug fuel usage rate is affected by many factors (horsepower, idling time, escorting time, underway time, weather and ocean conditions, wind, engine efficiency, job complexity, etc.), but there are some general estimates than can be used. For the purposes of the EIS, we estimate that a 3,000 to 3,500 hp tug will use 3,000 gallons per day (125 gallons per hour) at a 90 percent load (towing a fully laden barge). The escort tugs identified as actively engaged in the escort of target vessels range from 2,400 hp to over 10,000 hp (BPC & Ecology, 2021) so some of these tugs would use fuel at a higher rate. However, we also know that for most of the time spent both commuting and actively escorting, the tug would be operating “light” (not towing or pushing a larger vessel) and would be using fuel at a lower rate. This estimate is also consistent with other published estimates of tug fuel use (Professional

[21] This is an estimate only. Vessels could be fueling outside of Washington state (Oregon, Canada) for work performed inside Washington state, or while dry docked. Vessels also may take on fuel for ballast.

Mariner Staff, 2008). Estimates of underway time for each alternative come from the vessel traffic analysis (see Appendix B Vessel Traffic Discipline Report for more details).

Last, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 20. Significance thresholds for energy and natural resources impacts.

Indicator	Significance Thresholds
Maritime fuel use	• Use of energy totaling greater than 5 percent of maritime fuel use in Washington state on an annual basis. Change in fuel use would significantly impact local and/or regional availability of marine fuel.

4.6.2 Affected Environment

The transportation sector is the largest energy consumer in Washington state, accounting for 39.5 percent of all energy consumption (U.S. Energy Information Administration, n.d.). The transportation sector is also responsible for 80 percent of petroleum fuel use in Washington state, of which approximately 20 percent is diesel (U.S. Energy Information Administration, n.d.). Escort tugs have diesel engines and use distillate fuel oil (diesel) as fuel. Many vehicles and vessels use diesel fuel including heavy trucks, ferries, and tugs.

Maritime fuel use in Washington state includes a variety of fuel types. The total volume of fuel transferred to and from large commercial vessels has changed over time (see Figure 15 below). Between 2017 and2019, the volume of fuel transferred over water was an average of approximately 679 million gallons per year. Between 2021 and 2024, the volume of fuel transferred over water was 400 million gallons per year. This is a decrease of around 279 million gallons or approximately 41 percent. The implementation of the 2020 IMO Clean Fuel regulations likely influenced this reduction in the volume of fuel transferred over water. We use the post-2020 estimate of maritime fuel use as a comparison for the rest of this analysis.

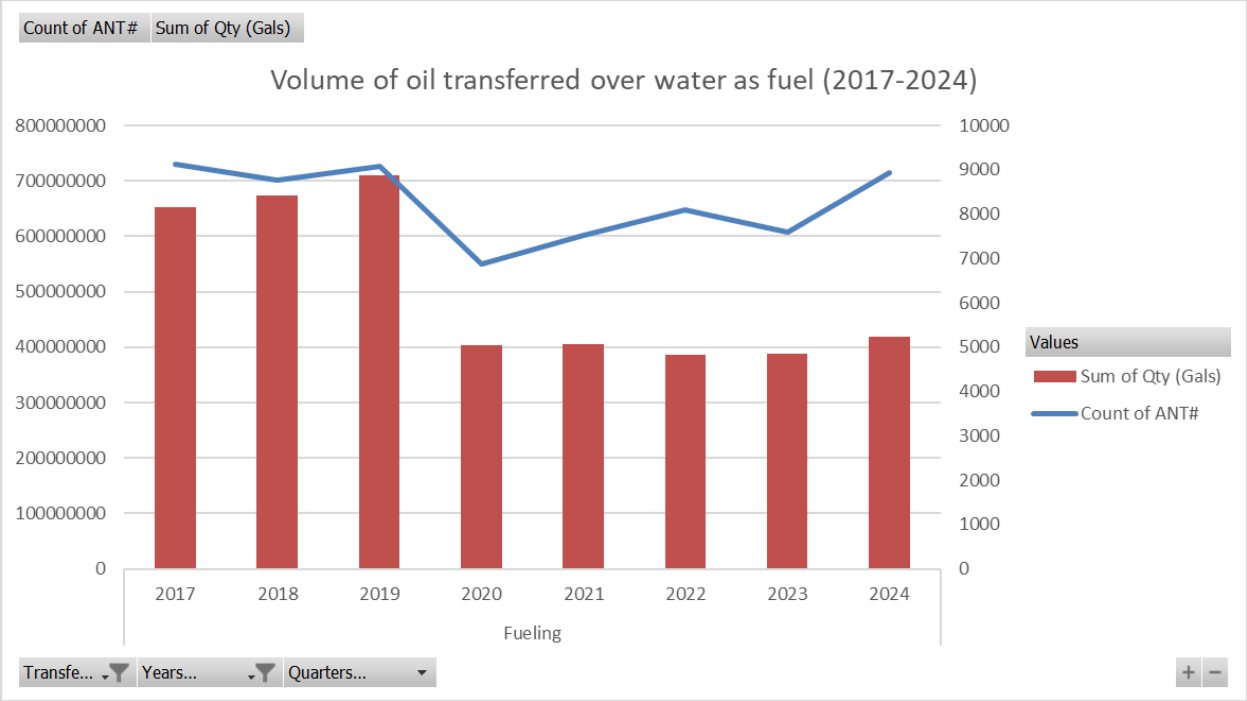


Figure 15. Volume of oil transferred over water by all vessels (2017-2024). This graph includes the volume transferred (bars) and the number of individual transfers (line).

The ANT data for the group of escort tugs used in this analysis showed a steady increase in the volume of fuel transferred since 2017, with continued increases after 2020 (see Figure 16). It is possible that some of this increase could be due to the tug escort requirements implemented in 2020, but many other factors could also be involved. Under current regulatory conditions, approximately 3 million gallons of fuel are transferred to these escort tugs in Washington state each year. Escort tug fueling transfers accounted for 0.72 percent to 0.82 percent of total maritime fueling transfers by volume between 2021 and 2023.

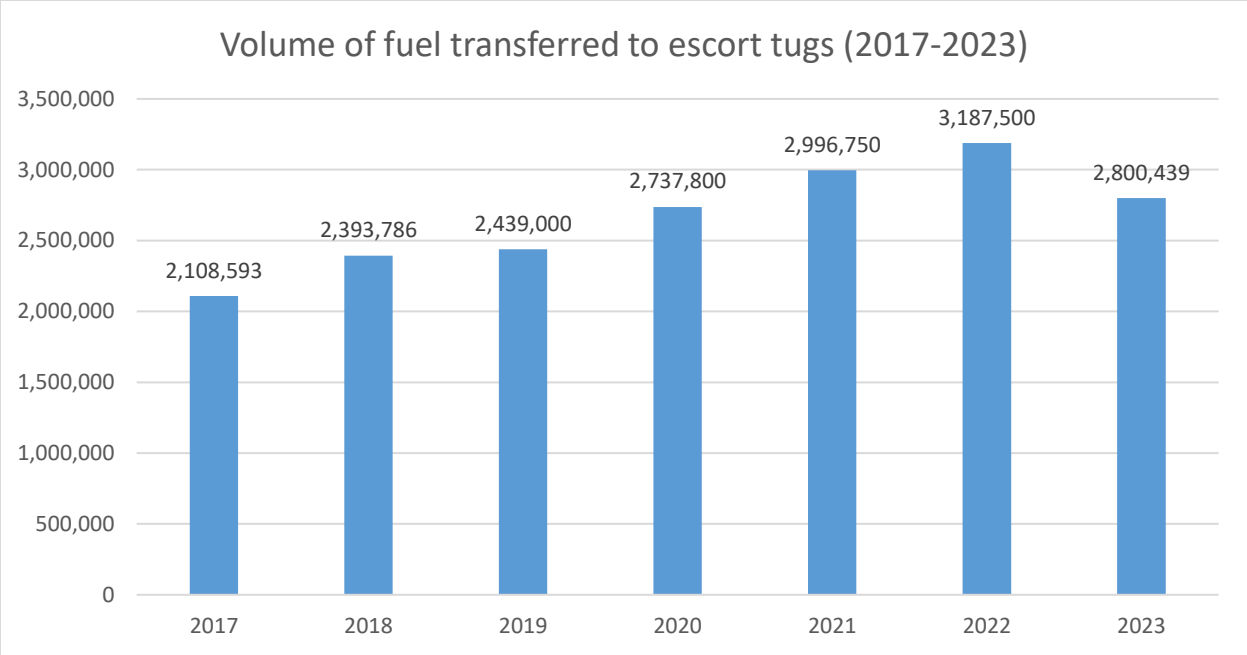


Figure 16. Volume of fuel transferred to escort tugs over water in Washington state (2017-2023).

4.6.3 Findings for Alternative A (No Action)

4.6.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii). Under Alternative A, Ecology's modeling estimates that there are 610,107 minutes of escort tug underway time associated with the target vessels. For the purposes of this assessment, we estimate that an average 3,500 hp tug will use approximately 3,000 gallons/day at 90 percent load in a 24-hour period. This is equivalent to approximately 125 gallons per hour or 2.08 gallons/minute.

Under Alternative A, we estimate that the tug escort requirements would require approximately 1,271,056 gallons of fuel per year to implement. This is approximately 0.32 percent of the annual average of fuel transferred over water in Washington state. It is unlikely to affect maritime fuel availability in Washington state.

4.6.3.2 Mitigation Measures

Escort tugs are required to adhere to all applicable requirements regarding clean fuels. Escort tugs are also required to adhere to existing vessel traffic safety and vessel speed requirements, which contribute to rate of fuel use. Ecology recommends escort tugs continue to participate in voluntary measures that reduce vessel speeds, which may reduce fuel use. The use of hybrid-electric and electric vessels may also reduce fuel use. These technologies, their applicability, and technological readiness as it relates to escort tugs, are described in detail in the Appendix E Appendix H. Ecology recommends escort tug operators consider transition to more efficient and zero-emission propulsion as technological readiness and cost increase the feasibility of these technologies.

4.6.3.3 Significant and Unavoidable Adverse Impacts

Escort tug fuel use under Alternative A represents less than one percent of total maritime fuel use, as estimated by the ANT data. This is unlikely to have a significant impact on the availability of marine fuel. Our analysis shows that Alternative A would not result in significant and adverse impacts to energy and natural resources.

4.6.4 Findings for Alternative B (Addition of FORs)

4.6.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, tug escort requirements would result in the same impacts as under Alternative A.

4.6.4.2 Mitigation Measures

There are no additional mitigation measures proposed for Alternative B than those described for Alternative A (Section 4.6.3.2). Escort tugs under Alternative B adhere to the same requirements regarding clean fuel, vessel traffic safety, and vessel speed requirements. Ecology also recommends the same set of voluntary mitigation measures to further reduce potential impacts.

4.6.4.3 Significant and Unavoidable Adverse Impacts

Alternative B is unlikely to significantly change the overall underway time or fuel consumption for escort tugs relative to Alternative A. Fuel use by escort tugs to implement Alternative B would remain a small portion of total maritime fuel use in Washington state, and fuel availability would be similarly unaffected. Therefore, we find that Alternative B would not result in significant and adverse impacts to energy and natural resources.

4.6.5 Findings for Alternative C

4.6.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily

within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, we estimate that there would be an additional 14,677 minutes of escort tug underway time. Using the fuel rate described under Alternative A, this is an additional 30,577 gallons of fuel per year for a total of 1,301,633 gallons of fuel per year to implement Alternative C. This is an increase of 2.41 percent from fuel use under Alternative A. This is approximately 0.33 percent of the annual average of fuel transferred in Washington state. It is a minor component of overall fuel use by the maritime sector and is unlikely to affect maritime fuel availability in Washington state.

4.6.5.2 Mitigation Measures

No additional mitigation measures outside of those included for Alternative A in Section 4.6.3.2 have been identified under Alternative C. Escort tugs under Alternative C adhere to the same requirements regarding clean fuel, vessel traffic safety, and vessel speed requirements. Ecology also recommends the same set of voluntary mitigation measures to further reduce potential impacts.

4.6.5.3 Significant and Unavoidable Adverse Impacts

Alternative C also represents less than one percent of total maritime fuel use. Alternative C is unlikely to have a significant impact on the availability of marine fuel. Our analysis shows that Alternative C would not result in significant and adverse impacts to energy and natural resources.

4.6.6 Findings for Alternative D

4.6.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. Escort tug activity would decrease to zero minutes of underway time for target vessels in all areas of the EIS Study Area and the resulting fuel use would be eliminated. This represents a reduction in fuel use of 1,271,056 gallons per year, or 0.33 percent of total maritime fuel use.

We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. The tugs would continue to use marine diesel as fuel for this other work. While the individual tugs may continue to have a minor impact on fuel use in Washington State, they would be unrelated to this rulemaking and are not considered in this EIS.

4.6.6.2 Mitigation Measures

No mitigation measures are proposed for Alternative D, as escort tug activity under this rulemaking would be eliminated.

4.6.6.3 Significant and Unavoidable Adverse Impacts

Alternative D eliminates any fuel use associated with the implementation of the rule. Alternative D would not result in significant and adverse impacts to energy and natural resources.

4.7 Air Quality and Greenhouse Gases

This section describes the existing conditions and potential impacts to air quality and greenhouse gas (GHG) emissions in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered air quality and human health impacts due to escort tug emissions of Clean Air Act criteria air pollutants or their precursors[22] and air toxics,[23] as well as the potential climate change impacts due to tug escort GHG emissions.

Refer to the Air Quality and Greenhouse Gases Discipline Report (Appendix H) for more information on the methodology, additional details regarding existing air quality in the EIS Study Area, the full analysis of impacts to air quality and GHGs under each alternative, and a more comprehensive list of relevant mitigation measures.

4.7.1 Methodology

Ecology reviewed scientific literature, technical reports, data, and Tribal and stakeholder input regarding air quality within the EIS Study Area, focusing primarily on pollutants related to escort tugs. Ecology reviewed the results of vessel activity simulations to better understand escort tug activity within the EIS Study Area, and how escort tug activity is projected to change under the rulemaking alternatives (see Appendix B).

Quantification of Tug Escort Emissions: Ecology calculated the estimated criteria pollutant, volatile organic compounds (VOC), hazardous air pollutant (HAP), and GHG emissions from escort tug activity under the four alternatives. Ecology used the following in its calculations: coordinate locations, reported speed over ground, and duration data from simulated escort tug underway activity, including typical engine and operational characteristics from 18 known escort tugs. See Section 4.1 (Transportation: Vessel Traffic) and Appendix B for more details on these data.

Air Dispersion Modeling: Ecology also performed air dispersion modeling using AERMOD[24] (American Meteorological Society & EPA, 2023) to predict the air quality impacts of criteria pollutant emissions from escort tug. Dispersion modeling efforts assessed only escort tug emissions associated with this rule and the resulting changes in airborne pollutant concentrations from those emissions. The goal of the dispersion modeling effort was to determine whether escort tug pollutant contributions were high enough to warrant further analysis related to air quality impacts. Ecology conducted the dispersion modeling at two different timescales, depending on the pollutant and impact threshold:

1. annual average, for comparison against thresholds with an annual averaging period; and

[22] Analyzed criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM) with a diameter of 2.5 micrometers or less ($PM_{2.5}$) or of 10 micrometers or less (PM_{10}), and sulfur dioxide (SO_2). This analysis also considered volatile organic compounds (VOCs), which are a precursor to ozone along with NO_2.
[23] For purposes of this EIS, the terms hazardous air pollutants (HAPs), air toxics, and toxic air pollutants (TAPs) are used interchangeably. For more nuance on the differences between the terms, please see the Air Quality and Greenhouse Gases Discipline Report (Appendix H).
[24] AERMOD is the American Meteorological Society/Environmental Protection Agency's recommended dispersion model for this type of analysis.

2. peak day, for comparison against thresholds with an averaging period of 24 hours or less.

Because of the large size of the EIS Study Area, modeling potential emissions dispersion over the entire EIS Study Area was not feasible. Ecology therefore chose to conduct focused modeling to estimate escort tug pollutant concentrations at the following eight receptor areas of concern: Buckhorn, Cherry Point, Neptune Beach, Lummi, Bellingham, James Island, Anacortes, and Swinomish[25] (see Figure 17). These locations were selected based on the concentration of escort tug underway time, sensitivity to changes in air quality (i.e., presence of environmental justice communities, areas with air-quality related health impacts such as asthma), Tribal reservations, areas of public interest, and availability of monitoring data.

Impact Assessment and Evaluation of Significance: Ecology then compared its modeling results with the U.S. Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) significant impact levels (SILs) to assess whether escort tug emissions would have the potential to cause a NAAQS violation. Ecology also compared the modeled concentrations against its acceptable source impact levels (ASILs) to assess whether escort tug emissions could result in an unacceptable human health risk from exposure to toxic air pollutants (TAPs).[26] To assess the human health impact potential related to TAPs, Ecology used the modeled $PM_{2.5}$ results as a proxy for diesel particulate matter health impacts from escort tug emissions under the proposed rule. $PM_{2.5}$ are particles smaller than 2.5 micrometers in diameter and are readily inhalable. Ecology assumed that a modeled concentration of 10 times the ASIL represents a lifetime cancer risk of ten per one million, assuming continuous lifetime exposure.[27]

Finally, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

[25] Ecology selected these areas as receptors because they meet at least one of the following characteristics: relatively high tug escort activity under Alternative A and/or Alternative C, sensitivity to changes in air quality (e.g., presence of Environmental Justice communities and/or areas experiencing air quality-related health overburdens), Tribal reservations, areas of public interest, or availability of monitoring data.

[26] Both SILs and ASILs only apply to the permitting of stationary sources and have no regulatory applicability to mobile sources or this rulemaking. Ecology still considered them to be reasonable screening-level indicators of potential impacts because the impacts of criteria pollutants (or their precursors) and of TAPs are presumed to be identical, regardless of whether they were emitted from a stationary or mobile source.

[27] Continuous lifetime exposure assumes that someone is constantly exposed to a TAP for 70 years (Ecology, 2019b).

Table 21. Significance thresholds for air quality and GHG impacts.

Indicator	Significance Thresholds
Washington state emissions reductions goals	• Substantially inconsistent with State emissions reductions plans or goals for criteria pollutants and/or GHGs.
Ambient air quality standards	• Reasonable likelihood of a chronic and recurring increase in the frequency, severity, and/or extent of numeric or narrative air quality standard exceedances.
Human health risk	• Emissions would result in TAP concentrations that could result in an increased lifetime cancer risk of more than ten per million.

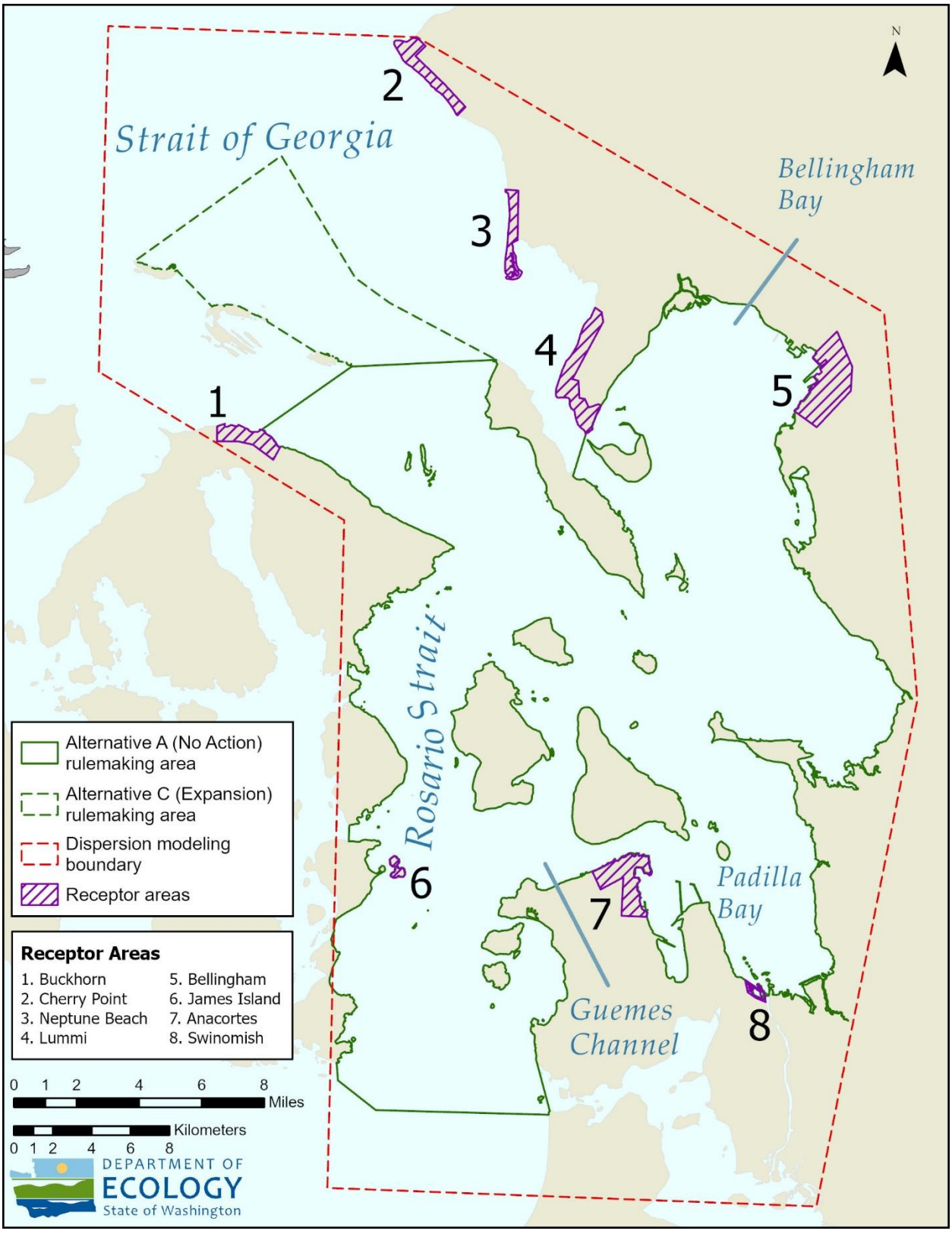


Figure 17. Receptor areas for dispersion modeling.

4.7.2 Affected Environment

Existing sources of air pollution in Washington state include natural sources, such as wildfires, and anthropogenic sources, such as industrial and transportation (e.g., cars, trains, and ships) emissions. Air quality throughout the EIS Study Area regularly meets the NAAQS requirements. There are no designated non-attainment areas where NAAQs are exceeded in the EIS Study Area. However, Washington state has informally designated several areas in the state as areas of concern for criteria pollutants if their air quality index reaches above 70, or if they often exceed federal standards. Nearly the entire EIS Study Area except for the northernmost section (north of Lummi Island) is considered an area of concern for ozone, and monitoring stations show elevated $PM_{2.5}$ levels near Everett and Tacoma (Ecology, 2023c).

The main air pollutants of human health concern emitted by tug escorts include NOx (nitrogen oxides), $PM_{2.5}$ and PM_{10} (particulate matter of different sizes), SO_2 (sulfur dioxide), CO (carbon monoxide), VOCs, air toxics, and GHGs. Exposure to criteria pollutants can lead to adverse human health impacts ranging from short-term effects like shortness of breath, to chronic effects such as the development or exacerbation of respiratory or cardiovascular conditions and increased mortality. Vulnerable populations, such as older individuals, children, and the immunocompromised, are at particular risk for these effects (Costa et al., 2014; Di et al., 2017; Dominici et al., 2022; EPA, 2024b; Kim et al., 2015; Orellano et al., 2020). Health issues arising from air toxics exposure can be life-threatening and include cancer, reproductive harm, and damage to the respiratory, cardiovascular, immune, and nervous systems (Puget Sound Clean Air Agency, 2011).

In 2019, total GHG emissions in Washington state were 102.4 million metric tons of carbon dioxide equivalent (MMT CO_2e), which is the equivalent of emissions from burning over 11.5 billion gallons of gasoline (EPA, 2024c; Puget Sound Clean Air Agency, 2023). The transportation sector is responsible for nearly 40 percent of GHG emissions in Washington state (Ecology, 2025b) and in the Puget Sound region (Puget Sound Clean Air Agency, 2023). In 2021, marine vessels (ocean-going vessels, harbor vessels, and recreational vessels) emitted approximately 1.22 million tons of CO_2e in the Puget Sound Air Basin, which encompasses all U.S. portions of the EIS Study Area in addition to surrounding land areas (Puget Sound Maritime Air Forum, 2024).

While missing its goal to meet 1990 GHG emission levels by 2020, Washington state still aims to achieve the other goals set in its Limiting Greenhouse Gas Emissions Act (Chapter 70A.45 RCW). This Act includes goals to reduce statewide emissions to 45 percent below 1990 levels by 2030, 70 percent by 2040, and 95 percent by 2050. The marine vessel sector also sets goals to reduce its climate impact. For example, participating ports of the Northwest Ports Clean Air Strategy aim to surpass the United Nations' goal of a 50 percent GHG emissions reduction relative to 2008 levels by 2050 (Northwest Ports Clean Air Strategy, 2020).

4.7.3 Findings for Alternative A (No Action)

4.7.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain

in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii). Under Alternative A, escort tug would continue to emit criteria pollutants, VOCs, and HAPs at their current levels throughout the EIS Study Area, the majority of which are emitted within Ecology's ozone area of concern. Under Alternative A, escort tug would continue emitting approximately 12,100 CO2e of GHGs per year, which is equivalent to burning approximately 1,235,000 gallons of gasoline (EPA, 2024c).

shows the calculated annual emissions from tug escorts within the EIS Study Area under Alternative A, and compares these to recent estimates of total emissions from all marine vessels in the Puget Sound air basin.

Table 22. Annual tug escort emissions in the EIS Study Area (Alternative A) and comparison to total marine vessel emissions in the Puget Sound air basin.

Pollutant	Alternative A Tug Escort Emissions (tons/yr)	2021 Marine Vessel Emissions in Puget Sound Air Basin (tons/yr)[a]	Tug Escort % of Marine Vessel Emissions
Criteria Pollutants			
CO	28.2	13,015	0.217%
NOx	187	18,159	1.03%
PM_{10}	4.84	331	1.46%
$PM_{2.5}$	4.70	312	1.51%
SO_2	0.109	369	0.0295%
VOCs			
VOCs	6.29	1,970	0.319%
GHGs			
CH_4	0.120	N/A	N/A
CO_2	11,900	N/A	N/A
N_2O	0.604	N/A	N/A
CO_2e	12,100	1,218,437	0.993%
HAPs			
HAPs	0.787	N/A	N/A

Source: a – (Puget Sound Maritime Air Forum, 2024)

Ecology's air dispersion modeling of these escort tug emissions found that CO, $PM_{2.5}$, PM_{10}, and SO_2 concentrations were well below their corresponding SILs at all eight receptor areas. This indicates that continued escort tug emissions under Alternative A would have no potential to cause or contribute to a violation of the NAAQS for these pollutants. While annual average modeled concentrations for NO_2 were all well below the corresponding SIL, hourly peak-day NO_2 concentrations exceeded the corresponding SIL (7.5 µg/m^3) in some or all of all eight receptor areas under Alternative A.

However, our review of real-world air quality monitoring data found that air quality in the Puget Sound region continues to meet the NO_2 NAAQS by a wide margin (Puget Sound Clean Air Agency, 2024) despite the emissions from significant marine vessel activity. In fact, maritime-related NOx emissions have been steadily decreasing due to improvements in fuel efficiency

and changes in operations (Northwest Seaport Alliance, 2024). Therefore, continued tug escort emissions under Alternative A would not cause or contribute to a violation of the NO_2 NAAQS.

Regarding the potential for human health impacts, the highest modeled value for $PM_{2.5}$ concentrations under Alternative A (0.01269 µg/m^3) exceeds the diesel PM ASIL (0.0033 µg/m^3) by a factor of less than 10. Therefore, continued escort tug emissions under Alternative A would not result in TAP concentrations that could result in an increased lifetime cancer risk of more than ten per million.

Under Alternative A, escort tug activity would continue to have beneficial impacts related to oil spill risks, compared to the risks when tug escort requirements are removed under Alternative D. While the probability of a target vessel drift grounding is low, a catastrophic oil spill could negatively impact air quality from evaporated chemicals (e.g., VOCs) and/or some spill response methods. In this alternative, escort tugs have an incident rate of 0.86 per year. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much less than the volume carried by target vessels (fuel and cargo). Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for additional information regarding oil spill risks.

4.7.3.2 Mitigation Measures

The entire EIS Study Area is located within the Emissions Control Area (ECA) under the International Convention for the Prevention of Pollution from Ships (MARPOL). This means that vessels operating in the region (including escort tugs) must use fuels with sulfur content not exceeding 0.10 percent mass-by-mass. This mandatory restriction is already followed by all escort tugs and other marine vessels operating within the EIS Study Area and reduces emissions of sulfur oxides and PM. The only marine diesel available in the U.S. for escort tugs is ultra-low sulfur diesel, which has 0.00015 percent sulfur, far lower than the ECA cap. Additionally, escort tugs are required to adhere to all applicable requirements regarding vessel speeds, which helps control air-related impacts to receptors. Escort tugs must also comply with all relevant federal and state vessel traffic safety and oil pollution prevention, preparedness, and response measures as well as with existing vessel traffic safety measures outlined in Appendix B and requirements outlined under 46 Code of Federal Regulations Chapter I, Subchapter M.

In addition to these requirements, Ecology recommends escort tug operators consider adopting lower and/or zero-emission propulsion for escort tugs to reduce GHG emissions, when the technological readiness and cost make this safe and feasible. Ecology also recommends escort tugs and target vessels implement any marina and/or port-specific measures aimed at reducing GHG emissions.

Ecology further recommends escort tug operators continue their participation in voluntary slowdowns, including those led by the ECHO Program and Quiet Sound. Voluntary slowdowns have the potential to reduce emissions by 11 percent to 25 percent, depending on the pollutant and location (Vancouver Fraser Port Authority, 2023).

4.7.3.3 Significant and Unavoidable Adverse Impacts

Alternative A would not result in significant and unavoidable adverse impacts to air quality in the EIS Study Area. Alternative A would have no potential to cause a chronic or recurring increase in the frequency, severity, and/or extent of NAAQS exceedances. Although tug escort requirements under Alternative A would continue to generate a low level of emissions, these emissions are not inconsistent with criteria pollutant or GHG-related emission reduction plans. Emissions associated with the rule would not result in TAP concentrations that could result in an increased lifetime cancer risk of more than ten per million.

4.7.4 Findings for Alternative B (Addition of FORs)

4.7.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, escort tugs would result in the same impacts as under Alternative A. Alternative B would also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of related air quality impacts.

4.7.4.2 Mitigation Measures

Escort tugs under Alternative B are required to adhere to the required mitigation measures described in Section 4.7.3.2 for Alternative A. Ecology also recommends that they continue to implement the voluntary measures identified for Alternative A in Section 4.7.3.2.

4.7.4.3 Significant and Unavoidable Adverse Impacts

Because Alternative B would not result in any meaningful changes to types or quantities of air emissions, or change the predicted frequency or volume of oil spills relative to Alternative A, Alternative B would not have significant or unavoidable adverse impacts on air quality.

4.7.5 Findings for Alternative C (Expansion)

4.7.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, escort tug emissions of criteria air pollutants (and their precursors), air toxics, and GHGs would increase. While Alternative C would not impact the types of escort tug emissions relative to Alternative A, overall total annual quantities of emissions would be approximately 2.5 percent greater than emissions under Alternative A. Alternative C would slightly decrease emissions of ozone precursors within the ozone area of concern.

The GHG emissions from escort tugs under Alternative C (12,400 tons per year (TPY) CO_2e) would represent approximately 1.02 percent of GHG emissions from marine vessels in the Puget Sound air basin. The 317 TPY CO_2e (2.63 percent) annual increase in CO_2e emissions under Alternative C would be equivalent to burning an additional 32,360 gallons of gasoline (EPA, 2024c). Although this minor increase in emissions doesn't contribute to state emissions reduction goals, it does not significantly hinder state efforts to reach GHG emissions reduction goals. For perspective, the Washington State Climate Commitment Act includes reporting and cap-and-investment requirements for stationary facilities with annual emissions exceeding 10,000 metric tons CO_2e and 25,000 metric tons CO_2e, respectively. Because the increase in escort tug GHG emissions under Alternative C would fall far below those thresholds (which do not apply to mobile sources), Ecology determined Alternative C would not be substantially inconsistent with state climate goals. **Error! Reference source not found.** shows the calculated annual emissions from escort tug within the EIS Study Area under Alternative C and compares these to recent estimates of total emissions from all marine vessels in the Puget Sound air basin.

Table 23. Annual escort tug emissions in the EIS Study Area (Alternative C) and comparison to total marine vessel emissions in the Puget Sound air basin.

Pollutant	Alternative C Tug Escort Emissions (tons/yr)	Percent Increase Compared to Alternative A	2021 Marine Vessel Emissions in Puget Sound Air Basin (tons/yr)[a]	Tug Escort % of Marine Vessel Emissions
Criteria Pollutants				
CO	29.0	2.63%	13,015	0.220%
NOx	192	2.59%	18,159	1.06%
PM_{10}	4.96	2.57%	331	1.50%
$PM_{2.5}$	4.81	2.57%	312	1.54%
SO_2	0.122	2.63%	369	0.03%
VOCs				
VOC	6.44	2.46%	1,970	0.33%
GHGs				
CH_4	0.122	2.46%	N/A	N/A
CO_2	12,200	2.63%	N/A	N/A
N_2O	0.620	2.59%	N/A	N/A
CO_2e	12,400	2.63%	1,218,437	1.02%
HAPs				
HAPs	0.806	2.48%	N/A	N/A

Source: a – Source: Puget Sound Maritime Air Forum, 2024

Similar to Alternative A, Ecology's air dispersion modeling indicated that CO, $PM_{2.5}$, PM_{10}, and SO_2 concentrations under Alternative C would be all well below their corresponding SILs. This demonstrates that escort tug emissions under Alternative C would have no potential to cause or contribute to a NAAQS violation for these pollutants. As with Alternative A, hourly peak-day NO_2 concentrations exceeded the corresponding SIL (7.5 $\mu g/m^3$) in portions of, or the entirety

of, all eight receptor areas under Alternative C. However, Ecology determined that because the region currently meets the NO_2 NAAQS by a wide margin, the approximately 2.6 percent increase in NOx emissions under Alternative C would not be expected to cause or contribute to a violation of the hourly NO_2 NAAQS.

Additionally, as under Alternative A, modeled $PM_{2.5}$ emissions under Alternative C exceeded the diesel PM ASIL by less than a factor of ten. Therefore, Ecology determined that escort tug emissions under Alternative C would not result in TAP concentrations that could result in an increased lifetime cancer risk of more than ten per million.

Alternative C would decrease the risk of target vessel drift groundings across the EIS Study Area (with benefits concentrated in the rulemaking expansion area), resulting in a lower risk of adverse air quality impacts due to oil spills. Conversely, the increase in tug escort activity would slightly increase the escort tug incident rate to 0.86 per year. Refer to Section 4.2 (Environmental Health: Releases) and Appendix C for additional information regarding oil spill risks, including discussion of Ecology's trajectory modeling to identify areas with elevated potential to be impacted by spills.

4.7.5.2 Mitigation Measures

Escort tugs under Alternative C are required to adhere to the required mitigation measures described in Section 4.7.3.2 for Alternative A. Ecology also recommends that they continue to implement the voluntary measures identified for Alternative A in Section 4.7.3.2.

4.7.5.3 Significant and Unavoidable Adverse Impacts

Although implementation would result in a minor increase in the quantities of emissions, Alternative C would not result in significant and unavoidable adverse impacts to air quality in the EIS Study Area.

4.7.6 Findings for Alternative D (Removal)

4.7.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug activity associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to emit criteria air pollutants, air toxics, and GHGs, they would be unrelated to this rulemaking and are not considered in this EIS.

Under this alternative, emissions of criteria air pollutants, air toxics, and GHGs from escort tug associated with this rule would be eliminated. Alternative D would therefore support state, regional, and port-specific initiatives relating to reducing criteria pollutant and GHG emissions. Alternative D would also reduce ozone precursor emissions within the ozone area of concern. However, as discussed in Section 4.4.3.1 (Impacts from Implementation), current tug escort requirements does not cause or contribute to air quality concerns related to exceeding national standards or causing human health impacts. Therefore, Alternative D would not be expected to result in a significant improvement in air quality in the EIS Study Area.

Under Alternative D, the elimination of escort tug activity associated with target vessels would result in an eliminated risk of escort tug incidents. However, the probability of a target vessel drift grounding would increase by 11.84 percent within the EIS Study Area (relative to Alternative A), and by 90.50 percent within the rulemaking area. This equates to a greater risk of exposure to oil spill-based air pollutants for communities near a spill, particularly for oil spill response workers.

4.7.6.2 Mitigation Measures

Other than the required and recommended measures for target vessels identified for Alternative A in Section 4.4.3.2 (Mitigation Measures), no additional mitigation measures for target vessels have been identified for Alternative D.

4.7.6.3 Significant and Unavoidable Adverse Impacts

Air quality impacts from the increased risk of catastrophic oil spills from target vessels could be substantial. However, the air quality impacts would be fairly short-term and would be unlikely to substantially affect state or regional emissions reductions goals, cause chronic or recurring NAAQS exceedances, or meaningfully influence cancer risk for local communities from TAP exposure. Therefore, Alternative D would not have significant or unavoidable adverse environmental impacts on air quality.

4.8 Recreation

This section describes the existing conditions and potential impacts to recreation in the EIS Study Area from the rulemaking alternatives. The analysis considered water-based recreation within the EIS Study Area, focusing on changes in recreational opportunity and/or quality as a result of the alternatives.

Refer to the Recreation Discipline Report (Appendix I) for more information on the methodology, additional details regarding existing recreation in the EIS Study Area, the full analysis of impacts to recreation under each alternative, and a more comprehensive list of relevant mitigation measures.

4.8.1 Methodology

Ecology reviewed available local, state, and federal agency plans and studies related to recreational activity, as well as data on recreational activity, where available, to describe current recreation in the EIS Study Area. Ecology did not receive comments from the public, Tribes, and/or the Oil Transportation Safety Committee about concerns with impacts to recreation.

Ecology then reviewed the results of vessel traffic modeling, which estimated the underway time and distribution of escort tug activity under each of the rulemaking alternatives. We then reviewed the changes in escort tug activity (duration of underway time, locations, and pathways of activity) and considered how those changes in tug escort activity would impact recreation. We also considered the impacts of an oil spill on recreation. We then evaluated impacts qualitatively for each alternative.

Finally, Ecology assessed whether those impacts would likely result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 24. Significance thresholds for impacts to recreation.

Indicator	Significance Thresholds
Changes to access or quality of recreational opportunities	• The proposed rulemaking would result in long-term or permanent loss of recreational opportunities and/or a permanent reduction of recreational quality.

4.8.2 Affected Environment

Recreation on or near the water occurs throughout Washington state, including within the EIS Study Area. The Recreation and Conservation Office (RCO) identifies 1,991 recreation points that offer boating access, fishing access, or water access throughout the state, with most of them located in and around the shorelines of the Puget Sound and the EIS Study Area (RCO, 2023b). Swimming in natural settings and paddle sports (whitewater, canoes, kayaks, stand-up paddle boards, rowing) are two of the most popular recreation activities in the State (RCO, 2023a). None of the RCO reports we reviewed identified interaction with vessel traffic or impacts associated with vessel traffic as a gap or concern for water-based recreation. A recent

RCO survey found that water-based activities are typically practiced in local or state parks or from federal public lands (RCO, 2023a). The map below shows local, state, and federally managed recreation areas in the EIS Study Area with water access (see Figure 18 below).

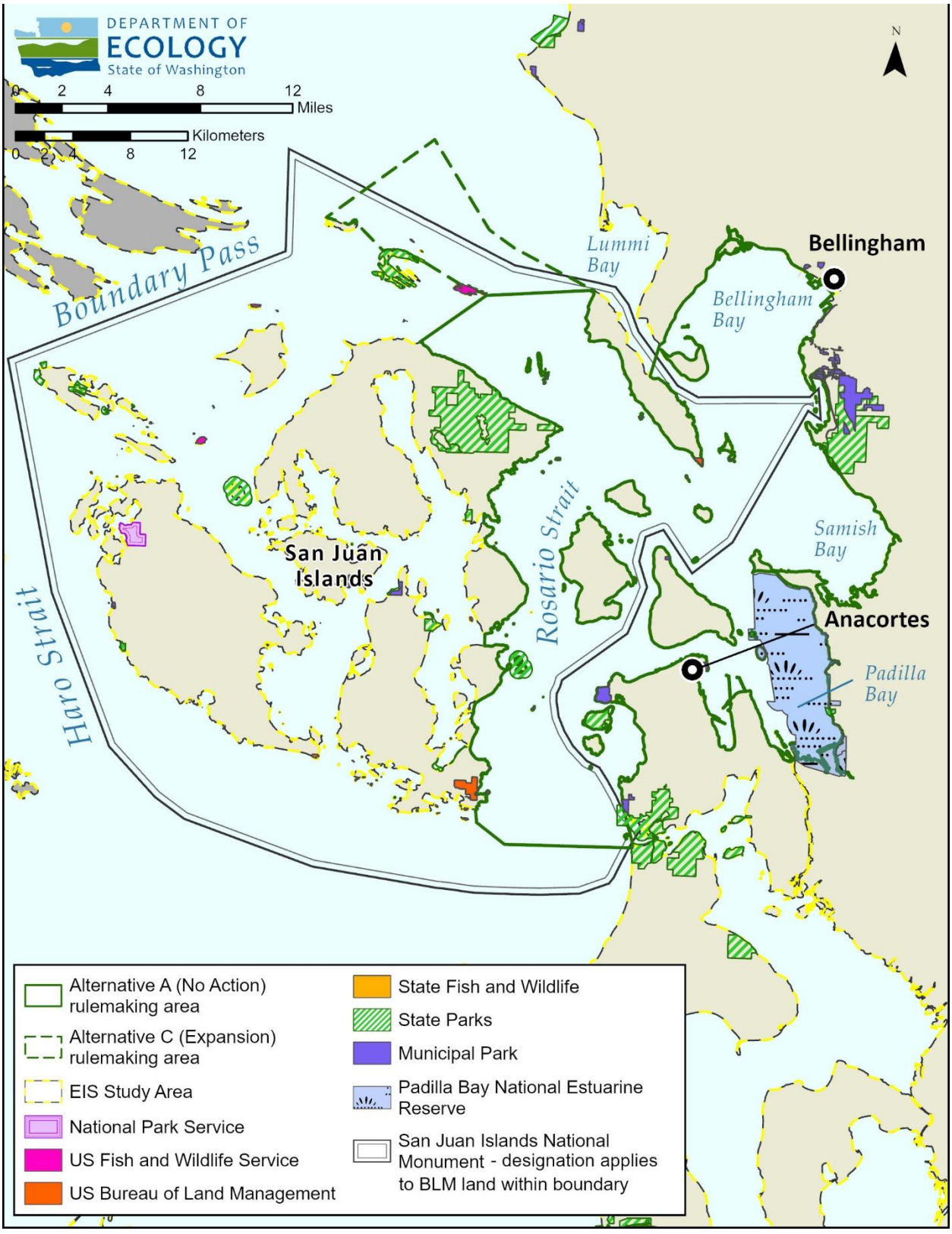


Figure 18. A map of the rulemaking area showing nearby federal, state, and municipal parks with water access.

Recreational Fishing and Shellfishing: Recreational fishing is also very popular. In 2022, 1.2 million people (residents and non-residents) participated in recreational fishing in Washington state, with 68 percent of that occurring in saltwater (Deynze, 2024). Fishing areas Marine Area 7 (San Juan Islands) and a portion of Marine Area 6 (East Juan de Fuca Strait) cover the current rulemaking area and the adjacent waters (See Figure 19). These marine areas include three public fishing piers and two “major recreational fishing areas” (Lawrence Point and Rosario Strait) (See Figure 19). There are no additional public fishing piers or major fishing areas within the expansion area. Recreational shellfish beaches exist throughout the EIS Study Area. The expansion area includes recreational shellfishing beaches on Matia, Sucia, and Patos Islands.

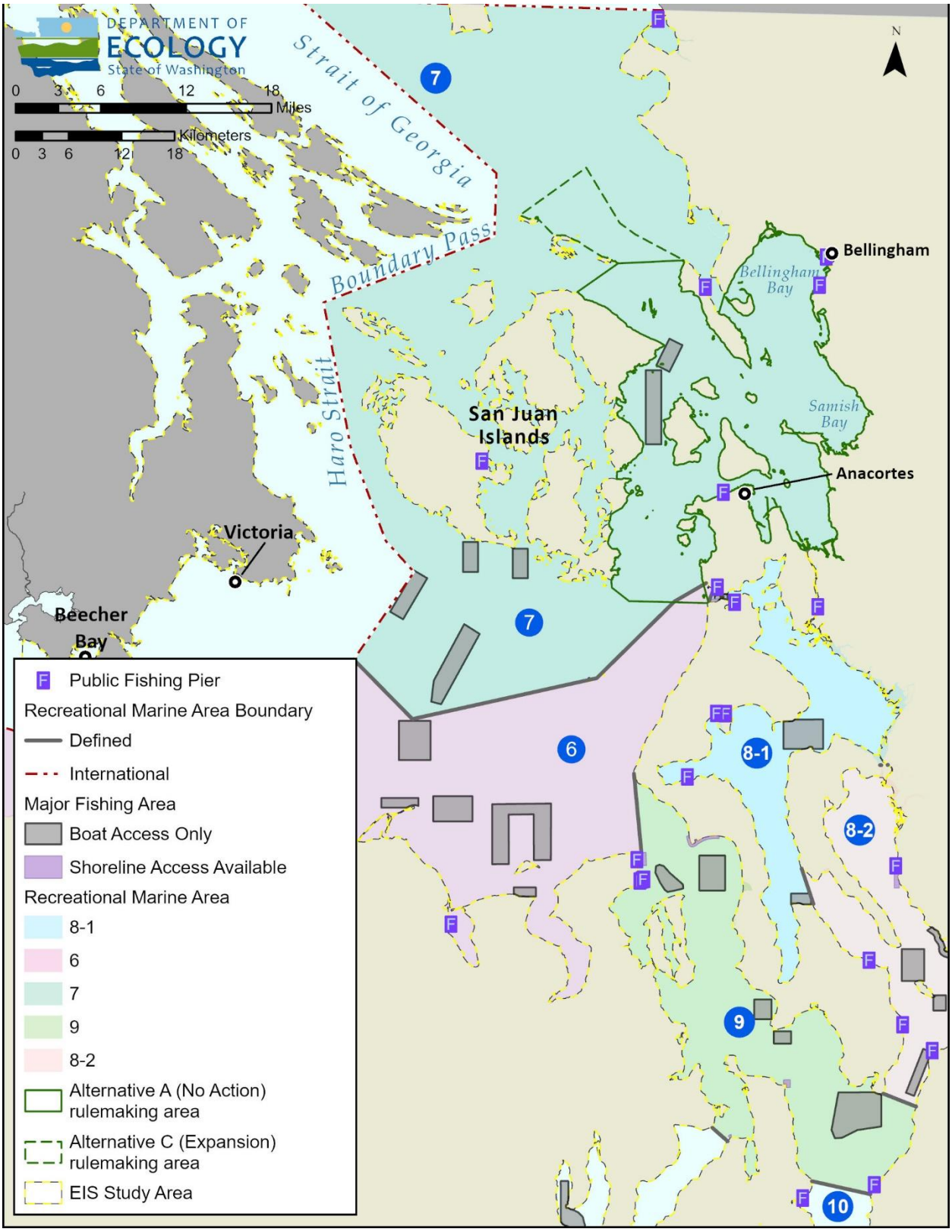


Figure 19. Map of the WDFW marine areas for recreational fishing, boat access, and shoreline fishing access in and around the rulemaking area.

Recreational Boating: Recreational boating for fishing, sightseeing, and recreation is popular in the EIS study area, particularly in and around the San Juan Islands (San Juan County, 2023). Approximately 65 percent of all registered recreational vessels are registered in counties with shorelines adjacent to the EIS Study Area. Recreational boaters have reported congestion as a constraint, but it was primarily concentrated around recreational boat launches and mostly described as a minor problem (Duda et al., 2007). This is unlikely to be affected by this rulemaking.

SCUBA Diving: There are 70 WDFW-identified SCUBA diving sites within the EIS Study Area (WDFW, 2009). Four are within or adjacent to the current rulemaking boundary and one is in the proposed expansion area. SCUBA diving usually occurs close to shore, while tugs operate in the established shipping lanes. SCUBA diving is unlikely to be impacted by the operation of escort tugs.

Whale watching: The Pacific Whale Watch Association (PWWA) estimates that its members provide whale watching services to approximately 400,000 people annually (PWWA, 2025). The highest density of observed whale watching effort is largely outside of the rulemaking area and concentrated in Haro Strait, Boundary Pass, and the Southwestern shore of San Juan Island. However, some observed whale-watching does occur within the rulemaking area, which Soundwatch characterizes as “sparse” (The Whale Museum, 2023).

Escort tugs are unlikely to encounter a significant number of active whale watching vessels in the rulemaking area as the overlap between their distribution is limited. Furthermore, commercial whale watching vessels are required to carry AIS (WAC 220-460-140), as are tugs. This means that whale watching vessels would be able to see and potentially avoid escort tugs. Escort tugs could also directly impact whales (see Plants and Animals section), indirectly impacting recreational whale watching.

Other Water-Based Recreation: Appendix I also summarizes available recreational information from the counties with shorelines in the rulemaking area. In general, water-based recreation is popular in this region. The Shoreline Management Plans in these counties typically reflect recreational access to and use of shorelines. Whatcom County restricts some water-based recreational activities to within 100-150 feet from shore.

Oil Spill Risk: Any release of oil from target vessels and/or escort tugs could have a negative impact on recreational resources within the EIS Study Area. These impacts can include lost access for recreational boating and fishing, and closures of beaches and coastal areas for activities like surfing, swimming, wildlife viewing, and birdwatching (NOAA, n.d.). Recreational closures can occur during the spill, during clean-up, and after the spill until oiled areas are safe for the public. In major spills, like the Deepwater Horizon incident, recreational impacts lasted for well over a year and resulted in $693.2 million in damages (NOAA, n.d.).

Variables, such as the location and timing of a spill, the time of year, and the distance from shore, influence the trajectory of oil after a spill has occurred and the resulting recreational impacts. Ecology performed oil spill trajectory modeling for eight worst case spill scenarios at locations that have a relatively higher spill risk. These simulations suggest that recreational

resources across most of the northern portion of the EIS Study Area could be at risk in the event of a worst case spill event.

4.8.3 Findings for Alternative A (No Action)

4.8.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

Escort tug traffic from this rulemaking accounts for less than 1 percent of total AIS traffic under Alternative A and between 4 and 5 individual escort jobs per day. Additionally, as described in Sec. 4.8.2 (Affected Environment), some counties limit many water-based recreational activities to within 100-150 feet from shore. Escort tugs rarely operate this close to the shoreline—only 1.74 percent of underway time is within 150 meters of the shore. When operating this close to the shore, they almost always travel slower than 6 knots. Impacts to recreation are unlikely due to the limited nature of potential physical interaction with recreation near the shore and the transitory nature of escort tug movement.

While there is limited data available since the 2020 tug escort requirements for target vessels went into effect, recreational fishing data (licenses sold and catch per unit effort) does not show any clear patterns of change after the implementation of the 2020 tug escort requirements. While there could be some recreational fishing interactions with escort tugs, interactions with vessel traffic have not been identified as a concern in Ecology's review of available data, unlike our findings with Tribal treaty fishing (See Tribal Resource Discipline Report, Appendix K).

The highest density of whale watching efforts is largely outside of the Alternative A boundary and concentrated in Haro Strait, Boundary Pass, and the Southwestern shore of San Juan Island. Some whale watching does occur within the boundary of the current rulemaking area, but it is characterized as "sparse" (The Whale Museum, 2023). Because most recreational whale watching occurs outside of the Alternative A boundary, it is unlikely that the tug escort requirements under Alternative A would significantly impact recreational whale watching. However, some minor impacts are possible due to the overlap between whale watching areas and escort tug movement associated with this rule.

4.8.3.2 Mitigation Measures

The current tug escort requirements themselves mitigate (reduce) the risk of a spill from the target vessels, which are low-probability events. This reduces the potential for impacts to recreation as a result of a catastrophic spill from a target vessel. Escort tugs and target vessels are required to adhere to all applicable requirements regarding vessel traffic safety and oil pollution prevention. These requirements keep large commercial vessel traffic away from shore where water-based recreation occurs more frequently. They also provide predictability for recreational vessels (fishing, yachts, etc.) that use water further from shore.

To minimize any potential impacts to recreational whale watching, escort tugs should limit potential impacts to SRKW and other marine mammals using the measures outlined in the

Plants and Animals Section 4.5. Ecology also recommends that escort tugs and target vessels continue to follow the PSHSC's SOCs and other industry best practices.

4.8.3.3 Significant and Unavoidable Adverse Impacts

Escort tugs primarily operate within existing shipping lanes and close to major ports and refineries, with only a small portion of total underway time spent within 150 meters from shore. Interactions with shore-based and nearshore (e.g. SCUBA diving, tubing) recreation, shore-based recreational shellfishing, and recreational boating are expected to be minimal under Alternative A. The fact that escort tugs operate primarily within the shipping lanes helps recreational fishers and boaters avoid interaction with the tugs, as do the common gear types for recreational fishing in Washington waters. Interactions with whale watching boats are also expected to be infrequent and well-managed by the fact that both the escort tugs and the whale watching boats are required to carry and use AIS. Any potential impacts are likely to be transitory in nature, occur infrequently, and would not result in a long-term or permanent loss of recreational opportunity or reduction of recreational quality. Under Alternative A, the risk of an oil spill from both target vessels and escort tugs is low, meaning that the risk of an oil spill impacting recreational opportunities is also low. While a spill is always possible, permanent impairment of recreational opportunity and/or quality from a catastrophic spill is unlikely under Alternative A. There are no significant and unavoidable adverse impacts to recreation associated with Alternative A.

4.8.4 Findings for Alternative B (Addition of FORs)

4.8.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, tug escort requirements would result in the same impacts as under Alternative A. Alternative B could also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of impacts of an oil spill to recreation.

4.8.4.2 Mitigation Measures

No additional mitigation measures than those included for Alternative A in Section 4.8.3.2 have been identified for Alternative B. Escort tugs would still be required to adhere to the existing vessel traffic safety and oil spill prevention, preparedness, and response regulations already in place. Ecology recommends that escort tugs and target vessels continue to participate in voluntary best practices and SOCs to reduce oil spill risk and impacts to SRKW and other marine mammals (see Section 4.5 Plants and Animals for details).

4.8.4.3 Significant and Unavoidable Adverse Impacts

As stated in Section 4.8.4.1 (Impacts from Implementation), the addition of the FORs would not change the anticipated interaction of escort tugs and recreational opportunities relative to Alternative A. Additionally, Alternative B would not change the predicted frequency or volume of oil spills from escort tugs or target vessels relative to Alternative A. Therefore, Alternative B would not have significant or unavoidable adverse environmental impacts on recreation.

4.8.5 Findings for Alternative C (Expansion)

4.8.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

The increases in escort tug underway time in the expansion area has the potential to impact additional recreational areas and activity. Two state parks, Sucia Island and Patos Island Marine State Parks, are in the expansion area. Both parks are only accessible by boat and both experience significant summertime peaks in access for both day and overnight use (Washington State Parks, 2023). Many of these vessels are likely to be sailboats (Duda et al., 2007).

Approximately 39 percent of escort tug underway time under Alternative C is active escorting of existing target vessels. Because the escort tugs are so much smaller than the target vessels and are close to them while escorting, this is unlikely to cause an additional impact. Potential new impacts to recreation would occur when the tugs are transiting alone. When transiting alone, some minor potential impacts to recreation are possible, although these impacts would be transitory in nature. Escort tugs may also wait in protected areas, such as Echo Bay on Sucia Island or near Neptune Beach for safety during strong weather or ocean conditions prior to meeting their target vessel at the rulemaking boundary. However, as recreation in these areas strongly peaks during the summer and more extreme conditions are more common in the winter, this is unlikely to have significant impacts on recreational boating. Any impacts to recreational boating from additional escort tug underway time would be transitory by nature and unlikely to permanently impair recreational access or quality.

While there is potential for minor impacts from escort tugs to recreational fishing or diving, as described in Alternative A, significant impacts are unlikely. Escort tugs remain largely within the designated shipping lanes, so their movements are predictable to recreational fishing boats. Even with the increase in escort tug traffic and geographic expansion, permanent impacts to recreational access or quality are unlikely to occur.

Whale watching does occur in higher concentrations in the expansion area, particularly in the areas immediately adjacent to Patos and Sucia Islands (The Whale Museum, 2023). Soundwatch data indicates that Bigg's transient killer whales and humpback whales are the primary target species for whale watching effort in this area. Approximately 39 percent of escort tug underway time is actively escorting the existing target vessels within the shipping lanes. The remainder of the time, escort tugs would be transiting alone. While this represents a new impact to recreation, tugs on their own are smaller and much more maneuverable than the target vessels. Impacts to recreational whale watching are likely to remain minor, even if tugs are visible more frequently. Conflict interactions between the target vessels, escort tugs, and the commercial whale watch vessels should be limited because all three vessel types are required to carry AIS.

This alternative further reduces the risk of a target vessel drift grounding within the EIS Study Area by 1.6 percent and reduces the likelihood of oil pollution impacts to recreation.

4.8.5.2 Mitigation Measures

No additional mitigation measures than those included for Alternative A in Section 4.8.3.2 have been identified for Alternative C. Escort tugs would still be required to adhere to the existing vessel traffic safety and oil spill prevention, preparedness, and response regulations already in place. Ecology recommends that escort tugs and target vessels continue to participate in voluntary best practices and SOCs to reduce oil spill risk and impacts to SRKW and other marine mammals (see Section 4.5 Plants and Animals for details). Particularly for any tugs waiting in protected areas for the target vessels, complying with best management practices to minimize light and operational noise at anchor (PSHSC, 2023; U.S. Coast Guard, 2016) will help minimize impacts to recreation.

4.8.5.3 Significant and Unavoidable Adverse Impacts

Expanding the tug escort requirements may result in minor localized and transitory impacts to recreation, while also offering additional protection against longer-term impacts to recreation from a catastrophic oil spill from a target vessel. There could be some minor impacts to recreational boating and/or dispersed camping and recreation on remote state parks if escort tugs are waiting for their target vessels in protected bays or near shorelines that are popular for recreation. However, this waiting behavior is more common as a safety measure during bad weather, which is more likely during the winter season when recreational boating is much more infrequent.

The existing higher concentration of whale watching in the expansion area is unlikely to be significantly affected by the expansion of tug escort requirements, although some minor impacts are possible. Harmful levels of underwater noise from escort tugs that could significantly impact marine mammals do exist under Alternative C, but are mostly the same as those described under Alternative A (see Section 4.4 Environmental Health: Noise).

Alternative C reduces the likelihood of a catastrophic oil spill from a target vessel drift grounding, and associated impacts to recreation, by 1.6 percent in the EIS Study Area. Alternative C is unlikely to have significant or unavoidable adverse impacts on recreation.

4.8.6 Findings for Alternative D (Removal)

4.8.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. This means that any potential impacts to recreation from the escort of target vessels under this proposed rule would be eliminated. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have interactions with water-based recreation, they would be unrelated to this rulemaking and are not considered in this EIS.

However, removing existing tug escort requirements for target vessels in the EIS Study Area increases the probability of a drift grounding, and potential oil spill, from a target vessel. Under

Alternative D, target vessel drift grounding probability increases by 11.84 percent over Alternative A across the EIS Study Area. Just within the rulemaking area, this is an increase of 90.5 percent. Under Alternative D, potential impacts to recreation because of an oil spill from a drift grounding are significantly more likely to occur. As described above, a major oil spill can result in long-term closures of recreational activities. It can also impact plants and animals (See Section 4.5 Plants and Animals or Appendix F) and water quality (See Section 4.3 or Appendix D) which are foundational to much of the water-based recreation in the EIS Study Area.

4.8.6.2 Mitigation Measures

The removal of tug escort requirements under Alternative D eliminates the need to mitigate the impacts of the escort tugs themselves. Target vessels would continue to comply with existing vessel traffic safety and oil prevention, preparedness, and response measures at the federal and state level that currently contribute to keeping oil spill risk low in the EIS Study Area. Ecology also recommends that target vessels continue to participate in voluntary best practices and SOCs to reduce oil spill risk and impacts to SRKW and other marine mammals (see Section 4.5 Plants and Animals for details). In addition to these measures, we recommend target vessels continue to participate in voluntary industry best practices.

4.8.6.3 Significant and Unavoidable Adverse Impacts

Alternative D would result in significant and unavoidable adverse impacts to water-based recreation in the EIS Study Area due to the increased risk of major oil spills from target vessel drift groundings. The increased probability of a potential catastrophic oil spill would be reasonably likely to result in long-term closures of recreation, affecting access to recreation as well as the quality of recreation. Recreation would also be impacted indirectly by significant and unavoidable impacts to plants and animals and water quality, as most water-based recreation relies on both clean water and abundant wildlife for recreational harvest and/or viewing.

4.9 Visual Resources

This section describes the existing conditions and potential impacts to visual resources in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered local, county, state, and federal regulations and guidance, the visual impacts of an oil spill, and results from the Federal Highway Administration's Visual Impacts Assessment.

Refer to the Visual Resources Discipline Report (Appendix J) for more information on the methodology, additional details regarding existing visual resources in the EIS Study Area, the full analysis of impacts to visual resources under each alternative, and a more comprehensive list of relevant mitigation measures.

4.9.1 Methodology

To determine how escort tug operations affect visual character, Ecology reviewed available literature and data from local, state, and federal agencies, and input from Tribal governments and stakeholders. In addition to visual impacts from tug escorts themselves, Ecology also assessed the visual impact of a potential oil spill from an escort tug. Ecology also reviewed the changes in escort tug activity simulated under each of the four alternatives, and considered how those changes in tug escort activity would impact visual resources.

We then qualitatively evaluated impacts to visual resources using the guidance developed by Washington State Department of Transportation (WSDOT) (WSDOT, 2025) and the Federal Highway Administration's (FHWA) Visual Impacts Assessment (VIA) processes (FHWA, 2015). The first step in the analysis identified the level of VIA required for this assessment using the FHWA VIA Scoping Questionnaire (See Appendix J for details). Although this assessment determined that the lowest level of analysis, a VIA Memorandum, was appropriate for this EIS, our analysis more closely aligns with an Abbreviated VIA to effectively capture all visual impacts. The purpose of an Abbreviated VIA is to briefly describe project features, impacts, and mitigation requirements. Descriptions and characterizations of the visual landscape are based on observation and review of planning and policy documents by local jurisdictions. Ecology also conducted a site visit to the eastern portion of the rulemaking area as part of this assessment. Finally, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts (**Error! Reference source not found.**).

Table 25. Significance thresholds for visual resource impacts.

Indicator	Significance Thresholds
Visual impacts as a result of changes in tug escort requirements	• Reasonable likelihood that the qualities of the region's visual character are permanently altered. • Important views are blocked, viewers see and are sensitive to view changes, changes in shadow or light levels are obvious, and light and glare could be a safety hazard or interfere with views.
Visual impacts as a result of oil spills	• Reasonable likelihood that an oil spill will result in long-term and/or permanent changes to the region's visual character.

4.9.2 Affected Environment

The visual landscape of the EIS Study Area has a diverse array of industrial uses and natural beauty. Our analysis focuses on the rulemaking area where escort tug traffic would be most concentrated, the North Puget Sound and San Juan Islands. This region is well known for natural beauty, scenic views, and outdoor wildlife-viewing and recreation opportunities. In addition to vessels carrying fuel and their escort tugs, it is common to see cruise ships and ferries traveling through the area and mooring at marinas in the region.

The North Puget Sound encompasses a variety of bays, shoreline types, islands, and land masses, along with multiple urban centers. The San Juan Islands, an archipelago of more than 170 islands, are protected as a National Monument (BLM, 2023). The islands are generally less developed than the mainland. One visiting the islands can expect to view a wide diversity of shoreline and marine habitats (rocks, reefs, and islands), along with undisturbed forests and meadows, and views of multiple mountain ranges. The San Juan County Shoreline Master Program Section 18.50.200 details requirements that include ensuring external lighting fixtures are dark sky rated, recessed, and shielded (San Juan County, 2021). However, federal, state, and local navigation and safety requirements are exempt from these requirements. The northernmost reaches of the San Juan archipelago near the expansion area are Patos Island (211 acre marine park), Sucia Island (group of islands with a total area of 680 acres, southeast of Patos Island), and Matia Island (145 acres, southeast of Sucia Island). Visitors to the islands enjoy an environment mostly without visible human intervention, views of mountain ranges, clear marine water, forested land, meadows, and remote wildlife areas (BLM, 2023). Appendix J includes more details on visual quality by sub-region, and notes from the site visit.

Large commercial vessels are part of the visual character of this region as the Strait of Juan de Fuca is the entrance to several large commercial ports on both sides of the US-Canadian border. Visual impacts for escort tug activity is described in two categories. The first includes escort tugs commuting to or from an escort job and potentially waiting for their target vessel to arrive. In terms of physical size, one of the larger escort tugs is approximately 155 feet in length. A smaller escort tug is approximately 91.5 feet in length. The second category is the active escort job, where the visual impact of the tug is dominated by the visual impact of the escorted vessel. For contrast, the escorted vessels are much larger and range from 241 to 690 feet in length. See Figures 20 and 21 below for visual comparisons of an escort tug and target vessels within the EIS Study Area.

There are also specific light requirements for large vessels. Vessels navigating in U.S. and Canadian waters follow the same navigational rules of the road known as the COLREGS. The COLREGS include requirements for when vessel lights should be turned on and where lights should be located. Generally, lights are required sunset to sunrise and only the required lights are allowed. Required lights include masthead, stern lights and towing lights. There are additional requirements when towing a vessel or if a vessel experiences grounding.

The USCG does receive complaints about light from vessels sporadically, however, complaints are typically regarding larger vessels at anchorages, not from tugs. Light impacts from escort tugs are therefore unlikely to be significant.

Figure 20. An oil tanker at the top of the photo is shown with a tug alongside, and one astern. Both of these tugs are the size and character of escort tugs. An ATB is shown in the middle ground with a crew boat alongside. A fishing boat passes in the foreground.

Figure 21. Escort tug transiting to an oil tanker.

Oil spills can also have visual impacts. The full extent of an oil spill may not be visible from nearby shorelines, depending on the location and size of the spill as well as the current weather conditions. Oil may reach the shoreline, leave a visible line at the high tide mark, and leave oil residue along the beach.

Once an oil spill response is underway, there may be multiple oil spill response vessels, other response equipment, and personnel on the water deploying boom and skimming oil. The amount, type, and duration of vessels on the water depends on the type of incident. Response vessels could be observed for days, weeks, or even months depending on the complexity of the spill. To deploy response equipment, a staging area is established by Unified Command at a local marina, park, or other area close to shore with easy access to the water.

4.9.3 Findings for Alternative A (No Action)

4.9.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

While active escorting occurs only within the boundaries of Alternative A, commuting occurs throughout the EIS Study Area. This means that while escort tugs are visible from more locations, the visual impact of commuting tugs is dispersed through a larger area and is low from any single viewer location. Concentrations of escort tug traffic exist around major ports and refineries. These areas are already highly industrialized and experience higher levels of vessel traffic in general, so the visual impact of the escort tugs is likely to be negligible. When tugs are transiting at night, the required lights would be visible. If escorting a vessel at night, the lights of the tug would be minimal in comparison to the lights of the larger vessel. Lights would be seen most within the Alternative A rulemaking Area (see Figure 6 for distribution of escort tug underway time in Alternative A).

Ecology used simulated data from the Ecology risk model to determine escort and assist time under existing conditions, or the conditions of Alternative A. Ecology estimates that tugs escorting target vessels perform 1,537 individual jobs per year. This is between 4 and 5 escort jobs of target vessels per day. However, tugs escorting target vessels are not the only time a viewer would see tugs of this size transiting through the EIS Study Area or interacting with larger commercial vessels. On any given day, a viewer could also expect to see between 2 and 3 escort jobs of tankers over 40,000 DWT and between 24 and 25 assist jobs, done by the same type of tug, for larger vessels. To the casual viewer, these tug-vessel interactions would likely look similar and the tug activity associated with this rulemaking would not have a distinct visual impact since the additional escort jobs make up a small portion of the total work tugs perform by comparison.

Under Alternative A, active escorting of target vessels makes up an estimated 36.78 percent of escort tug underway time, with the remainder transiting or waiting alone. While escorting a vessel, the vessel is the dominant feature of the landscape. It is more common to see escort tugs commuting (63.22 percent) to and from their escort jobs, but their small size would not inhibit any views (See Figures 20 and 21). See Section 4.1 Transportation: Vessel Traffic for

more details. Although a major oil spill can have visual changes to the affected area, the risk of oil spills under Alternative A is low (see Section 4.2 Environmental Health: Releases for details).

4.9.3.2 Mitigation Measures

Escort tugs are required to comply with all relevant USCG safety measures. Of particular relevance to visual impacts are the COLREGS 30 requirements for lighting. Other safety measures such as adherence to shipping lanes help minimize visual impact by providing a clear route for large vessel transits.

In addition to these requirements, Ecology recommends that escort tugs continue to implement the PSHSC SOCs, specifically the light recommendations in the Anchorage SOC. Implementation of these measures would help minimize any visual impacts from the escort tugs under Alternative A.

4.9.3.3 Significant and Unavoidable Adverse Impacts

Although existing tug escort activities may result in localized and transitory visual impacts, they represent less than 1 percent of total AIS traffic in the EIS Study Area. Continued adherence to federal standards for light use and vessel traffic safety, as well as continued voluntary participation in the PSHSC's SOCs ensure that visual impacts from escort tugs under Alternative A remain minimal. While some minor and transitory visual impacts are possible, Alternative A would not permanently alter the visual character of the region. Therefore, Alternative A would not have significant or unavoidable adverse impacts on visual resources.

4.9.4 Findings for Alternative B (Addition of FORs)

4.9.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, escort tug activities would result in the same impacts as under Alternative A. Alternative B could also result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of impacts to visual resources from a major oil spill.

4.9.4.2 Mitigation Measures

Escort tugs under Alternative B would be required to adhere to the same federal vessel traffic safety and lighting requirements and recommended mitigation measures as those identified for Alternative A in Section 4.9.3.2 (Mitigation Measures).

4.9.4.3 Significant and Unavoidable Adverse Impacts

As stated in Section 4.9.2.3 (Impacts), the addition of the FORs would not meaningfully change the visual impacts relative to Alternative A, although there could be some limited redistribution of commute time and locations. Therefore, Alternative B would not have significant or unavoidable adverse impacts on visual resources.

4.9.5 Findings for Alternative C (Expansion)

4.9.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, there would be a shift in potential visual impacts with more visible escort tug underway time (vessel traffic) in the expansion area. The zones that would experience the highest increases are the Strait of Georgia South Zone and the Strait of Georgia Zone. In the Strait of Georgia South Zone, escort tug underway time would increase from 0.02 hours to 1.11 hours per day due to the expansion. In the Strait of Georgia Zone, escort tug underway time would increase from 1.88 hours to 2.24 hours per day. The Strait of Georgia South Zone is more remote and further from permanent residential areas, so the experience of these visual impacts are also likely to be transitory. The increase in the Strait of Georgia Zone is smaller and there is a higher volume of other tug traffic in this region.

Under Alternative C, the overall proportion of escort tug time spent commuting vs. actively escorting also shifts. We see an increase of 9.3 percent in active escort time and a 1.61 percent decrease in commute time. The visual impact of an additional escort tug is dwarfed by that of a target vessel and is primarily visible when the much smaller tug is commuting on its own. Because the proportion of time tugs spend actively escorting is higher under Alternative C, the proportion of time when their visual impact would be negligible in comparison to the target vessel also increases.

Alternative C could also affect escort tug waiting at rendezvous locations and behavior at the northern end of the rulemaking area. The visual impact of tugs waiting for target vessels may be more distributed and include several nearby but more protected areas such as Neptune Beach or Echo Bay on Sucia Island, with less waiting right at the boundary. We do not expect Alternative C to affect tug waiting behavior at the southern boundary.

Alternative C also reduces the risk of a target vessel drift grounding within the EIS study area by 1.6 percent, reducing the likelihood of visual impacts from an oil spill from a target vessel. In Alternative C, escort tugs have an incident rate of 0.88 per year, compared to 0.86 per year in Alternative A. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much

less than the volume carried by target vessels (fuel and cargo). Oil spills from an escort tug are also unlikely under this alternative.

4.9.5.2 Mitigation Measures

No additional mitigation measures than those included for Alternative A in Section 4.9.3.2 (Mitigation Measures) have been identified for Alternative C.

4.9.5.3 Significant and Unavoidable Adverse Impacts

Expanding the tug escort requirements under Alternative C may result in increased localized and transitory visual impacts in the expansion area. Alternative C also offers additional protection against the potential visual impacts of an oil spill from a target vessel in the expansion area. Even under Alternative C, escort tug underway time represents less than 1 percent of total AIS traffic in the EIS Study Area. Continued adherence to federal standards for light use and vessel traffic safety, as well as the continued voluntary compliance with the PSHSC's SOCs ensure that visual impacts from escort tugs under Alternative C remain minimal. Although Alternative C could have minor and transitory visual impacts from the tugs themselves, including in more remote areas, it would not permanently alter the visual character of the region. Therefore, Alternative C would not have significant or unavoidable adverse impacts on visual resources from escort tugs.

4.9.6 Findings for Alternative D

4.9.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug activity associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have visual impacts, they would be unrelated to this rulemaking and are not considered in this EIS.

Under Alternative D, a viewer watching vessel traffic would still see between 2 and 3 escort jobs of tankers over 40,000 DWT per day and 24 to 25 assist jobs per day. They would not see the 4 to 5 escort jobs of target vessels per day. This is a reduction of 0.96 percent of all AIS traffic.

Removing existing tug escort requirements for target vessels in the EIS Study Area increases the probability of a drift grounding, and potential oil spill, from a target vessel. Under Alternative D, target vessel drift grounding probability increases by 11.84 percent over Alternative A across the EIS Study Area. The probability of an oil spill resulting from those drift groundings also increases.

4.9.6.2 Mitigation Measures

Alternative D would remove tug escort requirements for target vessels resulting in an overall decrease of 0.96 percent in all AIS vessel traffic. This eliminates the need to mitigate the impacts of the escort tugs themselves. Target vessels would continue to comply with existing vessel traffic safety and oil prevention, preparedness, and response measures at the federal and state level that currently manage oil spill risk in the EIS Study Area. Ecology also recommends that target vessels continue to implement voluntary best practices and SOCs.

These are described in detail in the Environmental Health: Releases Discipline Report (Appendix C).

4.9.6.3 Significant and Unavoidable Adverse Impacts

Under Alternative D, the visual impact of the escort tugs associated with the escort of target vessels would be eliminated. This represents a minor reduction in the visual impact of vessel traffic across the EIS Study Area and in the expansion area in particular. As discussed in section 4.9.2 (Affected Environment) and Appendix J, an oil spill and associated clean up can have visual impacts. Under Alternative D, the probability of a target vessel drift grounding increases by 11.84 percent in the EIS Study Area and 90.5 percent in the rulemaking area (although the absolute risk remains low). While there would be some moderate short to medium-term visual impacts from a major spill and associated clean-up, oil spills of this magnitude are rare and visual impacts would not be long lasting. Depending on the type of oil spilled, ocean and weather conditions, and location, oil may or may not be readily visible from the shoreline. Evaporation and weathering would further reduce the visual impact of a spill. Spill response activities would be visible during the clean-up phase of the response, but these activities would conclude when the response was demobilized. None of these visual impacts are expected to permanently change the region's visual character. Alternative D would not result in significant and unavoidable adverse impacts to visual resources in the EIS Study Area.

4.10 Tribal Resources

This section describes the existing conditions and potential impacts to Tribal resources in the EIS Study Area resulting from the four rulemaking alternatives. The analysis considered impacts to aquatic species and habitat of cultural significance to Tribes, water quality, Tribal treaty fishing, and impacts on coastal cultural resources such as archaeological sites.

Refer to the Tribal Resources Discipline Report (Appendix K) for more information on the methodology, additional details regarding existing Tribal resources in the EIS Study Area, the full analysis of impacts to Tribal Resources under each alternative, and a more comprehensive list of relevant mitigation measures.

4.10.1 Methodology

Ecology reviewed scientific literature, technical reports, data, and Tribal input to identify existing Tribal resources within the EIS Study Area that could be impacted by the proposed rulemaking, the main threats to these resources, and how existing marine vessel and tug escort activity affects these resources. Ecology developed an outreach list of Tribes with reference to the Governor's Office of Indian Affairs Tribal Directory and the Department of Archaeology and Historic Preservation (DAHP) Tribal Contact Information list.

Ecology characterized the affected environment by focusing on resources such as Traditional Cultural Properties (TCP) and archaeological sites and then discussing Tribal treaty reserved rights. Ecology also performed oil spill trajectory modeling, which simulates the trajectory of spills in locations where our modeling shows that drift groundings are more likely to occur and in areas with high concentrations of escort tug underway time. For the eight oil spill scenarios modeled, Ecology coordinated with DAHP to overlay the spill trajectories with known archaeological sites in the DAHP inventory to determine which sites are more likely to be affected in the modeled oil spill scenarios. Additional information on the oil spill trajectory modeling by Ecology and DAHP is included in the Tribal Resources Discipline Report (Appendix K) and the Environmental Health: Releases Discipline Report (Appendix C). Finally, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 26. Significance thresholds for Tribal resources impacts.

Indicator	Significance Thresholds
Aquatic Species and Habitat	Continuation or introduction of adverse impacts to wildlife or habitats of cultural significance to Tribes.
Water Quality	Continuation or introduction of reasonable likelihood of disruption of Tribal activities that are dependent on water quality.
Tribal Treaty Fishing	Continuation of adverse impacts or introduction of new adverse impacts to the quality and operation of Tribal fishing areas including, but not limited to, boat launches, other access points, commercial fishing, safety elements, equipment.
Coastal Cultural Resources	Continuation or introduction of adverse impacts to cultural resources (e.g., coastal sites) due to oil spills and/or wakes.

4.10.2 Affected Environment

All saltwater, freshwater, tidelands, and stream banks in western Washington north of a line from Olympia to the south shore of Grays Harbor are within the Usual and Accustomed fishing areas (U&A) of one or more Indian Tribes (Lummi Indian Business Council, 2016a). Treaty Tribes are entitled to one-half of the harvestable catch of fish and shellfish in Washington state. In addition to being entitled to half of the harvest, the Tribes are co-managers of the fisheries with the State and Federal governments.

Tribal treaty fisheries generally occur year-round and include a diversity of species from shellfish to salmon to groundfish. Tribal fishing fleets can include smaller vessels which don't typically carry AIS (Loomis & Swinomish, 2021). Tribal treaty fisheries provide both income and subsistence which support tribal economies and nutritional security. For example, in the Swinomish Tribe, almost every household depends on a commercial fisher for their livelihood (Loomis & Swinomish, 2021). Fishing and sharing fish is essential to Tribal culture, spirituality, sharing of inter-generational knowledge, and community events and ceremonies (Loomis & Swinomish, 2021).

Tribal resources in the EIS Study Area include natural resources such as fish, shellfish, and marine mammal species used for traditional, ceremonial, and subsistence uses. Tribal resources also include species and resources which are not harvested but which have cultural importance. Ceremonial and subsistence use may include traditional or community use of resources harvested for non-commercial use by treaty Tribes (NOAA, 2022). Habitat for natural resources used by Tribes occurs throughout the EIS Study Area, including habitat for Southern Resident Killer Whales (SRKW), salmon and steelhead species, and shellfish species. Tribes with treaty rights in the area harvest natural resources and are strong advocates for sustainable management of these resources. Salmon and steelhead species are of significant importance to Tribes. These species are harvested for subsistence, cultural practices, and commerce. In addition to these direct uses, salmon and steelhead species are a key food source for other culturally significant species. Recently, however, salmon and steelhead populations have declined due to factors including, but not limited to, habitat degradation, water quality impairment, and climate change (SSHIAP, 2020). Other fish species such as forage fish and groundfish including flatfish, roundfish, and rockfish are harvested by Tribes within the EIS Study Area (NWIFC, 2016). Shellfish harvesting, including geoduck, crab, sea urchin, oysters, clams, and shrimp, are also an important part of Tribal economies and culture.

Some Tribes have identified vessel traffic in the EIS Study Area as having impacts to Tribal treaty fishing and other Tribal resources. For example, the Swinomish Tribe has stated "We are at a point where the current amount of vessel traffic interferes with Swinomish treaty fishing in important fishing areas" (Loomis & Swinomish Tribe, 2021). The Swinomish Tribe has identified that approximately 27 percent of the waters of the Salish Sea, all of which are Tribal U&A, are designated shipping lanes and anchorages. The disruption to Tribal treaty fishing also spreads to a wider area from docking facilities, bunkering sites, and the movement of support vessels, and is particularly concentrated near docks and anchorages (Loomis & Swinomish Tribe, 2021).

These impacts include, but are not limited to, a loss of physical space for fishing, impairment of access to fishing resources and fishing opportunity, difficulty crossing shipping lanes to access fishing areas, the need to pull gear out of the water or move to avoid large vessels (lost opportunity), gear loss when gear cannot be moved fast enough and is run over by large vessels, and impacts from wakes that negatively affect fisheries and lead to gear loss (Ecology, 2021).

Other risks to aquatic species in the EIS Study Area include vessel strikes to culturally significant marine mammals where their migration routes or activity overlap with shipping lanes. In addition, underwater noise and vessel interactions can cause marine mammals to leave migration routes, breeding areas, and foraging areas (R. E. Burnham, 2023). Vessel noise has been found to significantly impact the communication and echolocation abilities of SRKW and to reduce the amount of time spent foraging. Refer to Section 4.4 (Environmental Health: Noise) and Appendix E for more detailed information on the impact of underwater noise on marine mammals.

Oil spills have the potential to impact Tribal resources and can cause adverse impacts to fisheries and water quality in the EIS Study Area. The Swinomish Indian Tribal Community identified the risk of oil spills as their main concern with this rulemaking Swinomish Indian Tribal Community representative to H. Kennard, personal communication, September 23, 2024). While severe spills could result from incidents involving target vessels or escort tugs, oil spills from target vessels would have a greater impact on water quality than spills from tug escorts.

A list of Tribes in Washington state potentially affected by the rulemaking and additional background on Tribal treaty fishing rights is included in Appendix K.

4.10.3 Findings for Alternative A (No Action)

4.10.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii). Under Alternative A, escort tugs would continue to contribute to marine vessel-related impacts to Tribal resources. This can include but is not limited to impacts to boat launches and other fishing access points, negative interactions with commercial vessel traffic in fishing areas, physical and vessel safety elements, and gear loss. Tug escort requirements would continue to add traffic in shipping lanes and anchorage areas, adding to difficulties in accessing Tribal fishing areas and resources. Escort tugs would continue to contribute to wake-related impacts and fishing gear loss.

Marine mammals are culturally significant to many Tribes. Existing threats to marine mammals from vessel strikes and underwater noise would also continue under Alternative A. However, escort tugs do not contribute substantially to collisions with marine mammals. Additionally, impacts to U&A and species of Tribal significance under current vessel traffic (including from tug escort requirements under this proposed rulemaking) would continue. Tug escort

requirements under Alternative A would continue to have a fairly substantial contribution to underwater noise at certain biologically important locations for marine mammals.

Under Alternative A, tug escort requirements would continue to reduce the risk of target vessel drift groundings and oil spill risks. While the probability of a target vessel drift grounding is rare (a once every 25,546-years risk), a catastrophic oil spill could negatively impact Tribal resources along the coastline. In this alternative, escort tugs have an incident rate of 0.86 per year. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much less than the volume carried by target vessels (fuel and cargo). Although the risk is low, a large spill from an escort tug could also negatively impact Tribal resources including coastal archaeological sites.

4.10.3.2 Mitigation Measures

The Northwest Area Contingency Plan (NWACP) outlines policies and procedures for oil and hazardous materials incident response in Washington and addresses inadvertent discoveries of cultural resources during oil spill response efforts. The NWACP includes measures that would be followed in the case of oil spills (refer to sections 4313, 4700, and 9403 of the NWACP for additional information) (Region 10 RRT & NWACs, 2024). Ecology also received requests and recommendations from the Lummi Nation and the Swinomish Indian Tribal Community regarding potential mitigation measures. These mitigation measures included a limitation on waiting for target vessels to arrive at rendezvous points, just-in-time shipping (vessels waiting offshore rather than in Puget Sound), and notification agreements with Tribes to alert them of escort tug destinations and routes.

Ecology also recommends that the PSHSC consider creating an SOC for escort tugs minimize waiting at rendezvous points, particularly during active Tribal treaty fishing. The PSHSC also recently began a subcommittee to address Tribal fishing gear loss as a result of interactions with commercial vessel traffic (Tribal Fisheries Lost Gear Subcommittee). Ecology recommends that escort tug and target vessel representatives consider participating in this subcommittee and adopting eventual recommendations and/or SOCs.

4.10.3.3 Significant and Unavoidable Adverse Impacts

Alternative A would result in continued significant impacts to Tribal treaty fishing and culturally significant species. Escort tugs contribute to overall vessel traffic impacts affecting the quality and operation of Tribal fishing areas. Under Alternative A, risk of impacts from vessel strikes and underwater noise impacts would continue to affect wildlife of cultural significance to Tribes, including marine mammals such as SRKW.

Escort tugs would not adversely impact water quality in Tribal treaty fishing areas or coastal Tribal resources such as archaeological sites and TCPs under Alternative A. Therefore, there are no significant or unavoidable adverse impacts to these resources under Alternative A.

4.10.4 Findings for Alternative B (Addition of FORs)

4.10.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, tug escort requirements would result in the same impacts as under Alternative A.

4.10.4.2 Mitigation Measures

The mitigation measures stated above for Alternative A in Section 4.10.3.2 (Mitigation Measures) also apply to Alternative B.

4.10.4.3 Significant and Unavoidable Adverse Impacts

Alternative B would result in significant adverse impacts to Tribal treaty fishing and culturally significant species in the EIS Study Area. These impacts would be the same as those discussed in Section 4.10.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

The addition of FORs would not adversely impact water quality in Tribal treaty fishing areas or coastal Tribal resources such as archaeological sites and TCPs under Alternative B. Therefore, there are no significant or unavoidable adverse impacts to these resources under Alternative B.

4.10.5 Findings for Alternative C (Expansion)

4.10.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, the expansion of tug escort requirements would result in moderate impacts to Tribal resources within and near the expansion area. Current threats and interactions to Tribal fishing from vessel traffic would be exacerbated by the projected increase in escort tug underway time in the expansion area. Escort tugs would continue to contribute to overall existing vessel traffic, as well as increase vessel traffic in the expansion area, which would result in adverse impacts to the quality and operation of Tribal fishing areas including, but not limited to, boat launches, other fishing access points, negative interactions with commercial vessel traffic in fishing areas, physical and vessel safety elements, and gear loss.

Additionally, Alternative C would result in higher potential risk of vessel strikes to culturally significant aquatic species, such as the SRKW in the expansion area due to the increase in escort tug underway time in the expansion area. Alternative C would also decrease strike risk to culturally significant aquatic species in other areas. Noise levels would be expected to increase at some locations and times under Alternative C; however, they would not result in additional exceedances of the 120 decibel NMFS marine mammal behavioral disturbance threshold as compared to existing conditions.

Alternative C has the potential to increase impacts to Tribal U&A areas and known fishing spots in the rulemaking area, specifically to U&A areas of the Swinomish Indian Tribal Community, Nooksack Indian Tribe, and Tulalip Tribes. In areas south of the rulemaking area, there would be no or minimal changes in escort tug activity.

The increase in vessel traffic under Alternative C is not anticipated to impact archaeological sites or TCPs in the area beyond the presence of additional vessel traffic described above. Alternative C would not result in changes to the types of tug escort discharges potentially affecting water quality relative to Alternative A. Minor changes in the locations and quantities of certain discharges or releases may occur, however these changes are not expected to result in a change in the water quality of Tribal resources.

Alternative C would reduce the risk of a target vessel drift grounding and associated oil spill risk in the expansion area. This means a lower risk of catastrophic oil spill impacts to coastal Tribal resources, fishing, U&A areas, and TCPs or archaeological sites along the coast of the EIS Study Area. The decreased risk of oil spills would also result in a decreased risk of water quality impacts to wildlife species and habitats of cultural significance to Tribes and to Tribal treaty fishing. However, the increased tug escort activity would also result in a slightly increased tug escort incident rate (relative to Alternative A).

4.10.5.2 Mitigation Measures

The mitigation measures stated above for Alternative A in Section 4.10.3.2 (

) also apply to Alternative C.

4.10.5.3 Significant and Unavoidable Adverse Impacts

Alternative C would result in the continuation of impacts described in Section 4.10.3.1 (Impacts from Implementation) and an increase in significant and unavoidable adverse impacts to Tribal treaty fishing and culturally significant species such as the SRKW, in the current rulemaking area and in the expansion area due to the anticipated increase in escort tug activity in the expansion area.

Tug escort requirements would not adversely impact water quality in Tribal treaty fishing areas or coastal Tribal resources such as archaeological sites and TCPs under Alternative C. Therefore, there are no significant or unavoidable adverse impacts to these resources under Alternative C.

4.10.6 Findings for Alternative D (Removal)

4.10.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have impacts on Tribal resources as a component of vessel traffic, they would be unrelated to this rulemaking and are not considered in this EIS.

Under Alternative D, the reduction of escort tug activity associated with the rule would result in less traffic in shipping lanes and anchorage areas, less potential for gear loss, less potential for

impacts from wakes, and reduced impacts to wildlife from underwater noise. Alternative D would also result in a decrease in minor potential for marine mammal strikes, including strikes to culturally significant species such as the SRKW. Additionally, Alternative D would result in less vessel traffic in U&A areas and less wastewater discharges from tug escorts operation.

Alternative D would result in an increased risk of drift groundings for target vessels and an increased risk of oil spills which would result in an increased risk of significant impacts to coastal Tribal resources, fishing areas, U&A areas, and TCPs along the coast of the EIS Study Area. The increased risk of oil spills would result in an increased risk of adverse water quality impacts to wildlife species and habitat of cultural significance to Tribes and to Tribal treaty fishing. The increased risk of oil spills also has the potential to negatively affect a large number of archaeological resources along the coastline of the EIS Study Area. The elimination of escort tug underway time would eliminate risks to Tribal Resources from escort tugs associated with this rule.

4.10.6.2 Mitigation Measures

The mitigation measures stated above for Alternative A in Section 4.10.3.2 (

) also apply to Alternative D.

4.10.6.3 Significant and Unavoidable Adverse Impacts

This alternative would result in significant and unavoidable adverse impacts to aquatic species and habitat, water quality, Tribal treaty fishing, and coastal cultural resources in the EIS Study Area due to the increased risk of oil spills. The quality and operation of Tribal treaty fishing areas including, but not limited to, boat launches, fishing access points, human health, physical safety, safe consumption of harvested seafood, and fishing equipment, would be negatively impacted if an oil spill occurred. Aquatic wildlife and habitats of cultural significance to Tribes and water quality would be adversely affected by a potential oil spill. Additionally, the quality and operation of Tribal treaty fishing areas would experience changes if an oil spill occurred. Oil spills would also cause adverse impacts to coastal archaeological sites and TCPs in the EIS Study Area.

4.11 Environmental Justice

This section describes the existing conditions and potential impacts to populations of color, low-income populations, and Tribal communities resulting from the four rulemaking alternatives. This analysis also considered the impacts to populations of color, low-income populations, and Tribal communities disproportionately exposed to air pollution and/or with health overburdens.

Refer to the Environmental Justice Discipline Report (Appendix L) for more information on the methodology, additional details regarding existing environmental justice conditions in the EIS Study Area, the full analysis of environmental justice impacts under each alternative, and a more comprehensive list of relevant mitigation measures.

4.11.1 Methodology

Ecology reviewed and downloaded data from the EPA's environmental justice screening and mapping tool (EJScreen) to identify populations of color and low-income populations within the environmental justice study area (EJ Study Area).[28] For the purposes of this analysis, populations of color refers to block groups where the percentage of people who list their racial status as a race other than white and/or list their ethnicity as Hispanic or Latino is greater than or equal to the state average (33.1 percent) (EPA, 2024a). Low-income populations refers to block groups where the percentage of people living at or below twice the poverty level is greater than or equal to the state average (23.5 percent) (EPA, 2024a). Tribal communities refers to Native American people affiliated with an American Indian Tribe, regardless of whether they live off or on a reservation. We refer to these communities collectively as communities with EJ concerns in this analysis.

Ecology identified populations of color, low-income populations, and Tribal communities disproportionately exposed to air pollution compared to the rest of the state (i.e., at or above the 80th percentile)[29] for the following air pollutants: $PM_{2.5}$, ozone, diesel PM, and NO_2. Ecology also examined health-related data from the Centers for Disease Control and Prevention's Population Level Analysis and Community Estimates (PLACES) dataset to identify populations of color, low-income populations, and/or Tribal communities within the EJ Study Area with high rates of asthma or chronic heart disease (i.e., at or above the 80th percentile in the state).[30] Ecology then reviewed oil spill trajectory modeling to determine which communities are more

[28] The EJ Study Area includes block groups within or partially within 1-mile from the shoreline of the EIS Study Area. This accounts for populations most likely to be impacted by a potential oil spill or other tug escort-related environmental impacts.

[29] The 80th percentile threshold employed in this analysis does not necessarily indicate that pollutant levels exceed a threshold of concern or significance. Ecology uses state percentiles to understand air pollution burdens within communities with environmental justice concerns relative to other communities in the state and acknowledges that exposure to some air pollutants at levels below the NAAQS may still impact health (Di et al., 2017; Dominici et al., 2022; Puget Sound Clean Air Agency, 2024).

[30] Air pollution exposure is one of many factors that influence heart disease and asthma rates. For example, age may be a strong driver of heart disease prevalence in the area, as many of the block groups with high rates of heart disease are also among the state's highest percentiles in the state for populations aged over 65 years.

likely to be affected in the modeled spill scenarios. Last, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in **Error! Reference source not found.**.

Table 27. Significance thresholds for environmental justice-related impacts.

Indicator	Significance Thresholds
Populations of color, low-income populations, and/or Tribal communities	The rulemaking has a disproportionate[a] adverse impact on populations of color, low-income populations, and Tribal communities.

a – If an impact occurs both within and outside of areas that have communities of color or low-income populations greater than the reference community, impacts to those populations may still be considered disproportionate.

4.11.2 Affected Environment

Error! Reference source not found. summarizes the number of block groups meeting the criteria summarized in Section 4.11.1 (Methodology). See Appendix L for maps of the communities described in the table.

Table 28. Summary of Communities with EJ Concerns within the EJ Study Area.

Statistic	Block Groups	Notes
All block groups in EJ Study Area	1,204	
Populations of color, low-income populations, and/or Tribal communities		
Populations of color	428	Dispersed throughout EJ Study Area
Low-income populations	410	Dispersed throughout EJ Study Area
Tribal communities	49	Only includes block groups within Tribal reservations
Total[a]	887	
Subset: At or above 80th percentile in the state for air quality/health overburdens		
$PM_{2.5}$	0	
Diesel PM	387	All located within or between Seattle and Tacoma
Ozone	7	All located in Tacoma or Joint Base Lewis-McChord
NO_2	265	Concentrated in urban areas: Bellingham, Everett, Seattle, Tacoma, and Olympia
Asthma	203	Dispersed throughout EJ Study Area
Chronic heart disease	188	Dispersed throughout EJ Study Area

a – Some block groups meet multiple criteria. Therefore, the total is not a sum of the preceding numbers.

Under existing conditions, approximately 4.76 percent and 22.6 percent of escort tug underway time occurs within 1 mile of populations of color and low-income populations, respectively. Within the rulemaking areas, approximately 0.18 percent and 29.7 percent of escort tug underway time occurs within 1 mile of populations of color and low-income populations, respectively. Approximately 0.96 percent of tug escort underway time occurs within 1 mile of Tribal reservations. Within the rulemaking areas, virtually 0 percent (16 minutes per year) of tug escort underway time occurs within 1 mile of Tribal reservations.

While areas with the highest levels of escort tug air pollutant emissions are near several populations of color, low-income populations, and/or Tribal communities, air quality in these regions easily meets national and state air quality standards. Additionally, within the rulemaking area, the only communities with environmental justice concerns that are also identified as being disproportionately exposed to air pollution are located in Bellingham. Therefore, tug escorts are not likely an existing substantial contributor to air quality concerns impacting populations of color, low-income populations, or Tribal communities in the EJ Study Area.

As discussed in Sections 4.5 (Plants and Animals) and 4.10 (Tribal Resources), escort tug activity contributes to impacts to Tribal treaty fishing and other Tribal resources, such as: loss of physical space for fishing, impairment of access to fishing activities, and increased strike risks to culturally significant marine mammal species. Tug escort requirements also contribute to existing visual and noise burdens for shoreline communities, including populations of color, low-income populations, and Tribal communities. Emissions of GHGs from tug escorts also contribute to climate change, the effects of which disproportionately impact populations of color, low-income populations, and Tribal communities (Lummi Indian Business Council, 2016b; Seattle Office for Civil Rights, 2021; U.S. Global Change Research Program, 2016).

Escort tug and target vessel-related oil spill risks have the potential to impact populations of color, low-income populations, and Tribal communities as well as subsistence fishing communities when they occur and cause adverse effects to fisheries, water-based recreation activities, and water and air quality.

4.11.3 Findings for Alternative A (No Action)

4.11.3.1 Impacts from Implementation

Alternative A represents the most likely future conditions if we make no changes to existing tug escort requirements for target vessels. Tug escort requirements for target vessels would remain in place in the current rulemaking area as established by RCW 88.16.190(2)(a)(ii).

Under Alternative A, escort tugs would continue to emit air pollutants and release discharges, potentially resulting in continued minor, localized impacts to air and water quality for populations of color, low-income populations, and Tribal communities. Escort tugs would also continue to have minor contributions to existing visual and noise burdens for shoreline communities. Escort tugs would continue to contribute to impacts to Tribal communities, including vessel strike risks to culturally significant species for Tribes. Tug escort requirements add traffic in shipping lanes and areas where Tribes fish, adding to difficulties in accessing Tribal fishing areas and resources. Refer to Section 4.10 (Tribal Resources) for more on impacts to Tribal resources.

Climate change is expected to disproportionately impact populations of color, low-income populations, and Tribal communities. Under Alternative A, escort tugs associated with this rulemaking would continue to emit greenhouse gases and therefore contribute to climate change. However, the quantity of emissions would remain minor relative to other local greenhouse gas sources.

Under Alternative A, escort tug activity would continue to have beneficial impacts related to oil spill risks, compared to the risks when tug escort requirements are removed under Alternative D. While the probability of a target vessel drift grounding is rare, a catastrophic oil spill could negatively impact populations of color, low-income populations, Tribal communities and other subsistence fishing populations. In this alternative, escort tugs have an incident rate of 0.86 per year. Potential incident types included in this rate range from equipment malfunctions and small fueling spills to collisions and groundings. These incidents generally have a lower spill potential than a catastrophic target vessel spill because the volume of oil on tugs (fuel) is much less than the volume carried by target vessels (fuel and cargo).

4.11.3.2 Mitigation Measures

Implementation of required and/or recommended mitigation measures would further reduce the potential for impacts to populations of color, low-income populations, and Tribal communities. Tribal representatives from the Lummi Nation and Swinomish Indian Tribal Community have provided input and/or requests for mitigation measures relating to impacts on cultural resources associated with protecting cultural resources during oil spill clean ups, and reducing escort tug waiting time in the Puget Sound. They also advocate for improving communication with Tribes about tug and target vessel routes and timing to reduce impacts to Tribal treaty fishing. See Section 4.10 (Tribal Resources) and the Tribal Resources Discipline Report (Appendix K) for more information on these measures.

Please refer to the following sections for other mitigation measures relevant to environmental justice: 4.1 (Transportation: Vessel Traffic), 4.2 (Environmental Health: Releases), 4.3 (Water Quality), 4.5 (Plants and Animals), 4.7 (Air Quality and Greenhouse Gases).

4.11.3.3 Significant and Unavoidable Adverse Impacts

Alternative A would result in continued disproportionate impacts to Tribal communities due to impacts to Tribal treaty fishing activities and culturally significant species. Significant and unavoidable adverse impacts to Tribes and Tribal resources are discussed in depth in Section 4.10 (Tribal Resources) and Appendix K. Continued air emissions, GHG emissions, water discharges, noise, or light from tug escort requirements under Alternative A would not result in disproportionately high and adverse effects to populations of color, low-income populations, or Tribal communities.

4.11.4 Findings for Alternative B (Addition of FORs)

4.11.4.1 Impacts from Implementation

Alternative B adds functional and operational requirements intended to increase safety and formalize existing best practices. It makes no change to the geographic boundaries described in Alternative A. Under Alternative B, escort tugs would result in the same impacts as under Alternative A. Alternative B would result in some minor and unquantified reduction in drift grounding risks from a target vessel, resulting in a slightly lower risk of related environmental justice impacts.

4.11.4.2 Mitigation Measures

The mitigation measures referenced above for Alternative A in Section 4.11.3.2 (Mitigation Measures) also apply to Alternative B.

4.11.4.3 Significant and Unavoidable Adverse Impacts

Alternative B would result in disproportionate adverse impacts to Tribal communities. These impacts would be the same as those discussed in Section 4.3.3.3 (Significant and Unavoidable Adverse Impacts) for Alternative A.

4.11.5 Findings for Alternative C (Expansion)

4.11.5.1 Impacts from Implementation

Alternative C maintains the tug escort requirements outlined in Alternative A and expands them northwest towards Patos Island. Alternative C would result in a 2.41 percent increase in escort tug underway time. The net increase in escort tug underway time would occur primarily within and near the expansion area (i.e., in the Strait of Georgia and the Strait of Georgia South Zones). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 9). Alternative C also includes the FORs included in Alternative B.

Under Alternative C, escort tug underway time would occur within 1 mile of populations of color (4.58 percent of the time), low-income populations (20.8 percent of the time), and Tribal communities (0.71 percent of the time). Therefore, the amount of vessel activity near communities with environmental justice concerns under Alternative C is expected to be essentially the same as under Alternative A.

Alternative C would result in a minor (2.5 percent) increase of air emissions, with increases primarily located within and near the northern expansion area. These emissions increases and minor shifts in emissions locations would not be expected to cause or contribute to adverse air quality conditions or associated human health risks for local communities within the EIS Study Area. Similarly, Alternative C may have minor changes in the locations and quantities of, but not the types of, wastewater discharges relative to Alternative A. These changes would not be anticipated to impact water quality, recreation activities, or subsistence fishing for populations of color, low-income populations, or Tribal communities. Increases in escort tug underway time within and near the expanded rulemaking area would not occur near the shoreline. Therefore, changes in noise and light pollution under Alternative C would not noticeably impact populations of color, low-income populations, or Tribal communities.

Alternative C would decrease the risk of target vessel drift groundings across the EIS Study Area (with benefits concentrated in the rulemaking expansion area), resulting in a lower risk of air and water quality impacts to populations of color, low-income populations, and especially Tribal communities as well as subsistence fishing communities. Alternative C would also slightly increase the risk of an escort tug incident to 0.88 per year (from 0.86 per year under Alternative A).

4.11.5.2 Mitigation Measures

The mitigation measures referenced above for Alternative A in Section 4.11.3.2 (Mitigation Measures) also apply to Alternative C.

4.11.5.3 Significant and Unavoidable Adverse Impacts

Alternative C would result in disproportionate adverse impacts to Tribal communities by posing significant impacts to Tribal treaty fishing and culturally significant species in the current rulemaking areas. The expected increase in escort tug underway time in Alternative C would also expand these risks to the expansion area. Increased vessel activity would adversely impact the quality and operation of Tribal fishing areas such as boat launches, other fishing access points, negative interactions with commercial vessel traffic in fishing areas, physical and vessel safety elements, and gear loss in both the current and expanded rulemaking areas. Significant and unavoidable adverse impacts to Tribes and Tribal resources are discussed more in Section 4.10 (Tribal Resources).

Increases in air pollutant emissions, GHG emissions, water discharges, noise, and light from expanded tug escort requirements under Alternative C would not result in disproportionately high and adverse impacts to populations of color, low-income populations, or Tribal communities.

4.11.6 Findings for Alternative D (Removal)

4.11.6.1 Impacts from Implementation

Alternative D removes the existing tug escort requirements for target vessels, eliminating escort tug underway time associated with this proposed rule. Under Alternative D, air emissions and wastewater discharges from escort tugs associated with this proposed rule would be eliminated. We can reasonably assume that most or all of the 18 identified escort tugs would remain within the EIS Study Area but shift to other assisting and/or escort work for larger vessels. While the individual tugs may continue to have environmental justice-related impacts, they would be unrelated to this rulemaking and are not considered in this EIS.

As discussed throughout this report, escort tug activity is not likely a substantial contributor to air, climate, or water quality issues for populations of color, low-income populations, or Tribal communities. With less vessel traffic in the EIS Study Area, Alternative D would reduce the risks for marine mammal vessel strike risks, disruptions to Tribal fishing rights, and gear loss and impacts to Tribal resources from wakes.

Alternative D would increase the risk of drift groundings for target vessels and associated oil spills which would adversely impact air and water quality, recreation activities, and Tribal treaty fishing activities for populations of color, low-income populations, and Tribal communities.

Because regulated tug escort activity would decrease to zero, Alternative D would eliminate greenhouse gas emissions associated with tug escort requirements covered under this rulemaking. This would potentially result in an imperceptibly minor and indirect reduction in climate change-related impacts to populations of color, low-income populations, and Tribal communities.

4.11.6.2 Mitigation Measures

The mitigation measures referenced above for Alternative A in Section 4.11.3.2 (Mitigation Measures) also apply to Alternative D.

4.11.6.3 Significant and Unavoidable Adverse Impacts

Alternative D would result in disproportionate adverse impacts to populations of color, low-income populations, and Tribal communities near the EIS Study Area due to the increased risk of oil spills which would directly and adversely affect recreational, economic, and subsistence activities. Additionally, an oil spill would threaten archeological resources, quality and operation of Tribal treaty fishing areas, as well as aquatic wildlife and habitats of cultural significance to Tribal communities.

5. Cumulative Impacts

Non-significant impacts from one action can ultimately result in significant impacts when considered in combination with the impacts from other past, present, and/or reasonably foreseeable future actions. This is the basis for a cumulative impacts analysis, which is intended to ensure that decision-makers consider the full range of consequences for the proposed project under expected future conditions. Ecology prepared this cumulative impacts analysis in accordance with SEPA requirements (WAC 197-11-060).

5.1 Past, Present, and Reasonably Foreseeable Future Actions

Existing baseline conditions in the EIS Study Area reflect the impacts of past and present actions. These existing conditions are described as part of the affected environment for the resource analyses in this EIS. Therefore, past actions are not cumulatively considered again in this section, unless the past action's resulting impacts on marine vessel activity were not yet reflected in the historical AIS data used in this EIS (e.g., an action that caused increased marine vessel activity after 2023).

In this cumulative impacts analysis, Ecology focused primarily on specific actions with the potential to impact marine vessel activity within the EIS Study Area. These include the following types of actions:

- Specific ongoing or reasonably foreseeable port infrastructure projects that could increase marine vessel activity (e.g., additional transits by tankers and barges) within the EIS Study Area, even if the projects are located outside of the EIS Study Area (e.g., in Canada).
- Specific ongoing or reasonably foreseeable port infrastructure projects—including those described above—that could increase the number of target vessels requiring tug escorts in the EIS Study Area (e.g., by increasing the number of target vessel transits, or by converting non-target vessels to target vessels).

To prioritize conceptually developed projects, Ecology mainly concentrated on projects that have completed the applicable federal, state, and/or provincial environmental review processes.

This review identified the following past, present, and reasonably likely future port infrastructure projects with potential cumulative impacts:

- Trans Mountain Expansion Project – Burnaby, British Columbia
    - Summary: Trans Mountain Pipeline ULC expanded the capacity of its existing Trans Mountain Pipeline from 300,000 to 890,000 barrels of oil per day. Operations are expected to add approximately 29-30 tanker calls per month. All of these tankers would be greater than 40,000 DWT and don't affect escort tug traffic associated with this proposed rulemaking. Oil barge traffic is expected to be unchanged at approximately three per month. If these barges transit through

the current rulemaking area while laden, they are required to have an escort tug. Vessels would transport heavy crude oil, also called diluted bitumen. The majority of the additional Trans Mountain vessel traffic is not expected to call on Washington ports but is likely to represent a slight increase in non-target vessel calls to Washington refineries.

    - Completed and Operational: May 2024

- DP World Fraser Surrey (Canola Transport) – Surrey, British Columbia
    - Summary: DP World Canada Inc. is developing a canola oil transload facility at its existing Fraser Surrey Terminal. This will involve expanding and redeveloping existing infrastructure at Berth 10 and installing new rail receiving and unloading infrastructure. Operations are expected to add approximately 33 vessel calls per year to ship the canola oil, none of which will require tug escorts under this rulemaking.
    - Anticipated completion: 2025
- New Potash Export (Westshore) – Delta, British Columbia
    - Summary: Westshore Terminals, Ltd. plans to upgrade its existing Westshore Terminal to allow for the handling and shipment of 4.5 million metric tons of potash per year. Operations are expected to add approximately 20 vessel calls per year, none of which will require tug escorts under this rulemaking.
    - Anticipated completion: 2026 or 2027
- Roberts Bank Terminal 2 – Delta, British Columbia
    - Summary: The Vancouver Fraser Port Authority is developing a new three-berth marine container terminal at Roberts Bank, located adjacent to the Deltaport and Westshore Terminals. Operations are expected to add approximately 520 container ship calls per year, none of which will require tug escorts under this rulemaking.
    - Anticipated completion: Mid 2030s
- Tilbury Marine Jetty – Delta, British Columbia
    - Summary: Tilbury Jetty Limited Partnership is proposing to construct a new jetty near Tilbury Island, British Columbia. The new jetty will include two berths: one to host liquid natural gas (LNG) carriers and one for bunker vessels supplying LNG fuel to other vessels. Jetty operations are expected to add approximately 228 vessel calls per year, none of which will require tug escorts under this rulemaking.
    - Anticipated completion: 2026
- Woodfibre LNG – Squamish, British Columbia

    - Woodfibre Natural Gas Limited is proposing to develop an LNG production, storage, and marine carrier transfer facility. Full operations are expected to add approximately 40 LNG marine carrier calls per year, none of which will require tug escorts under this rulemaking.
    - Anticipated completion: 2027

Ecology also considered whether ongoing or foreseeable trends in the marine vessel industry could meaningfully change the volumes and patterns of marine vessel activity in the EIS Study Area (not in response to a specific infrastructure/manufacturing action). This review identified increasing ATB use as a meaningful vessel traffic trend. As discussed in Section 4.1 (Transportation: Vessel Traffic) and Appendix B, ATB traffic within the EIS Study Area (particularly within Puget Sound) has increased significantly over the past 10 years. This trend is likely to continue. Many of these ATBs will presumably be considered target vessels and will therefore require tug escorts in the rulemaking area under this rulemaking.

Finally, Ecology considered whether any high-profile construction or redevelopment projects within or near the perimeter of the EIS Study Area could result in cumulative impacts when viewed in combination with the impacts of tug escort activities. Ecology focused this review on identifying projects located near the rulemaking area, where tug escort activity is relatively high compared to other portions of the EIS Study Area. This review identified one ongoing and reasonably foreseeable redevelopment project with potential cumulative impacts:

- Intalco Demolition/AltaGas Green Hydrogen – Ferndale, WA
    - The former Alcoa Intalco aluminum smelter, which ceased operations in 2023, is currently being demolished.
    - AltaGas is proposing to redevelop the site as a “green hydrogen” facility to produce and transport up to 100 metric tons of hydrogen per day. The hydrogen would be produced via electrolysis of water, which would be powered using only renewable energy sources, specifically hydropower and wind. The Green Hydrogen facility would be approximately 20 percent the size of the Intalco facility. The AltaGas Green Hydrogen Project is still in the proposal stage and may or may not proceed.

5.2 Cumulative Impacts

The projects described above would result in cumulative increases in overall marine vessel activity within the EIS Study Area. Based on estimates provided in individual project documents, Ecology estimates that, combined, the port infrastructure projects described above could add more than 1,000 vessel calls per year in the EIS Study Area. None of the available estimates Ecology found for these projects included additional vessel traffic that would require new tug escorts under this rulemaking. Although not covered under this rulemaking, any new oil tankers over 40,000 DWT would still require tug escorts under existing requirements and new vessel traffic may also require assist tugs. This represents a further increase in overall vessel traffic.

Outside of any specific project, ATB use continues to increase as a general trend. Under this proposed rulemaking, if any ATBs transit through the rulemaking area, a tug escort would be required. Both the increased ATB use and the required tug escort in the rulemaking area represent potential increases in vessel traffic and cumulative impacts. These increases in marine vessel traffic, when considered in combination with the alternatives discussed in this EIS, will likely result in cumulative adverse impacts to all resource areas covered in this EIS. Specifically, these cumulative impacts may be most notable to vessel traffic, spill risk, plants and animals, and Tribal resources. As discussed in Section 4.2 (Environmental Health: Releases), drift groundings and other vessel incidents can result in significant, catastrophic environmental impacts. The spill risk for laden vessels associated with the Trans Mountain Expansion Project is a particular concern because they would be transporting diluted bitumen. Diluted bitumen is a heavier oil that may sink in water rather than float, complicating and limiting clean-up options. Diluted bitumen becomes very viscous and sticky when exposed to the elements, making it a particular concern for any exposed flora and fauna. Further, the oil may persist in the environment and therefore could have long-term devastating impacts to water quality as well as marine and shoreline plant and animal resources (NOAA, 2019).

In addition to spill-related impacts, additional marine vessel activity will increase underwater noise disturbance and strike risks for marine mammals and other marine wildlife.

Finally, the additional vessel activity will likely exacerbate historical and ongoing impacts to Tribal fishing activities and to culturally significant species, including those resulting from tug escort activity. As described in Section 4.10 Tribal Resources, Tribal fishing is already impacted by interactions with vessel traffic and the physical space occupied by designated shipping lanes and anchorages. Tribal fishers can only exercise their Tribal treaty fishing right within their designated U&A and can't simply fish elsewhere if vessel traffic increases within their U&A. Swinomish Indian Tribal Community has specifically identified increases in vessel traffic from these types of projects as well as increasing ATB traffic as an impact to Tribal treaty fishing (Loomis & Swinomish Tribe, 2021). As described in Section 4.10, Tribal fisheries are also already affected by impacts to their target species (e.g., salmon) from climate change, habitat loss, and pollution. Tribes and Tribal resources are uniquely impacted by cumulative stressors to the environment and impacts to Tribal treaty fishing.

Construction, operations, and demolition activities (if applicable) associated with these projects will also result in short- and long-term increases in GHG emissions and therefore have incremental but compounded contributions to climate change. Climate change will also result in cumulative stressors that ultimately compound many of the adverse impacts discussed in this EIS. While this cumulative impacts analysis does not specifically discuss climate change in detail, climate change-related stressors are discussed throughout the EIS and the attached discipline reports. See Sections 4.5 (Plants and Animals), 4.7 (Air Quality and Greenhouse Gases), 4.10 (Tribal Resources), and 4.11 (Environmental Justice) and the following discipline reports: Water Quality (Appendix D), Plants and Animals (Appendix F), Air Quality and Greenhouse Gases (Appendix H), Tribal Resources (Appendix K), and Environmental Justice (Appendix L).

Regarding the Intalco Demolition/AltaGas Green Hydrogen Project, demolition activities would temporarily increase air pollutant emissions and noise in the immediate area. This could result

in cumulative air quality and airborne noise impacts when considered in combination with tug escort activity near Cherry Point and the expansion area under Alternative C. These cumulative impacts would likely be minor and temporary. Plans and environmental analyses for the potential AltaGas green hydrogen facility are not yet sufficiently developed to allow for a meaningful review of cumulative impacts, but these would likely include temporary construction-related air and noise impacts.

Ecology also broadly considered the potential for cumulative impacts from other projects expected to be operational within 10 years. These other projects are still in federal, state, and/or provincial review and therefore were only given limited consideration. Such projects have the potential to result in additional marine vessel activity and potential additional needs for tug escorts as covered under this rulemaking and result in similar impacts as those covered in this EIS.

6. Consultation and Coordination

This section describes how information was shared during development of this EIS. Because this EIS is part of the tug escort rulemaking, outreach and information sharing has occurred as part of the larger rulemaking process. From the start of the process through the release of the Draft EIS, Ecology's website and the BPC website provided information about the environmental review. The Ecology website includes contact information for those interested in receiving updates and registering for workshops.

6.1 Environmental Impact Statement Scoping Process

The scoping process was a joint effort between Ecology and the BPC. The scoping period lasted from February 22, 2023 to April 8, 2023. Scoping comments were accepted through the online comment form, by mail, and orally during the scoping meetings. Ecology held one virtual scoping meeting on March 21, 2023 and scoping materials were available on the Ecology website. We received six comments through the online form and two additional comments during the scoping meeting.

We also held an additional workshop on scoping on March 5, 2024 to solicit feedback from Tribes and stakeholders. Scoping comments focused on SRKW and marine mammals, the impacts and dynamics of underwater vessel noise, vessel traffic, oil spill risk, Tribal natural and cultural resources, water quality, fuel use and alternative fuel, and visual impacts. We also received comments about the geographic scope of the tug escort requirements, data and reports, cumulative impacts, and mitigation ideas. Additional details on the scoping process and comments received are in the Scoping Summary Report (Appendix A). We continued to consider informal comments about scope until the BPC voted to finalize the EIS scope at their meeting on March 20, 2024.

Scoping Outreach Summary:

- **Scoping notice** published in Ecology's SEPA register on February 22, 2023.
- **Information published** on Ecology's Public Input and Events Listing website.
- **Formal letters** sent to Tribal Chairs and Natural Resource Directors on February 22, 2023 inviting Government-to-Government consultation.
- **Email** sent to interested parties using the list developed by the rulemaking team (includes industry, Ports, local government, non-profits, etc.) on February 22, 2023.
- **Email** sent to state agencies by email, listserv, and SEPA Register notices.
- **Announcements** posted on the Ecology and BPC websites.

6.2 Additional Public Outreach

To support outreach on this rulemaking and EIS development, Ecology and the BPC hosted eleven three-part workshop series. Workshop dates and slides are all available on the Ecology rulemaking website. The workshops occurred approximately every other month and include a Stakeholder workshop, a Tribal Governments workshop, and an OTSC workshop within a two-week period with similar content presented at each one. The BPC announced each workshop

series to our full communication list (See Section 8 Distribution List) approximately one month in advance and sent reminder emails and a follow up email with slides.

The eleven workshops occurred between January 10, 2023 and February 11, 2025. Workshop #9 focused on Tribal resources in the EIS and included two Tribal Government workshops instead of a stakeholder workshop. Because we received so many comments about underwater noise, we held a standalone underwater noise deep dive workshop on November 7, 2024. We held an industry stakeholder meeting on August 20, 2024. We convened additional standalone OTSC meetings as needed to discuss specific topics and develop recommendations to the BPC.

We periodically presented updates on the rulemaking and EIS at PSHSC meetings, Pacific States/British Columbia Oil Spill Task Force meetings, and the Northwest Area Committee meetings. Ecology also shared information about the rulemaking and EIS at the Cherry Point Science Forum in January 2025.

6.3 Tribal Coordination

During scoping, Ecology and the BPC sent formal letters to Tribes in Washington to notify them of the scoping period and offer Government-to-Government consultation. A second formal letter was sent to announce the informal scoping workshop and again invite consultation on the rulemaking and EIS.

As described above, we held several meetings that were open only to Tribal Government representatives. These were communicated separately to a Tribal Government email list which included Tribal Chairs, Natural Resource Directors, Tribal staff involved in oil pollution topics, and contacts at the Northwest and Columbia River Intertribal Fish Commissions. Tribal Historic Preservation Officers were added to this list in September 2024. It included First Nation contacts, where available, in recognition of the transboundary nature of vessel traffic and oil pollution. Several Tribes registered for at least one workshop and/or were in communication with Ecology staff through other means including:

- Lummi Nation
- Makah Tribe
- Nisqually Tribe
- Port Gamble S'Klallam Tribe
- Suquamish Tribe
- Swinomish Indian Tribal Community
- Jamestown S'Klallam Tribe
- Confederated Tribes of the Chehalis Reservation
- Confederated Tribes of the Colville Reservation
- Snoqualmie Indian Tribe
- Spokane Tribe of Indians
- Samish Indian Nation
- Upper Skagit Indian Tribe
- Stillaguamish Tribe of Indians
- Hoh Indian Tribe
- Quinault Indian Nation
- Shoalwater Bay Indian Tribe

Representatives from Beecher Bay First Nation, Point No Point Treaty Council, and the Indigenous Marine Advisory and Monitoring Committee also registered for our workshops.

Ecology worked with the agency's Director of Tribal Relations to develop a list of Tribes who were most likely to be directly affected by the rulemaking and/or who had been engaged in the process. We reached out by email and phone periodically to staff contacts at these Tribes

between March 2024 and January 2025 to request input and offer regular technical meetings to Tribal cultural and natural resources staff. Makah, Swinomish, Jamestown, and Lummi all contacted Ecology in response to these emails for meetings about some aspect of the EIS.

Ecology contacted Tribes close to the rulemaking area while conducting our visual resources assessment to see if any Tribal staff would be interested in participating in the site visit or if there were any on-Reservation locations they wanted us to prioritize. Both Swinomish and Lummi expressed interest and Ecology and the BPC met with both Tribes. We also met with other Tribes informally as questions came up or as staff-level requests for coordination were made.

Last, Ecology and BPC staff prioritized sharing information at Affiliated Tribes of Northwest Indians (ATNI) meetings. We presented at the January 2023 and September 2023 meetings and sent updates to Ecology's Director of Tribal Relations to share at other ATNI meetings.

6.4 Agency Coordination

Ecology and the BPC have an inter-agency agreement which outlines coordination on this rulemaking. The BPC is the final decision-maker and Ecology is responsible for SEPA and APA requirements. The BPC and Ecology worked closely together throughout the EIS development. The BPC's OTSC makes formal recommendations to the BPC to support their voting process. The BPC voted at several key points in the EIS development, including on the EIS scope and the alternatives to be evaluated.

Ecology worked with state agencies that have expertise in areas evaluated in the EIS, particularly during the methods development phase. These agencies included DAHP, WDFW, Washington State Department of Health, and the Puget Sound Partnership. State agency staff reviewed and provided feedback on the methodology memos for specific sections. DAHP provided some data on archaeological sites and reviewed draft language (see Appendix C for details). Ecology's Water Quality Program advised on the water quality section and we met with Ecology's Air Quality Program several times regarding the development of the air quality analysis.

7. List of Preparers and Contributors

Table 29. List of preparers and contributors.

Name	Subject Matter
Agencies	
Washington Department of Ecology	Air Quality and Greenhouse Gases; Cumulative Impacts; Energy and Natural Resources; Environmental Health: Noise; Environmental Health: Releases; Environmental Justice; GIS Analysis; Plants and Animals; Recreation; Transportation: Vessel Traffic; Tribal Resources; Visual Resources; Water Quality
Washington State Board of Pilotage Commissioners	Provided SME committee (OTSC); Technical expertise; Scoping
Washington State Department of Archaeology and Historic Preservation	Environmental Health: Releases; Tribal Resources
Washington State Department of Fish and Wildlife	Plants and Animals (methods)
Washington State Department of Health	Air Quality and Greenhouse Gases (methods); Water Quality (methods)
National Oceanic and Atmospheric Administration, Office of Response and Restoration	Environmental Health: Releases (oil spill trajectory modeling)
Consultant Team	
Eastern Research Group, Inc. (ERG)	Air Quality and Greenhouse Gases; Cumulative Impacts; Environmental Health: Noise; Environmental Justice; GIS Analysis; Plants and Animals; Tribal Resources; Water Quality
AS1MET Services	Air Quality and Greenhouse Gases (dispersion modeling)
Cascadia Research Collective	Plants and Animals
JASCO Applied Sciences	Environmental Health: Noise
Triangle Associates	Tribal Resources

8. Distribution List

8.1 OTSC Members and Alternates

- Board of Pilotage Commissioners
- Puget Sound Pilots
- Washington State Petroleum Association
- Swinomish Indian Tribal Community
- U.S. Coast Guard
- Washington Conservation Action
- Friends of the Earth
- Friends of the San Juans
- Crowley
- American Waterways Operators

8.2 Regulated Industry (Tug and Target Vessel Operators)

- Centerline Logistics/Olympic Tug and Barge
- ConocoPhillips
- Cook Inlet Tug and Barge
- Crowley
- Eneos Ocean Corp
- FLEET MANAGEMENT HONG KONG LTD
- Foss Maritime
- Global Marine Transportation, Inc.
- Harley Marine Services
- Island Tug and Barge (Canada)
- Kirby Offshore Marine
- Marine Petrobulk, Ltd.
- MOL CHEMICAL TANKERS PTE LTD
- Polar Tankers
- REITAKU KAIUN CO. LTD
- Sause
- SeaRiver Maritime
- UNIX LINE PTE LTD
- Vane Line Bunkering Inc.
- Westar Marine Services
- Western Towboat
- ALASKA TANKER COMPANY LLC
- BP Shipping
- M.T.M Ship Management
- Thenmaris Ships Management
- Bernert Barge Lines
- Boyer Towing
- Brusco Tug and Barge
- Dunlap Towing
- Fremont Tug
- Tidewater Barge Line
- SYNERGY NAVIS MARINE PVT. LTD
- TB MARINE SHIPMANAGEMNT GMBH & CO KG
- TM SHIPMANAGEMENT CO. LTD

8.3 Tribal Governments and Organizations (Includes First Nations)

- Beecher Bay First Nation
- Confederated Tribes and Bands of Yakama Nation
- Confederated Tribes of the Chehalis Reservation
- Confederated Tribes of the Colville Reservation
- Cowichan Tribes
- Cowlitz Indian Tribe
- Quinault Indian Nation
- Samish Indian Nation
- Sauk-Suiattle Indian Tribe
- Shoalwater Bay Indian Tribe
- Skokomish Indian Tribe
- Snoqualmie Indian Tribe
- Spokane Tribe of Indians
- Squaxin Island Tribe
- Stillaguamish Tribe of Indians

- Ditidaht First Nation
- Esquimalt Nation
- Gitxaala Nation
- Hoh Indian Tribe
- Jamestown S'Klallam Tribe
- Kalispel Tribe of Indians
- Kitasoo/Xai'xais
- Lower Elwha Klallam Tribe
- Lummi Nation
- Makah Tribe
- Malahat Nation
- Muckleshoot Indian Tribe
- Nisqually Indian Tribe
- Nooksack Indian Tribe
- Pacheedaht Nation
- Port Gamble S'Klallam Tribe
- Puyallup Tribe
- Sto:lo Nation
- Suquamish Tribe
- Swinomish Indian Tribal Community
- Tsawout First Nation
- Tsleil-Waututh Nation
- Tulalip Tribes
- Upper Skagit Indian Tribe
- Wuikinuxv Nation
- Columbia River Inter-Tribal Fish Commission
- Northwest Indian Fisheries Commission
- Point no Point Treaty Council
- Trans-Mountain Indigenous Advisory and Monitoring Committee

8.4 Federal and Regional Agencies

- Canada Energy Regulator
- Canadian Chamber of Shipping
- Canadian Coast Guard
- Canadian Coast Guard Marine Communication and Traffic Services (MCTS)
- Department of Fisheries and Oceans Canada
- Environment and Climate Change Canada
- Environmental Protection Agency
- National Oceanic and Atmospheric Administration
- Naval Air Station Whidbey Island
- Naval Base Kitsap at Bangor
- Naval Base Kitsap at Bremerton
- Naval FISC Manchester Fuel Depot
- NAVSUP Manchester
- Olympic Coast National Marine Sanctuary
- Pacific Pilotage Authority
- Pipeline and Hazardous Materials Safety Administration (PHMSA)
- Transport Canada
- U.S. Navy
- U.S. Army Corps of Engineers
- U.S. Coast Guard (District 13)
- U.S. Coast Guard Sector Columbia River
- U.S. Coast Guard Sector Puget Sound
- U.S. Fish and Wildlife Service

8.5 Washington State Agencies

- Puget Sound Partnership
- Washington State Department of Archaeology and Historic Preservation
- Washington State Department of Natural Resources
- Washington State Department of Transportation

- Washington State Department of Agriculture
- Washington State Department of Commerce
- Washington State Department of Ecology
- Washington State Department of Fish and Wildlife
- Washington State Department of Health
- Washington State Department of Labor and Industries
- Washington State Ferries
- Washington State Military Department
- Washington State Parks
- Washington State Patrol
- Washington State Recreation and Conservation Office
- Washington State Utilities and Transportation Commission

8.6 Other State and Provincial Government Agencies

- Alaska Department of Environmental Conservation
- BC Chamber of Shipping
- BC Coast Pilots
- BC Ferries
- BC Ministry of Environment and Climate Change Strategy
- California DFW Office of Spill Prevention and Response
- California Energy Commission
- Hawaii Dept of Health
- Massachusetts Department of Environmental Protection
- Oregon Board of Maritime Pilots
- Oregon Department of Environmental Quality

8.7 Local Governments (Cities, Counties)

- Clallam County
- Grays Harbor County
- Island County
- Jefferson County
- King County
- Kitsap County
- Mason County
- Pierce County
- San Juan County
- Skagit County
- Snohomish County
- Thurston County
- Whatcom County
- Aberdeen
- Algona
- Anacortes
- Arlington
- Elma
- Enumclaw
- Everett
- Everson
- Federal Way
- Ferndale
- Fife
- Fircrest
- Forks
- Friday Harbor
- Gig Harbor
- Gold Bar
- Granite Falls
- Hoquiam
- Hunts Point
- Index
- Issaquah
- Oakville
- Ocean Shores
- Olympia
- Orting
- Pacific
- Port Angeles
- Port Orchard
- Port Townsend
- Poulsbo
- Puyallup
- Rainier
- Redmond
- Renton
- Roy
- Ruston
- Sammamish
- SeaTac

- Auburn
- Bainbridge Island
- Beaux Arts Village
- Bellevue
- Bellingham
- Black Diamond
- Blaine
- Bonney Lake
- Bothell
- Bremerton
- Brier
- Buckley
- Burien
- Burlington
- Carbonado
- Carnation
- Clyde Hill
- Concrete
- Cosmopolis
- Coupeville
- Covington
- Darrington
- Des Moines
- DuPont
- Duvall
- Eatonville
- Edgewood
- Edmonds
- Kenmore
- Kent
- Kirkland
- La Conner
- Lacey
- Lake Forest Park
- Lake Stevens
- Lakewood
- Langley
- Lynden
- Lynnwood
- Maple Valley
- Marysville
- McCleary
- Medina
- Mercer Island
- Mill Creek
- Milton
- Monroe
- Montesano
- Mount Vernon
- Mountlake Terrace
- Mukilteo
- Newcastle
- Normandy Park
- North Bend
- Oak Harbor
- Seattle
- Sedro-Woolley
- Sequim
- Shelton
- Shoreline
- Skykomish
- Snohomish
- Snoqualmie
- South Prairie
- Stanwood
- Steilacoom
- Sultan
- Sumas
- Sumner
- Tacoma
- Tenino
- Tukwila
- Tumwater
- University Place
- Vancouver (Canada)
- Victoria (Canada)
- Westport
- Wilkeson
- Woodinville
- Woodway
- Yarrow Point
- Yelm

8.8 Ports

- Port of Allyn
- Port of Anacortes
- Port of Bellingham
- Port of Bremerton
- Port of Brownsville
- Port of Coupeville
- Port of Dewatto
- Port of Edmonds
- Port of Everett
- Port of Friday Harbor
- Port of Grapeview
- Port of Grays Harbor
- Port of Hoodsport
- Port of Illahee
- Port of Indianola
- Port of Keyport
- Port of Kingston
- Port of Lopez
- Port of Manchester
- Port of Olympia
- Port of Orcas
- Port of Port Angeles
- Port of Port Townsend
- Port of Poulsbo
- Port of Seattle
- Port of Shelton
- Port of Silverdale
- Port of Skagit County
- Port of South Whidbey Island
- Port of Tacoma
- Port of Tracyton
- Port of Waterman
- Port of Vancouver (Canada)

8.9 Other Agencies and Organizations

- ACGI Shipping Co Inc
- All Aboard Sailing
- Anchor QEA
- Andeavor Anacortes Refinery
- Arcadis
- Argosy Cruises
- ARROW LAUNCH SERVICE
- Associated Petroleum
- Association of Washington Business
- Association of Washington Cities
- BC Whale Tours
- Bluewater Shipping
- BNSF Railway Company
- BP Cherry Point Refinery
- BP Olympic Pipeline
- Bridgedeck
- Cascade Marine Agencies
- Cascadia Research
- Center for Environmental Law and Policy
- Center for Whale Research
- Certified Cleaning Services
- Chevron
- Christensen Inc.
- Citizens Committee on Pipeline Safety
- Clallam County Marine Resource Committee
- Clean Harbors Inc.
- Clean Rivers
- Clear Seas - Centre for Responsible Marine Shipping
- Coastal Transportation
- Coleman Oil Company, LLC
- Columbia River Crab Fishermans Association
- Columbia River Steamship Operators' Association
- Columbia River Yachting Association
- Columbia Riverkeeper
- Communities for a Healthy Bay
- Connell Oil Inc.
- Oceans Initiative
- Olympic Region Clean Air Agency
- Orca Conservancy
- Orca Spirit Adventures Group
- Orcas Island Eclipse Charters
- Orcasound Hydrophone Network
- Outer Island Excursions
- Owens Coastal Consultants
- Pacific Functional Fluids, LLC
- Pacific Merchant Shipping Association (PMSA)
- Pacific Northwest Waterways Association
- Pacific States Marine Fisheries Commission
- Pacific States/BC Oil Spill Task Force
- Pacific Whale Watch Association
- Passenger Vessel Association
- PetroCard Inc.
- Phillips 66
- Pintail Marine
- Planning Association of Washington
- Polaris Applied Sciences
- Prince William Sound Regional Citizens Advisory Council
- Prince William Sound Science Center
- Puget Sound Anglers
- Puget Sound Clean Air Agency
- Puget Sound Express
- Puget Sound Harbor Safety Committee
- Puget Sound Marine Exchange
- Puget Soundkeeper Alliance
- Ramboll
- Recreational Boating Association of Washington
- Reisner Distributor, Inc.
- Re-sources
- Roma Environmental
- RPS Group

- Cook Inlet Regional Citizens Advisory Council
- Council of Marine Carriers (BC)
- Covich Williams Co Inc
- Cruise Lines International Association
- Delphi Maritime
- Earth Justice
- EMC & Washington Fire Chiefs Association
- Enbridge Northern Gateway
- Evergreen
- ExxonMobil
- Fishermens Finest
- Fishing Vessel Owners' Association
- Focus Wildlife
- Friends of the Columbia George
- Friends of the Earth
- Friends of the San Juans
- GAC
- General Steamship Corp.
- Global Diving & Salvage, Inc.
- Grays Harbor Safety Committee
- Greater Seattle Business Association
- Greater Victoria Harbor Authority
- Green Marine
- Grette Associates
- Gulf Marine
- Hart Crowser
- HF Sinclair
- Highliner and R&R Charters
- Holly Frontier Puget Sound Refinery
- Hyak Maritime
- Hyundai America
- Inchcape Shipping Services
- Intrepid Ship Management
- Island Adventures Whale Watching
- Island County Marine Resource Committee
- Islands Oil Spill Association
- Jasco Applied Sciences
- Jefferson County Marine Resource Committee
- Salt Spring Adventure Co
- San Juan County Marine Resource Committee
- San Juan Cruises
- San Juan Excursions
- San Juan Ferry and Barge
- San Juan Island Outfitters
- San Juan Preservation Trust
- San Juan Safaris
- Schwabe
- Scorpio Ship Management
- Scripps Whale Acoustic Lab
- Sea Mammal Research Unit Consulting
- SeaDoc Society
- SeaPort Sound Terminal
- SeaSpan
- Seattle Aquarium
- Seattle Yacht Club
- Shell Oil
- Sidney Whale Watching
- Sierra Club
- Skagit County Marine Resource Committee
- Snohomish County Marine Resource Committee
- Sound Action
- Sound Marine and Industrial Services
- Southport Agencies
- Spirit of Orca Whale and Wildlife Tours
- Springtide Charters
- SSA Marine
- Stand Up Earth
- Stantec
- State Environmental Response Committee Staff and Representatives
- Steveston Seabreeze Adventures
- Strait Ecosystem Recovery Network
- Swat Consulting, Inc

- K&L Gates LLP
- Kinder Morgan Liquids Terminal - Harbor Island
- Kitsap Transit Fast Ferry
- K-Line
- Lands Council
- Libby Environmental
- Lindblad Expeditions
- Local Emergency Planning Committees
- Lower Columbia Region Harbor Safety Committee
- Lund Faucett
- Marine Spills Response Corporation
- Marine Vacuum Service
- Maritime Blue/Quiet Sound
- Maritime Fire & Safety Association/ Merchants Exchange
- Maxum - Harbor Island Terminal
- Maxum Petroleum
- Maya's Legacy
- Monterey Environmental
- Moran Shipping Agencies, Inc
- Municipal Research and Services Center of Washington
- National Association of Women Business Owners
- Nature Conservancy
- Nelson Petroleum
- North Sound Baykeeper
- Northern Fish/Northern Wild
- Northwest Clean Air Agency
- Northwest Fisheries Association
- Northwest Marine Trade Association
- Northwest Seaport Alliance
- Northwest Sportfishing Industry Association
- Northwest Straits Commission
- Norton Lilly International
- NRC Environmental Services, Inc
- NRC/US Ecology
- Nuka Research
- Nustar Energy Tacoma
- Tacoma Rail
- Talon Marine Services
- Tesoro Port Angeles Terminal
- The Boat Company
- The Pipeline Safety Trust
- The Sawicki Group LLC
- TLP Management Services LLC
- Trans Mountain Pipeline
- Transmarine Navigation
- Transversal Shipping Company
- Trident Seafoods
- U.S. Oil & Refining
- UnCruise Adventures
- Union Pacific Railroad
- University of Washington Applied Physics Lab
- Van Ness Feldman
- Vancouver Whale Watch
- Victoria Clipper
- Washington American Planning Association
- Washington Crab Fishermen’s Association
- Washington Marine Cleaning
- Washington Oil Marketers Association
- Washington Physicians for Social Responsibility
- Washington Public Ports Association
- Washington Sea Grant
- Washington State Association of Counties
- Washington State Maritime Cooperative (WSMC)
- Western Canada Marine Response South Coast
- Western Prince Whale Watching
- The Whale Museum
- Whatcom County Marine Resource Committee
- Wild Whales Vancouver
- Wilhelmsmen Port Services

- Ocean Ecoventures
- Witt O'Brien's

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