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

Environmental Justice Discipline Report

Washington State Board of Pilotage Commissioners

Washington State Department of Ecology

Olympia, WA

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Acronyms and Abbreviations

AIS	Automatic Identification System
ATB	articulated tug barge
BPC	Board of Pilotage Commissioners
CCA	Climate Commitment Act
CFR	Code of Federal Regulations
CO_2e	carbon dioxide equivalent
Ecology	Washington Department of Ecology
EIS	Environmental Impact Statement
EJ	environmental justice
EPA	U.S. Environmental Protection Agency
ESHB	Engrossed Substitute House Bill
FOR	functional and operational requirement
hp	horsepower
min/yr	minutes per year
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
OAQPS	Office of Air Quality Planning and Standards
OTSC	Oil Transportation Safety Committee
PLACES	Population Level Analysis and Community Estimates
PM	particulate matter
$PM_{2.5}$	Particulate matter with diameter 2.5 micrometers or smaller
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
VOC	volatile organic compound
WAC	Washington Administrative Code

Summary

This discipline report is produced by the Washington State Department of Ecology (Ecology) as part of the development of an Environmental Impact Statement (EIS) as required pursuant to the State Environmental Policy Act (SEPA).

The Board of Pilotage Commissioners (BPC), in consultation with 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. The BPC and Ecology determined that the rulemaking may have significant adverse impacts on the environment and are developing an EIS.

This Environmental Justice Discipline Report describes the existing conditions and potential impacts to communities with environmental justice (EJ) concerns resulting from the four rulemaking alternatives: No Action (Alternative A), Addition of Functional and Operational Requirements (FORs) (Alternative B), Expansion of Tug Escort Requirements (Alternative C), and Removal of Tug Escort Requirements (Alternative D). The study area for this EJ analysis includes the EIS Study Area (which encompasses the rulemaking alternative boundaries and potential areas for escort tug commutes to and from the alternative boundaries) and census block groups located within or partially within 1 mile of the shoreline.

This discipline report considers whether adverse effects identified elsewhere in the EIS and/or other discipline report analyses would disproportionately affect populations of color, low-income populations, and/or Tribal communities. Specific adverse impacts analyzed for environmental justice concerns include:

- Emissions of criteria pollutants (or their precursors), air toxics, and greenhouse gases.
- Potential water quality impairments from routine discharges and releases.
- Tribal treaty fishing hinderance, wake-related impacts, and marine mammal strikes.
- Potential impediments on recreational and subsistence water-based activities.
- Contributions to noise levels and visual impacts.
- Impacts from oil spills.

Significant and unavoidable adverse impacts (i.e., disproportionate adverse impacts) to Tribal communities were identified under Alternatives A, B, C, and D, and to populations of color and low-income populations under Alternative D. Table 1 summarizes anticipated impacts on communities with EJ concerns.

Table 1. Environmental Justice impact summary.

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
Alternative A: No Action				
Continued operation of escort tugs throughout EIS Study Area, resulting in continued vessel traffic, air emissions, water discharges, noise contributions, and light pollution.	Continued potential for minor and localized air quality, climate, water quality, recreation, noise, and visual impacts to populations of color, low-income populations, and Tribal communities nearest to escort tug activity.	N/A	Continued adherence to relevant regulations and laws.	No
	Continued contributions from escort tugs to existing vessel traffic-related impacts to Tribal treaty fishing and continued potential for marine mammal strikes.	N/A	Continued adherence to relevant regulations and laws and continued coordination with Tribes.	**Yes**
	Probability of any hazard incident from an escort tug is low: probability of 0.86 per year. Potential impacts to populations of color, low-income populations, and Tribal communities from diesel fuel spill and response is likely to be small. This risk level would continue.	N/A	Continued adherence to requirements of existing vessel traffic and oil pollution safety regime.	No

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
Target vessels continue to have tug escorts within rulemaking area.	Probability of a drift grounding from a target vessel is low: a 186-year event in the EIS Study Area. Potential impacts to populations of color, low-income populations, and Tribal communities from drift grounding spill and response could be substantial. This risk level would continue.	N/A	Continued adherence to requirements of existing vessel traffic and oil pollution safety regime.	No
Alternative B: Addition of Functional and Operational Requirements				
Continued operation of escort tugs throughout EIS Study Area, resulting in continued vessel traffic, air emissions, water discharges, noise contributions, and light pollution.	Continued potential for minor and localized air quality, climate, water quality, recreation, noise, and visual impacts to populations of color, low-income populations, and Tribal communities nearest to escort tug activity.	Same as for Alternative A.	Same as for Alternative A.	No
	Continued contributions from escort tugs to existing vessel traffic-related impacts to Tribal treaty fishing and continued potential for marine mammal strikes.	Same as for Alternative A.	Same as for Alternative A.	**Yes**
	Probability of any hazard incident from an escort tug is low: probability of 0.86 per year. Potential impacts to populations of color, low-income populations, and Tribal communities from diesel fuel	Same as for Alternative A.	Same as for Alternative A.	No

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
	spill and response is likely to be small.			
Target vessels continue to have tug escorts within rulemaking area, with added FORs.	Probability of a drift grounding from a target vessel is low: a 186-year event in the EIS Study Area. Potential impacts to populations of color, low-income populations, and Tribal communities from drift grounding spill and response could be substantial. This risk level would continue.	Some minor and unquantified reduction in risk due to standardization of FORs, resulting in slightly lower risk of EJ-related impacts.	Same as for Alternative A.	No

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
Alternative C: Expansion of Tug Escort Requirements				
Increase in escort tug underway time (by 2.41%) and shift in commute and escort locations, with continued and expanded vessel traffic, air emissions, water discharges, noise contributions, and light pollution from escort tugs.	Continued potential for minor and localized air quality, climate, water quality, recreation, noise, and visual impacts to populations of color, low-income populations, and Tribal communities nearest to escort tug activity.	Minor increase in quantities of air emissions, wastewater discharges, and minor changes to locations of these emissions and discharges as well as noise and light pollution.	Same as for Alternative A.	No
	Continued contributions from escort tugs to existing vessel traffic-related impacts to Tribal treaty fishing and continued potential for marine mammal strikes.	Expansion in locations where escort tugs may impact Tribal treaty fishing and/or strike marine mammals.	Same as for Alternative A.	**Yes**
	Probability of any hazard incident from an escort tug increases but remains low: probability of 0.88 per year. Potential impacts to populations of color, low-income populations, and Tribal communities from diesel fuel spill and response is likely to be small.	2.41% increase in risk of a hazard incident from an escort tug (risks concentrated in the expansion area), resulting in higher risk of EJ-related impacts.	Same as for Alternative A.	No

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
Target vessels have tug escorts within expanded rulemaking area, with added FORs.	Probability of a drift grounding from a target vessel is a 189-year event in the EIS Study Area. Potential impacts to populations of color, low-income populations, and Tribal communities from drift grounding spill and response could be substantial.	1.6% reduction in risk of drift grounding across the EIS Study Area (benefits concentrated in the expansion area), resulting in lower risk of EJ-related impacts.	Same as for Alternative A.	No
Alternative D: Removal of Tug Escort Requirements				
Elimination of escort tug activity throughout EIS Study Area, resulting in the elimination of vessel traffic, air emissions, water discharges, noise, contributions, and light pollution from escort tugs.	Potential for minor and localized improvements in air quality, climate, water quality, recreation, noise, and visual conditions for populations of color, low-income populations, and Tribal communities where existing escort tug activity occurs.	Minor reduction in EJ-related impacts.	None	No
	Improved access to fishing areas and resources for Tribal communities and reduction in potential for marine mammal strikes.	Risks associated with escort tugs impacting fishing areas and marine mammals are eliminated, resulting in lower risk of impacts to Tribal communities.	None	No
	Risk of any hazard incident from an escort tug associated with this rule is eliminated (0 per year).	Risk associated with tugs escorting target vessels is eliminated, resulting in lower risk of EJ-related impacts.	None	No

Change in Activity	Resulting Impact on Communities with EJ Concerns	Comparison to Alternative A	Mitigation	Disproportionate Adverse Impact?
Target vessels no longer have tug escorts within rulemaking area.	Probability of a drift grounding from a target vessel is a 167-year event in the EIS Study Area. Potential impacts to populations of color, low-income populations, and Tribal communities from drift grounding spill and response could be substantial.	11.84% increase in risk of drift grounding across the EIS Study Area (increases in risk concentrated in the rulemaking area), resulting in higher risk of catastrophic EJ-related impacts.	Same as for Alternative A.	**Yes**

1.0 Introduction

1.1 Background

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.

The rulemaking will:

- Describe tug escort requirements for the following vessels (referred to as "target vessels" throughout this report) 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 (ATBs) 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.

This rulemaking could potentially increase or decrease tug escort activity and the risk of oil spills in Puget Sound. The BPC and Ecology therefore determined that the rulemaking may have significant adverse impacts on the environment. The BPC and Ecology issued a Determination of Significance on February 22, 2023, which initiated development of an Environmental Impact Statement (EIS) as required under RCW 43.21C.030 (2)(c) pursuant to the State Environmental Policy Act (SEPA). At the same time, Ecology also issued a formal scoping notice as required through the SEPA process. Ecology conducted an EIS Scoping Meeting on March 21, 2023 to invite comments

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

- **"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.

on the scope of the EIS and a comment period was open from February 22 through April 8, 2023.

The BPC and Ecology have agreed to act as co-lead agencies under SEPA and share lead agency responsibility for the EIS. The elements of the environment to be included in the EIS were preliminarily identified in the scoping notice. This discipline report serves as the detailed analysis of an element identified for inclusion in the EIS and will serve as supporting documentation to the EIS.

The BPC is conducting the rulemaking process concurrently with the EIS development and works closely with Ecology to coordinate the public involvement process. The rulemaking effort includes regular public involvement workshops that are designed to share information with stakeholders, Tribal Government representatives, and interested parties. The BPC also appointed the Oil Transportation Safety Committee (OTSC) as an advisory committee of subject matter experts representing different areas like the regulated industry, Tribal governments, and environmental groups. The OTSC meets regularly to develop recommendations for the BPC, and the BPC makes the final decisions related to this rulemaking.

1.2 Rulemaking Alternatives

Through the rulemaking public involvement process, the BPC developed rulemaking alternatives for consideration in the EIS. The BPC has proposed four reasonable[1] rulemaking alternatives to be analyzed in the EIS. This discipline report analyzes the impacts associated with the four proposed rulemaking alternatives: No Action (Alternative A), Addition of Functional and Operational Requirements (FORs) (Alternative B), Expansion of Tug Escort Requirements (Alternative C), and Removal of Tug Escort Requirements (Alternative D). The proposed rulemaking alternatives are summarized below and are shown on Figure 1.

Alternative A. No Action. Under the No Action Alternative, the existing tug escort regulations would continue in effect with no changes.

Alternative B. Addition of Functional and Operational Requirements. The existing tug escort regulations would continue with the addition that escort tugs operating under the rule would need to meet the following three functional and operational requirements:

1. Pre-escort conference: Prior to beginning the escort, the escort tug and the target vessel need to coordinate and discuss safety measures and other standard requirements.
2. Minimum horsepower: Escort tugs must meet minimum horsepower (hp) 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 and less than 40,000 DWT.

[1] As defined in Chapter 197-11-786 WAC.

3. Propulsion specifications: To ensure sufficient propulsion, escort tugs must have a minimum of twin-screw propulsion.

Alternative C. Expansion of Tug Escort Requirements. This alternative would maintain the geographic scope of the current tug escort regulations and extend them to the northwest (see Figure 1 below). This alternative would add 28.9 square miles (74.9 square kilometers) to the existing geographic extent where tug escort requirements apply. The expansion area would be located at the northern boundary of the existing tug escort requirement. This alternative would include the above-mentioned three functional and operational requirements set forth under Alternative B.

Alternative D. Removal of Tug Escort Requirements. This alternative would remove the current tug escort requirement for the target vessels within the rulemaking boundaries.

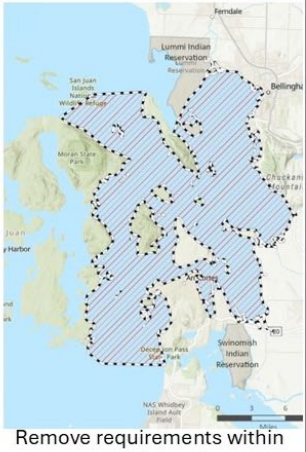
Alternative A (No Action)	Alternative B (Add FORs)	Alternative C (Expansion)	Alternative D (Removal)
			
No change to geographic scope of requirements	No change to geographic scope of requirements	Expand current requirements north to Patos Island	Remove requirements within current boundary
No change 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 1. Proposed rulemaking alternatives.

Under ESHB 1578, Ecology developed a model to simulate vessel traffic patterns and oil spill risk, including tug escort activity. The model was based on historical automatic identification system (AIS) data from 2015-2019 and was used to inform the 2023 Analysis of Tug Escorts for Tank Vessels. For the current EIS effort, Ecology used the model to 1) simulate the tracks of escort and assist[2] tug traffic, based on 2015-2019 historical AIS data, and 2) simulate the current volumes of escort and assist tug traffic along these tracks while accounting for tug escort requirements that went into effect in 2020.

[2] Escort tugs are sometimes referred to as "escort/assist tugs" in this analysis because the same vessels typically perform both escorting and assisting work. Ecology used the model to simulate traffic for both escorting and assisting work; however, only escorting work would be affected by the rulemaking alternatives.

The model produced 1,000 annual simulations of escort and assist tug traffic. To represent current conditions and Alternative A, Ecology selected the simulation output with the highest amount of escort tug traffic (i.e., the "worst case scenario") to ensure that the EIS does not undercount potential environmental impacts and to account for other potential near-term growth in vessel traffic (e.g., traffic from the Trans Mountain Expansion). For Alternative C, Ecology modified the Alternative A simulated traffic outputs to account for the proposed changes in tug escort requirements under that alternative.

Ecology used 2023 historical AIS data (i.e., not simulated) to represent all vessel categories other than escort and assist tugs, with some adjustments to account for recreational and fishing vessels that are not equipped with AIS. Traffic for these other vessel categories did not require simulation because it would not change based on the rulemaking alternatives.

The simulation outputs are used here to show the differences in underway time for escort tugs under Alternative A and Alternative C. Figure 2 and Figure 3 show the results of these simulations, compiled to indicate the total minutes per year (min/yr) of escort tug underway time within each one-square-kilometer grid cell. Figure 4 depicts the change in escort tug underway time between Alternatives A and C. Escort tug activity under Alternative B would not be expected to be meaningfully different than under Alternative A, while Alternative D would result in zero tug escorts. Refer to the Transportation: Vessel Traffic Discipline Report (Appendix B) for details regarding the vessels activity simulation methodology and results.

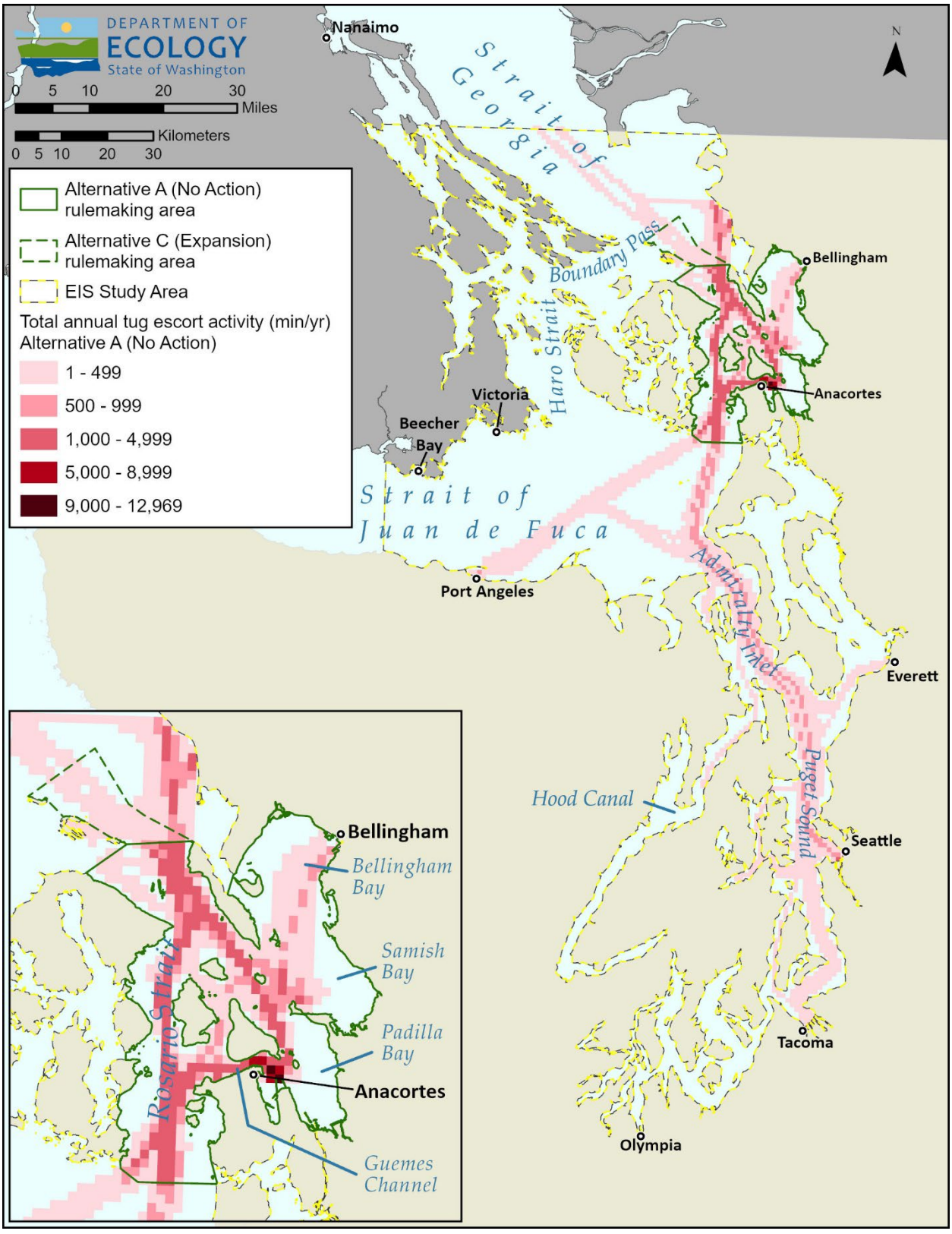


Figure 2. Simulated escort tug underway time under Alternative A and B.

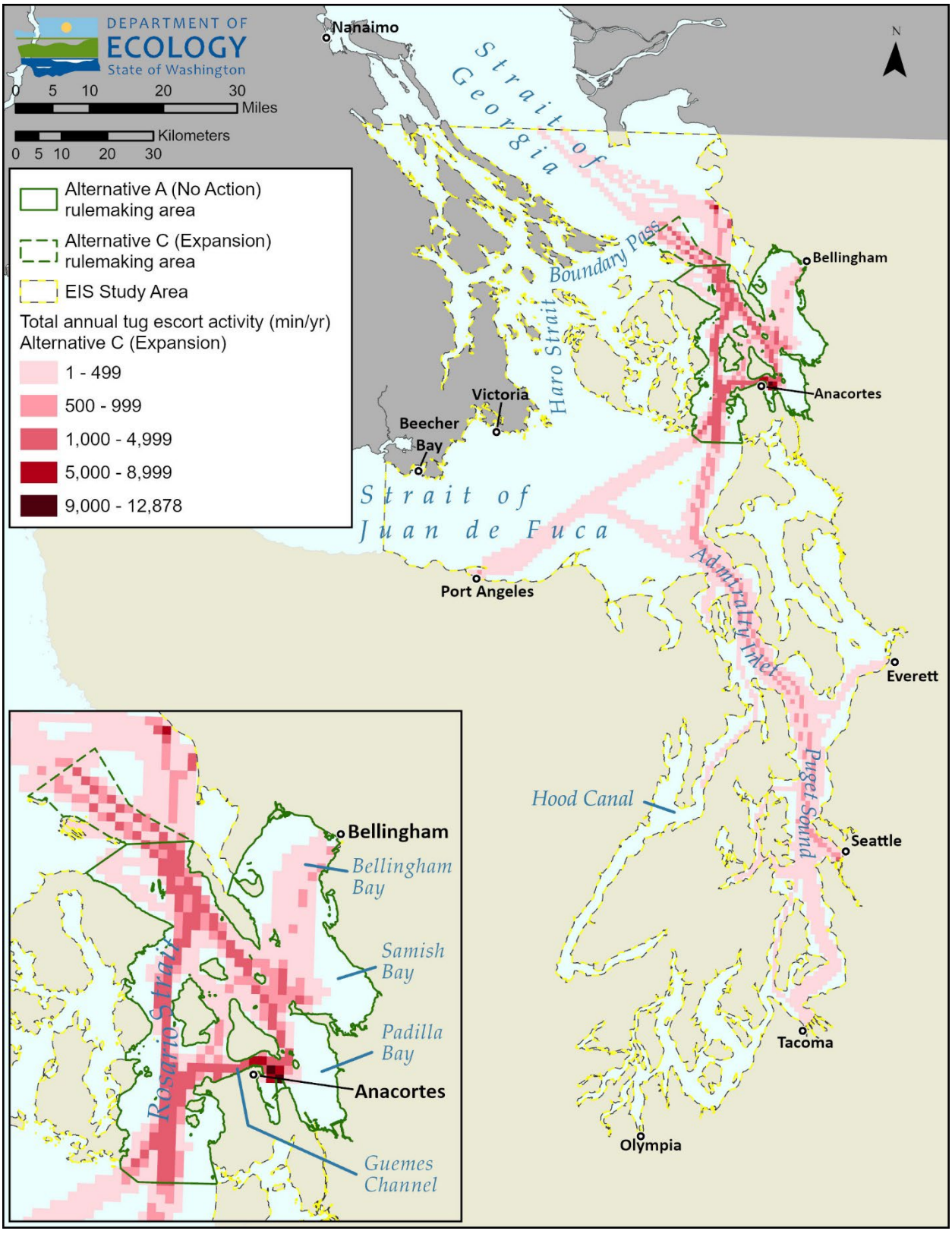


Figure 3. Simulated escort tug underway time under Alternative C.

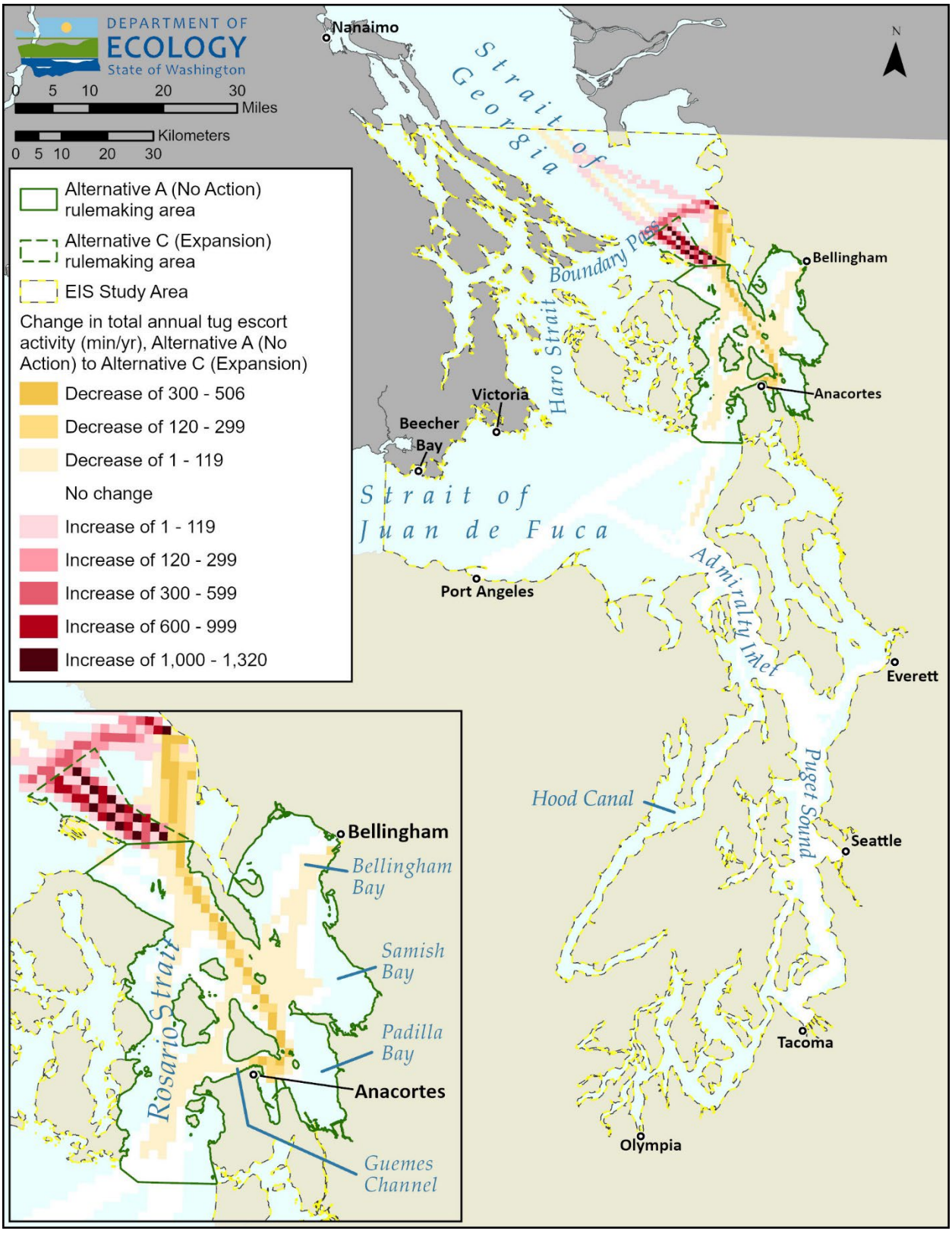


Figure 4. Simulated change in escort tug underway time between Alternative A and Alternative C. An additional accessible version of this map is available in Appendix M.

1.3 Resource Study Area

The EIS Study Area includes the rulemaking alternative boundaries and potential areas for escort tug commutes to and from the alternative boundaries. Specifically, the EIS Study Area includes all connected marine waters in the Salish Sea[3] 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 (see Figure 5).

The study area for this environmental justice (EJ) analysis (herein referred to as the EJ Study Area) includes the EIS Study Area plus those census block groups located within or partially within 1 mile of the shoreline (see Figure 5). Ecology used its best professional judgment in choosing a 1-mile buffer, recognizing that the transitory nature of escort tug impacts (e.g., air emissions) require a study area beyond the immediate area surrounding areas of escort tug activity and recognizing that communities within 1 mile of the shoreline would be expected to be the communities most impacted by a potential oil spill or other escort tug-related environmental impacts.

[3] 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.

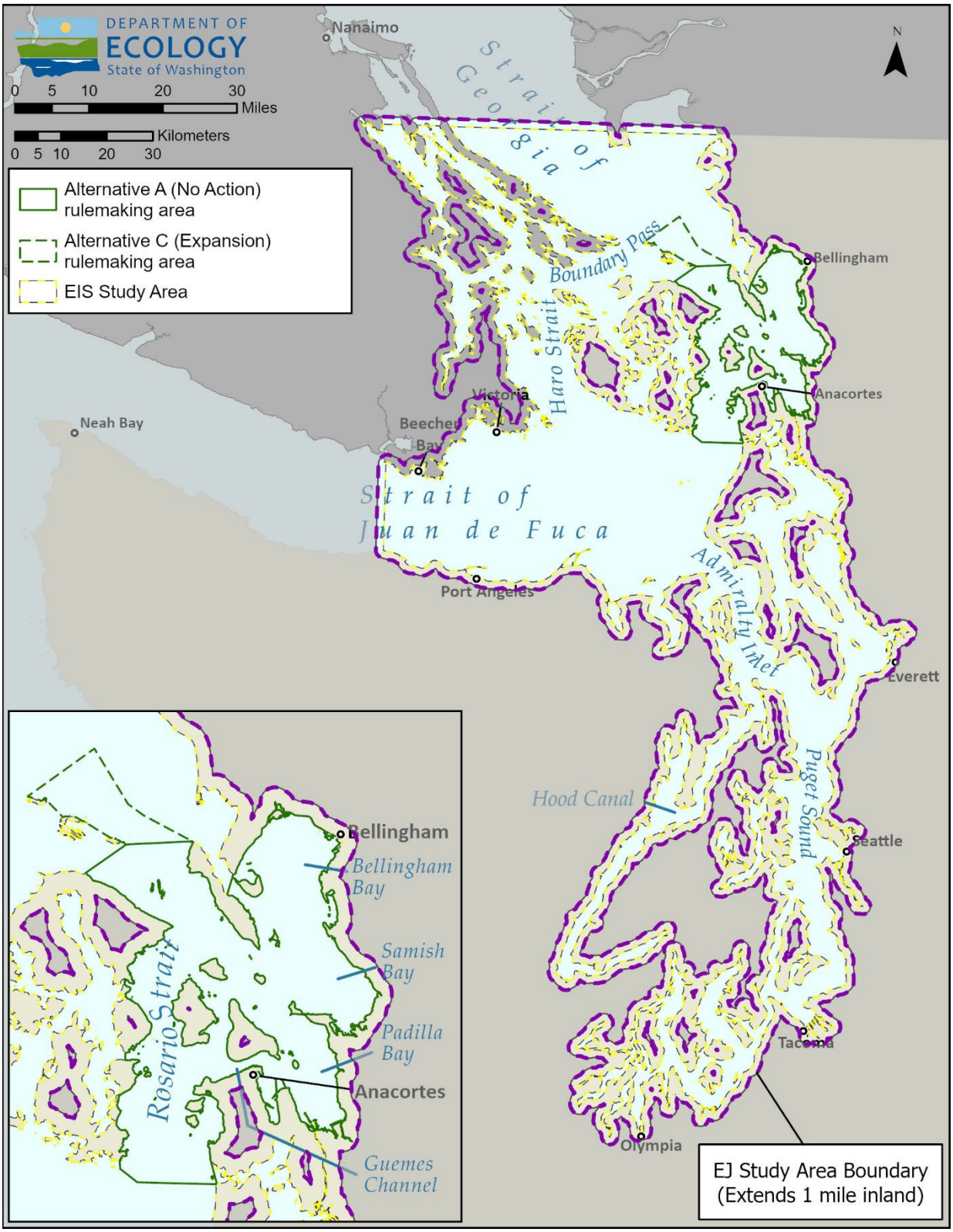


Figure 5. Boundaries of the EIS Study Area and EJ Study Area.

1.4 Resource Description

This Environmental Justice Discipline Report describes communities with potential for EJ concerns in the EJ Study Area and evaluates the potential impacts to these communities from each rulemaking alternative. For purposes of this report, communities with EJ concerns include populations of color, low-income populations, and Tribal communities. *Populations of color* refers to block groups with a specific percentage of people who list their racial status as a race other than white and/or list their ethnicity as Hispanic or Latino. *Low-income populations* refers to block groups with a specific percentage of people living at or below twice the poverty level. *Tribal communities* refers to Native American people affiliated with an American Indian Tribe, regardless of whether they live on or off a Tribal reservation. Ecology chose to focus on race and income level as EJ indicators, because both sociodemographic groups historically and contemporarily bear disproportionate exposure to environmental hazards and harms in the United States (Bullard, 1993; EPA, 2021), including within Washington State (Environmental Justice Task Force, 2020; Min et al., 2021).

For the purposes of this discipline report, populations of color and low-income populations in the EJ Study Area are identified by comparing them to the general population of Washington State (i.e., the reference community). If the percentage of people of color or low-income populations within any block group in the EJ Study Area is greater than or equal to Washington State's average for these demographics, that block group is assessed for EJ impacts. Block groups within Tribal reservations are also assessed for EJ impacts, even if those block groups do not meet the aforementioned criteria for percentages of people of color or low-income populations. However, rulemaking impacts to Tribal resources are considered in detail in Appendix K Tribal Resources Discipline Report. See Section 2.0 (Methodology Summary) for details on how Ecology determined which communities are populations of color, low-income populations, and/or Tribal communities.

This discipline report considers the various environmental impacts identified and whether those impacts disproportionately affect populations of color, low-income populations, or Tribal communities. Because escort tugs are a source of airborne emissions and pollutants, this discipline report also specifically considers potential impacts to populations of color, low-income populations, and Tribal communities that currently face disproportionate air pollutant exposure and associated health disparities (i.e., asthma and chronic heart disease).

1.5 Regulatory Framework

Several federal and state laws, plans, and policies are applicable to EJ in the EIS Study Area. Discussion of these laws, plans, and policies related to EJ is intended to provide a framework for the overall regulatory context of the action but is not necessarily intended to imply applicability or compliance requirements for the four regulatory alternatives evaluated in the EIS.

Table 2 summarizes relevant federal and state laws, plans, and policies for environmental justice.

Table 2. Relevant federal and state laws, plans, and policies related to environmental justice.

Statute, Regulation, Policy	Description
Federal	
Executive Order 13166, Improving Access to Services for Person with Limited English Proficiency	• Requires federal agencies to ensure services and funding opportunities are fully accessible to eligible persons who are not proficient in the English language.
Title VI of the Civil Rights Act of 1964, as amended by the Civil Rights Restoration Act of 1987	• Prohibits federal entities from discriminating on the basis of race, color, or national origin when administering funds.
Ocean Justice Strategy (2023)	• States that all people should have equitable access to the ocean and establishes a strategy to address environmental justice concerns specific to communities that live near or depend on the ocean.
State	
Environmental Justice (RCW 70A.02)	• Establishes state policy to address environmental and human health disparities, with particular attention to disparities faced by people of color, low-income people, and Tribal communities.
Washington State Office of the Chief Information Officer Policy 188	• Requires state agencies to ensure online information is accessible for all people, with specific attention to ensuring people with disabilities have equitable access to information and services.
Executive Order 05-03	• Requires state agencies to ensure all communications use clear, easily understood language and information so that the public can easily understand its content.

2.0 Methodology Summary

For purposes of this discipline report, we focus on populations of color, low-income populations, and Tribal communities as communities that may have EJ concerns.

Ecology reviewed and downloaded data from the U.S. Environmental Protection Agency (EPA)'s environmental justice screening and mapping tool (EJScreen) to identify populations of color and low-income populations within the EJ Study Area. Using EJScreen data in ArcGIS Pro, Ecology compared percentages of people of color and low-income households in census block groups with the reference community (Washington State). If the percentage of people of color or low-income households within a block group was equal to or greater than the state average, that block group was considered a population of color or low-income population and therefore analyzed for EJ impacts. Because Washington State's Environmental Justice law (Chapter 70A.02 RCW) highlights the state's commitment to reduce environmental hazards exposure not only for people of color and low-income people but also for "Indian country," Ecology considered impacts on Tribal reservation lands as well as wider impacts to Tribal rights and resources within the EJ Study Area. To ensure that maps included Tribal communities at least in part, Ecology included all block groups located within Tribal reservations in the overarching category "communities with EJ concerns."

Ecology also used EJScreen data to review air quality indicators and identify populations of color, low-income populations, and Tribal communities that may experience high air pollution levels compared to the rest of the state. To determine a threshold for high air pollution percentiles, Ecology reviewed academic literature and federal environmental impact assessments to identify common practices. Much of the reviewed literature employed a 90^{th} or 80^{th} percentile as a threshold for high air pollution exposure (Cheeseman et al., 2022; Liu et al., 2021; U.S. Army Corps of Engineers, 2019). Therefore, Ecology chose to employ the more conservative of the two (i.e., an 80^{th} percentile threshold) to ensure that communities with high air pollution are not under-represented. Ecology reviewed the state percentiles for communities with EJ concerns (i.e., populations of color, low-income populations, and Tribal communities) for the following key pollutants emitted by escort tugs and other pollutants formed in the atmosphere when emitted pollutants react with chemicals in the air: particulate matter (PM) with diameters 2.5 micrometers or smaller ($PM_{2.5}$), ozone, diesel PM, and nitrogen dioxide (NO_2). EJScreen defines the following:

- $PM_{2.5}$: Annual average of $PM_{2.5}$ levels in the air. Raw data on $PM_{2.5}$ is from EPA's Office of Air Quality Planning and Standards (OAQPS) and is a mixture of monitoring data and air quality modeling results. Because the dataset is compiled by census tracts, all block groups within a census tract are recorded as having the same value (EPA, 2024b).
- Ozone: Annual mean of the 10 highest daily maximum 8-hour average ozone concentrations. Raw data on ozone are from OAQPS and are a mixture of monitoring data and air quality modeling results. Because the dataset is compiled by census tracts, all block groups within a census tract are recorded as having the same value (EPA, 2024b).

- Diesel PM: Estimated concentration of diesel PM. Raw data on Diesel PM are from OAQPS. Because the dataset is compiled by census tracts, all block groups within a census tract are recorded as having the same value (EPA, 2024b).
- NO_2: Raw data on NO_2 are compiled from a regression model, satellite data, and other large-scale models. The resulting output is an approximately one-square-kilometer grid of NO_2 concentrations that are projected to block groups (EPA, 2024b).

It is important to note that the 80th percentile threshold employed in this analysis does not necessarily indicate that pollutant levels exceed a threshold of concern or significance. Rather, Ecology uses percentile in the state to understand air pollution burdens within communities with EJ concerns relative to other communities in the state. Three out of the four analyzed air pollutants ($PM_{2.5}$, ozone, and NO_2) are criteria pollutants addressed by EPA's National Ambient Air Quality Standards (NAAQS).[4] However, exposure to some air pollutants at levels below the NAAQS may still impact health (Di et al., 2017; Dominici et al., 2019; Puget Sound Clean Air Agency, 2024b).

Ecology also examined health-related data from the Centers for Disease Control and Prevention's Population Level Analysis and Community Estimates (PLACES) dataset along with EJScreen data to identify populations of color, low-income populations, and/or Tribal communities in the EJ Study Area where communities face high rates of respiratory and cardiovascular health issues. For the purposes of this analysis, Ecology identified populations of color, low-income populations, and Tribal communities at or above the 80th percentile in the state for asthma prevalence among adults. Ecology also identified populations of color, low-income populations, and Tribal communities at or above the 80th percentile in the state for chronic heart disease prevalence among adults. Because the PLACES dataset is compiled by census tracts, all block groups within a census tract are recorded as having the same value.

Ecology reviewed the results of vessel activity simulations, which estimated the existing annual underway minutes for escort tugs and how escort tug underway times are projected to change under the rulemaking alternatives (see Appendix B Transportation: Vessel Traffic Discipline Report for details). To focus on areas of potential impact from escort tug activity, Ecology reviewed the model results for Alternative A to determine where escort tugs are expected to operate and determined whether those areas were near communities with EJ concerns (i.e., populations of color, low-income populations, and/or Tribal communities). Ecology then reviewed the expected changes in escort tug activity (e.g., duration of underway time, locations and pathways of activity) under each of the four alternatives and considered how those changes in escort tug activities would impact populations of color, low-income populations, and Tribal communities.

[4] The NAAQS are benchmark air pollutant quantities over a defined period within a region. Areas where air pollutant levels exceed the NAAQS are designated as nonattainment areas for the specific pollutant(s) in question. Once a nonattainment area regularly complies with the NAAQS and has a special EPA-approved plan in place, it can be designated as a maintenance area. An area is "in attainment" when it is not a nonattainment area. See the Air Quality and Greenhouse Gases Discipline Report for more information on the NAAQS.

Ecology also characterized the oil spill risks to populations of color, low-income populations, and Tribal communities under the various alternatives. Ecology then considered whether any of the adverse impacts from escort tug activity identified through the EIS would disproportionately affect these communities.

Last, Ecology assessed whether those impacts would be likely to result in significant adverse environmental impacts, using the significance thresholds outlined below in Table 3. According to WAC 197-11-794, significant "means a reasonable likelihood of more than a moderate adverse impact on environmental quality" and should rely on context (e.g., physical setting) and intensity (e.g., magnitude and duration of impact). Findings of significance were reported for each alternative, where identified.

Table 3. 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 populations of color or low-income populations greater than the reference community, impacts to those populations may still be considered disproportionate.

3.0 Technical Analysis and Results

This section describes the affected environment for EJ within the EIS Study Area. It also describes the anticipated, qualitative impacts on populations of color, low-income populations, and Tribal communities from the four alternatives: No Action (Alternative A), Addition of FORs (Alternative B), Expansion of Tug Escort Requirements (Alternative C), and Removal of Tug Escort Requirements (Alternative D). This section also identifies mitigation measures that could avoid, minimize, or reduce the potential impacts and determines if there would be significant and unavoidable adverse environmental impacts.

3.1 Affected Environment

The EIS Study Area includes all connected marine waters in the Salish Sea 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 (see Figure 5). The Salish Sea is a geographic area encompassing land and water bodies of southern British Columbia, Canada, and northern Washington State. Major waters that make up the Salish Sea estuarine ecosystem include the Strait of Georgia, Strait of Juan de Fuca, and Puget Sound. Within these major waters are numerous straits, inlets, canals, and bays (Western Washington Institute, 2024).

The rulemaking areas include marine waters of San Juan, Skagit, and Whatcom counties, and a small portion of Island County, Washington. Specific waters include Bellingham Bay, Samish Bay, Rosario Strait, Thatcher Pass, Burrows Bay, and smaller areas such as Boat Harbor, Deepwater Bay, Strawberry Bay, Secret Harbor, and Cooks Cove.

Washington's marine waters support Tribal treaty fishing rights and cultural practices (see Appendix K Tribal Resources Discipline Report for further discussion), produce income from maritime sector economic activities, and provide recreational opportunities. Vessels that utilize 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. For the purposes of this analysis and consistent with previous analyses, Ecology is considering the escort tug population of this EIS to be 18 escort tugs identified in Appendices P and Q of the 2021 Vessel Traffic Trend Study (BPC & Ecology, 2021). Ecology assumes that, while the fleet conducting tug escort activity may have changed since the 2021 study (and may continue to change), the fleet will remain generally similar in composition and characteristics (e.g., length) to those identified in the 2021 study. Ecology estimates that escort tug underway time associated with existing tug escort requirements currently represents approximately 0.96 percent of the overall marine vessel activity with AIS in the EIS Study Area. See Appendix B Transportation: Vessel Traffic Discipline Report for details.

As stated above in Section 1.3 (Resource Study Area), the EJ Study Area includes census block groups within or partially within 1 mile of the shoreline present in the EIS Study Area.

3.1.1 Populations of Color

In Washington State, people of color comprise approximately 33.1 percent of the population (EPA, 2024a). Thus, any study area block group within or partially within 1 mile of the shoreline with a population equal to or more than 33.1 percent people of color is considered a community of color and assessed for EJ impacts.

In total, there are 1,204 block groups within or partially within 1 mile from the shoreline within the EIS Study Area. Of these, 428 block groups are populations of color. Populations of color are especially concentrated within and near the Lummi Reservation, Oak Harbor, Everett, Seattle, Tacoma, Bremerton, and west of Fort Lewis. See Figures A1, A2, A3, and A4 in Attachment A (Maps of Communities with Potential Environmental Justice Concerns).

As described in Section 1.2 (Rulemaking Alternatives) and Appendix B Transportation: Vessel Traffic Discipline Report, Ecology developed a model to simulate escort tug activity within the EIS Study Area and the rulemaking areas. Based on this dataset, under existing conditions, approximately 4.76 percent of escort tug underway time occurs within 1 mile of populations of color. Within the rulemaking areas (the region defined by the Alternative C boundary), approximately 0.18 percent of escort tug underway time occurs within 1 mile of populations of color.

3.1.2 Low-Income Populations

Approximately 23.5 percent of households within Washington State have incomes that are less than or equal to twice the 2022 federal poverty level (EPA, 2024a). Thus, any block group within or partially within 1 mile of the shoreline with equal to or more than 23.5 percent low-income households is considered a low-income population and assessed for EJ impacts.

There are 410 low-income populations in the EJ Study Area. Low-income populations are relatively evenly distributed throughout the EJ Study Area, but concentrations of these populations occur in or near San Juan Island, Lummi Reservation, Swinomish Tribal Reservation, Seattle, Tacoma, and throughout the western portion of the EJ Study Area (see Figures A5, A6, A7, and A8 in Attachment A).

Based on Ecology's model (see Appendix B Transportation: Vessel Traffic Discipline Report), under existing conditions, approximately 22.6 percent of escort tug underway time occurs within 1 mile of low-income populations. Within the rulemaking areas (the region defined by the Alternative C boundary), approximately 29.7 percent of escort tug underway time occurs within 1 mile of low-income populations.

3.1.3 Tribes

There are 29 Tribes that may potentially be affected by the rulemaking, 10 of which have reservations at least partially within the EJ Study Area:

- Jamestown S'Klallam Tribe.
- Lower Elwha Klallam.
- Lummi Nation.

- Port Gamble S'Klallam Tribe.
- Puyallup Tribe.
- Skokomish Indian Tribe.
- Squaxin Island Tribe.
- Suquamish Port Madison Tribe.
- Swinomish Indian Tribal Community.
- Tulalip Tribes.

For purposes of this discipline report, all Tribal communities located within or partially within the EJ Study Area were assessed for EJ impacts.

Currently, a very small portion of all escort tug underway time occurs near reservations of the Lummi Nation, Puyallup Tribe, and Suquamish Tribe. Specifically, based on Ecology's model, under existing conditions, approximately 0.96 percent of escort tug underway time occurs within 1 mile of Tribal reservations. When considering only the escort tug activity that takes place within the rulemaking areas (the region defined by the Alternative C rulemaking boundary), virtually 0 percent (16 minutes per year) of escort tug underway time occurs within 1 mile of Tribal reservations.

Please refer to Appendix K Tribal Resources Discipline Report for more on potentially affected Tribes and the potential impacts the rulemaking may have on Tribes.

3.1.4 Overburdened Communities

Air Quality

Escort tugs are one of many sources of air pollutants within the EIS Study Area. Some of the common air pollutants escort tugs release or contribute to include $PM_{2.5}$, ozone, diesel PM, and NO_2. In the following sections, Ecology explores the relative risk of exposure to these air pollutants for populations of color, low-income populations, and Tribal communities in the EJ Study Area. More details on the current and projected emissions from escort tugs for each alternative are available in Appendix H Air Quality and Greenhouse Gases Discipline Report.

In the United States, air pollution disproportionately affects people of color and low-income communities (EPA, 2021; Jbaily et al., 2022; Tessum et al., 2021). Air quality disparities are caused in part by disproportionate exposure to pollutants and by structural and systemic inequalities such as limited accessibility to healthcare (American Lung Association, 2023). As part of work under the Climate Commitment Act (CCA) and the "Improving Air Quality in Overburdened Communities" initiative, Ecology has identified 16 communities in Washington State that are overburdened with health, social, and/or environmental disparities and are also disproportionately impacted by criteria air pollutants (Ecology, 2024a, 2024b). Six of these communities are at least partially located in the EJ Study Area: Everett, North Seattle and Shoreline, South Seattle, South King County, South and East Tacoma, and Northeast Puyallup. These communities are herein referred to as CCA Overburdened Communities (Ecology, 2024b).

For the EIS, Ecology took a different approach to identify communities disproportionately exposed to air pollution. For the purposes of this analysis, as described in Section 2.0 (Methodology Summary), Ecology identified those populations of color, low-income populations, and Tribal communities (i.e., communities with EJ concerns) in the EJ Study Area that are at or above the 80th percentile in the state for $PM_{2.5}$, ozone, diesel PM, NO_2, respiratory disease (asthma), or chronic heart disease. This methodology allows Ecology to focus on the specific communities of concern in relation to escort tug impacts. To see the overlaps between communities with EJ concerns and Ecology's previously-identified CCA Overburdened Communities, see Figures A9, A10, A11, and A12 in Attachment A.

$PM_{2.5}$

$PM_{2.5}$ consists of small particles sized at or less than 2.5 micrometers in diameter. Long-term exposure to $PM_{2.5}$ can exacerbate existing cardiovascular and respiratory conditions and also increase the rates of these diseases. Exposure is also linked with increased strokes, overall hospital admissions, and even mortality rates (Ecology, 2009; Hayes et al., 2019). The Puget Sound Clean Air Agency has identified $PM_{2.5}$ as the biggest air quality challenge in the area (Puget Sound Clean Air Agency, 2024a). However, no populations of color, low-income populations, or Tribal communities within the EJ Study Area are at or above the 80th percentile in the state for $PM_{2.5}$ exposure.

Ozone

Ozone is an air pollutant not directly emitted into the air; rather, it forms when volatile organic compounds (VOCs), nitrogen oxides, and carbon monoxide chemically react with sunlight. Ground-level ozone (referred to in this report as just ozone) is different from the atmospheric ozone layer that protects the planet from the sun's ultraviolet rays. Elevated ozone levels can trigger and aggravate respiratory issues and even permanently damage lung tissue (Kampa & Castanas, 2008; Puget Sound Clean Air Agency, 2024a). Of the 887 populations of color, low-income populations, and/or Tribal communities in the EJ Study Area, only 7 are at or above the 80th percentile in the state for potential exposure to ozone, all of which are in Tacoma or Joint Base Lewis-McChord (see Figure A13 in Attachment A). All communities within the EJ Study Area are in attainment for ozone.

Diesel PM

Diesel PM is an air toxic and constitutes a major portion of diesel exhaust emissions. Diesel emissions are one of the biggest contributors to air pollution-contributing health disparities in the region (Port of Tacoma, 2021; Puget Sound Clean Air Agency, 2024b). The Puget Sound Clean Air Agency estimates diesel exhaust exposure contributes over 80 percent of air pollution-based potential cancer risk in the Puget Sound region (Puget Sound Clean Air Agency, 2024b). A total of 387 populations of color, low-income populations, or Tribal communities in the EJ Study Area are at or above the 80th percentile in the state for potential exposure to diesel PM. All of these block groups are located within or between Seattle and Tacoma (see Figure A14 in Attachment A).

NO_2

NO_2 is a type of nitrogen oxide and often serves as an indicator for overall nitrogen oxide pollution (EPA, 2016). Short-term NO_2 exposure can aggravate existing respiratory conditions such as asthma, and long-term exposure can increase risk of respiratory infections (Puget Sound Clean Air Agency, 2024a). Several urban areas in the EJ Study Area have populations of color, low-income populations, or Tribal communities that are at or above the 80th percentile for potential exposure to NO_2. These include Bellingham, Everett, Seattle, Tacoma, and Olympia (see Figures A15, A16, and A17 in Attachment A). All of Washington State is in attainment for NO_2.

Health Outcomes

While asthma and heart disease rates are impacted by a wide range of factors, long-term exposure to various air pollutants can increase the risk of developing cardiovascular and respiratory diseases and can aggravate existing health conditions. Ecology identified populations of color, low-income populations, and/or Tribal communities that are also at or above the 80th percentile in the state for asthma prevalence among adults 18 or older. Of the 887 total block groups identified as a community of color, low-income population, and/or Tribal community, 203 also have asthma rates in adults at or above the 80th percentile. These communities are dispersed relatively evenly throughout the EJ Study Area, with clusters in and around the Lummi Reservation, Bellingham, Swinomish Tribal Reservation, Everett, Tacoma, Olympia, Key Peninsula, Bremerton, and Port Angeles (see Figures A18, A19, A20, and A21 in Attachment A).

Ecology also identified 188 populations of color, low-income populations, and/or Tribal communities that are also at or above the 80th percentile in the state for chronic heart disease. These communities are dispersed throughout the EJ Study Area (see Figures A22, A23, A24, and A25 in Attachment A). It is important to recognize that air pollution exposure is just 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 EJ Study 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.

3.1.5 Assessment of Current Environmental Justice Impacts from Tug Escort Requirements

Overall, this discipline report focuses on the impacts of the 18 escort tugs that are assumed to escort target vessels within the rulemaking areas, as well as the tugs' commutes throughout the EIS Study Area to and from these escort jobs. Currently, tug escorts are required for target vessels in the Rosario Strait and other connected waters within the rulemaking area. Escorts are also required for all oil tankers over 40,000 deadweight tons, which are primarily transiting to and from major refineries located in the Anacortes, Bellingham, and Ferndale area. These large vessels also require tugs to help safely dock at ports. Other areas of high tug traffic in the EIS Study Area include major ports in Seattle, Tacoma, and Everett. As discussed in Appendix B Transportation: Vessel Traffic Discipline Report, these escort tugs are estimated to have a total of approximately 610,107 minutes of underway time per year within the EIS Study Area.

Ecology estimates that these escort tugs represent approximately 0.96 percent of the overall marine vessel activity with AIS in the EIS Study Area. In addition to escort tugs and target vessels, other smaller commercial and recreational vessels also operate within the EIS Study Area.

The preceding subsections summarize the locations of populations of color, low-income populations, and Tribal communities that may be impacted by the rulemaking. These communities are dispersed relatively evenly throughout the EJ Study Area. Ecology also identified those populations of color, low-income populations, and Tribal communities that may be disproportionately exposed to ozone, diesel PM, and NO_2 air pollution. Many of these communities are located in urban areas such as Seattle and Tacoma. Ecology then identified populations of color, low-income populations, and Tribal communities experiencing health overburdens that may be connected to air pollution — namely asthma and chronic heart disease. Ecology found that these communities facing air pollution-related health overburdens are dispersed throughout the EJ Study Area.

With emissions such as black carbon, diesel PM, NO_2, and VOCs, escort tugs contribute to air pollution totals in the region. Despite their small size relative to other marine vessels, escort tugs require engines with significant propulsion power that often rely on notable fuel consumption and resulting emissions. Exposure to these air pollutants can pose human health impacts, such as exacerbation of existing respiratory and cardiovascular disease symptoms. These health impacts disproportionately affect communities already experiencing disproportionate exposure to air pollution and with health overburdens. As detailed in Appendix H Air Quality and Greenhouse Gases Discipline Report, Ecology conducted dispersion modeling of emissions from escort tugs and concluded that, while escort tugs do contribute to localized air pollution, these emissions are not currently causing or contributing to notable adverse air quality conditions or adverse human health risks. Additionally, escort tugs' continued adherence to air-related regulations and laws help reduce adverse air quality impacts. While areas with the highest levels of escort tug emissions are in close proximity to several populations of color, low-income populations, and/or Tribal communities (e.g., Anacortes and the Lummi Reservation), air quality in these regions easily meets national and state air quality standards. Additionally, within the rulemaking area, the only communities with EJ concerns that are also identified as being disproportionately exposed to air pollution are located in Bellingham. Therefore, existing tug escort requirements are not likely to be a substantial contributor to air quality concerns impacting populations of color, low-income populations, or Tribal communities in the EJ Study Area.

As discussed in Appendix H Air Quality and Greenhouse Gases Discipline Report, escort tugs rely on diesel fuel and therefore emit greenhouse gases during operations. Therefore, existing tug escort requirements contribute to global climate change and the associated impacts. The Puget Sound region warmed in the 20th century. Warming in the 21st century is expected to at least double, and potentially increase ten-fold, compared to warming in the 20th century (Mauger et al., 2015). While climate change impacts all communities, several aspects of climate change disproportionately impact populations of color and low-income populations. Historically, discriminatory housing policies have pushed communities of color to live in green space-deprived areas that experience higher temperatures than surrounding communities due to the

urban heat island effect (Seattle Office for Civil Rights, 2021). Increasing temperatures will only exacerbate the urban heat island effect in these communities. Low-income populations also face similar challenges if unable to afford air conditioning or access health care services, both of which are crucial for preventing, managing, and treating heat-induced and heat-exacerbated health conditions (U.S. Global Change Research Program, 2016). Tribal communities also experience disproportionate impacts from climate change, which threatens culturally important species and even access to their lands (Lummi Indian Business Council, 2016; U.S. Climate Resilience Toolkit, 2024). Ecology estimates that existing escort tug activity covered under this rulemaking contributes approximately 12,100 tons per year of carbon dioxide equivalent (CO_2e), which is equivalent to emissions of burning approximately 1,235,000 gallons of gasoline (EPA, 2024c).

Escort tug activity also contributes to minor but recurring impacts on water quality from wastewater discharges and pollutant releases (e.g., copper releases from tugs' anti-fouling coatings). As discussed in Appendix D Water Quality Discipline Report, ongoing adherence to regulations and other best management practices helps mitigate water quality impacts. Shoreline communities, including low-income populations and populations of color, could be exposed to discharges and pollutants when participating in water-dependent activities such as swimming in the ocean. However, wastewater discharges and pollutant releases into the water are minimal in quantity and restricted to certain areas. Ultimately, routine escort tug activity is not likely to be a substantial contributor to water quality concerns in the EIS Study Area or result in water quality issues for communities with EJ concerns.

Escort and assist tugs and target vessels make up less than 6 percent of total AIS vessel traffic in the EIS Study Area. However, escort tug contributions to vessel activity impact Tribal communities. As discussed in Appendix K Tribal Resources Discipline Report, some Tribes have identified vessel traffic as impacting treaty fishing and other Tribal resources. 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, impacts from wakes that negatively affect fisheries, and other impacts (Ecology, 2021). These impacts also affect other subsistence fishing populations.

Escort tugs contribute to existing visual and noise burdens for shoreline communities, including populations of color, low-income populations, and Tribal communities. Lights (particularly at night) and noise from escort tugs are likely perceptible to shoreline communities, but these lights and noise are not likely to exceed any light or noise standards. Because noise perception is dependent on a variety of other factors (e.g., atmospheric conditions), it is difficult to predict which communities are more likely to perceive escort tug noise. Escort tugs and target vessels under this proposed rule constitute only a fraction of vessel activity within the EIS Study Area. Additionally, escort tug underway time occurs throughout the EIS Study Area and does not disproportionately occur near populations of color, low-income populations, or Tribal communities. Therefore, the contributions of existing tug escort requirements to noise and visual burdens for these communities are likely minimal. See Appendix E Environmental Health: Noise Discipline Report and Appendix J Visual Resources Discipline Report for more on escort tug impacts on noise and visual resources, respectively.

3.1.6 Oil Spill Risk

Puget Sound has experienced relatively few major oil spills over the past several decades; however, a catastrophic oil spill is a high-impact risk to communities and the many resources they rely on (Puget Sound Partnership, 2024). Petroleum products contain hundreds of chemicals which are released into the water column and/or atmosphere during a spill. Studies show that populations exposed to an oil spill experience heightened rates of physiological (e.g., respiratory problems, neurological impacts) and mental (e.g., depression and anxiety) health issues (Laffon et al., 2016).

Large spills could result from incidents involving target vessels or escort tugs. Oil spills from target vessels would be expected to have a greater environmental impact than spills from escort tugs due to the larger quantity of released oil. Therefore, compared to escort tug spills, target vessel oil spills would have a greater potential to impact shoreline populations of color, low-income populations, and Tribal communities. Tribal communities would be disproportionately impacted, as oil spills can significantly disrupt Tribal treaty fishing and harm culturally significant species. See Appendix K Tribal Resources Discipline Report for a more detailed analysis on oil spill impacts to Tribes and Tribal resources. Additionally, an oil spill would impact not only recreational fishing for all communities, but also subsistence-based fishing activities, resulting in diet disruptions specifically for high fish-consuming populations such as Tribal and Asian and Pacific Islander populations (Ecology, 2013). Consuming seafood with polycyclic aromatic hydrocarbons, the chemicals in oil most likely to bioaccumulate in fish, poses health risks, as some of these hydrocarbons are carcinogenic (California Office of Environmental Health Hazard Assessment, 2025).

An oil spill could also result in temporary but notable air quality impacts to local communities from evaporated oil and/or from the spill cleanup response methods (e.g., chemical dispersants). While communities closest to the spill could see short-term increases in air pollutants, first responders and those working directly at the spill site are at particular risk for exposure and resulting health impacts. However, many factors must be considered to predict the severity and extent of air quality impacts, such as oil type and location of a spill. See Appendix H Air Quality and Greenhouse Gases Discipline Report for more on oil spill-related air pollution.

Ecology performed oil spill trajectory modeling, which simulated the trajectory of worst case spills in locations where target vessel drift groundings have a relatively high likelihood of occurrence and where escort tug traffic is most concentrated. These included simulations of target vessel spills at Clark Island and Matia Island to identify areas that are currently at an elevated risk of being affected by a spill, due to the absence of tug escort requirements for target vessels near those islands. These simulations suggest that, under existing conditions, certain populations of color, low-income populations, and Tribal communities are at an elevated risk of being affected by a spill—for example, those on Lummi Island, at Birch Point, and on San Juan Island. Looking at areas where tug escorts are currently required, the simulations also suggest that an escort tug diesel fuel spill near Anacortes could impact communities with EJ concerns around Samish Island and other nearby communities. Finally, a simulated escort tug diesel fuel spill at the Southern Rendezvous Point would potentially affect

communities with EJ concerns near Anacortes and sparsely populated areas along the southern coast of Lopez Island. Oil spill risks are considered in detail in the Environmental Health: Releases Discipline Report (Appendix C).

3.2 Alternative A: No Action

3.2.1 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). As discussed above in Section 3.1.5 (Assessment of Current Environmental Justice Impacts from Tug Escort Requirements), escort tugs under Alternative A 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 tug activity is not likely a substantial contributor to air or water quality concerns in the EIS Study Area for populations of color, low-income populations, or Tribal communities. Additionally, escort tug air emissions and water discharges likely do not meaningfully impact these communities' recreational activity or pose notable human health risks.

Escort tugs associated with this proposed rulemaking would continue to contribute to a portion of vessel strike risks to culturally significant species for Tribes and could potentially create adverse effects to these species if a strike occurs. Tug escort requirements would also continue to add traffic in shipping lanes and areas where Tribes have fishing equipment, adding to difficulties in accessing Tribal fishing areas and resources. These impacts are discussed in detail in the Tribal Resources Discipline Report (Appendix K).

The current rule and current escort tug activity would continue to have beneficial impacts related to oil spill risks under Alternative A, compared to the risks associated with removing tug escort requirements under Alternative D. Under Alternative A, a target vessel drift grounding in the EIS Study Area is a 186-year event. An oil spill from that drift grounding is a 25,546-year event and could be catastrophic to air and water quality for populations of color, low-income populations, and Tribal communities and other subsistence fishing communities. 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).

As described in Section 3.1 (Affected Environment), climate change is expected to disproportionately impact populations of color, low-income populations, and Tribal communities. Under Alternative A, escort tugs 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 tugs would continue to have minor, localized operational noise and visual impacts on populations of color, low-income populations, and Tribal communities. See

Section 3.1.5 (Assessment of Current Environmental Justice Impacts from Tug Escort Requirements).

3.2.2 Proposed 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, 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 the Tribal Resources Discipline Report (Appendix K) for more information on these measures.

Please also refer to the following discipline reports for more mitigation measures relevant to environmental justice: Water Quality (Appendix D), Plants and Animals (Appendix F), Environmental Health: Releases (Appendix C), Transportation: Vessel Traffic (Appendix B), Plants and Animals (Appendix F), and Air Quality and Greenhouse Gases (Appendix H).

3.2.3 Significant and Unavoidable Adverse Impacts

Alternative A could result in significant and unavoidable disproportionate adverse impacts to Tribal communities due to impacts to Tribal treaty fishing activities and culturally significant species. As discussed in Section 3.2.1 (Impacts), existing tug escort requirements contributes to vessel traffic that disrupts Tribal fishing activities. Also contributing to vessel strike risks to culturally significant species, escort tugs would continue to affect culturally significant wildlife for Tribes under Alternative A. Furthering the disproportionate and adverse impacts to Tribal communities, vessel traffic also adversely impacts 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. Significant and unavoidable adverse impacts to Tribes and Tribal resources are discussed in depth in Appendix K Tribal Resources Discipline Report.

Continued air emissions, water discharges, noise, or light from escort tug activities under Alternative A would not result in disproportionately high and adverse effects to populations of color, low-income populations, or Tribal communities. Because of the overall minimal amount of routine discharges, water quality impacts would not disproportionately impact subsistence fishing communities.

3.3 Alternative B: Addition of Functional and Operational Requirements

3.3.1 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. These functional and operational requirements include 1) a minimum of either

2,000 or 3,000 hp requirements for the escort tugs based on the DWT of the escorted vessel, 2) minimum of twin-screw propulsion, and 3) a pre-escort conference between the tug and the escorted vessel.

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 hp. Ecology reviewed the data used in this report and found that the escort tugs between 2,000 and 3,000 hp 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). Additionally, all 18 of the identified tugs meet the minimum twin screw propulsion requirement. These two requirements reflect today's industry practices and are therefore unlikely to result in changes to the distribution of escort tugs and their associated impacts. The FORs are intended to increase safety and formalize existing best practices.

The addition of FORs would not be anticipated to have any meaningful changes in air pollutant emissions, water discharges, noise, or light emissions compared to Alternative A, since all escort tugs in the existing fleet already meet the proposed horsepower and propulsion requirements.

The addition of FORs could result in a minor but unquantified decrease in the risk of target vessel oil spills due to drift groundings but would not be expected to change the existing risk of escort tug incidents.

Therefore, Alternative B would not be anticipated to have impacts on populations of color, low-income populations, or Tribal communities that are meaningfully different from those under Alternative A.

3.3.2 Mitigation Measures

No additional mitigation measures than those included under Alternative A in Section 3.2.2 (Mitigation Measures) have been identified under Alternative B. Escort tugs and target vessels would adhere to required mitigation measures from rulemakings and other existing regulations as detailed in the discipline reports listed in Section 3.2.2 (Mitigation Measures). Additionally, Ecology recommends that escort tugs and target vessels continue to implement the mitigation measures described within those discipline reports.

3.3.3 Significant and Unavoidable Adverse Impacts

As stated in Section 3.3.1 (Impacts), the addition of the FORs would not meaningfully change the impacts to populations of color, low-income populations, or Tribal communities as compared to Alternative A. Therefore, Alternative B would also result in disproportionate adverse impacts to Tribal communities from escort tug activity disrupting the quality and operation of Tribal fishing areas and increasing vessel strike risks to culturally significant species.

3.4 Alternative C: Expansion of Tug Escort Requirements

3.4.1 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, 28.9 square miles). Escort tug underway time in the rest of the EIS Study Area would decrease slightly or remain the same (see Figure 6). Alternative C also includes the FORs included in Alternative B.

Based on Ecology's model, under Alternative C, approximately 4.58 percent of underway time by escort tugs would occur within 1 mile of populations of color and 20.8 percent within 1 mile of low-income populations. Within the rulemaking areas, approximately 0.15 percent and 27.2 percent of underway time by escort tugs would occur within 1 mile of populations of color and low-income populations, respectively. Approximately 0.71 percent of total underway time and virtually 0 percent (16 minutes per year) of underway time within the rulemaking areas would occur within 1 mile of Tribal reservations. Therefore, the amount of vessel activity near communities with EJ concerns under Alternative C is expected to be essentially the same as under Alternative A.

As discussed in Section 3.3 (Alternative B: Addition of Functional and Operational Requirements), FORs would not be expected to result in impacts to populations of color, low-income populations, or Tribal communities.

Alternative C would not be anticipated to have any impact on the types of air pollutants emitted by tugs; however, consistent with the total increase in escort tug underway time, emissions quantities under Alternative C would be expected to increase by approximately 2.5 percent as compared to Alternative A. Emissions locations would shift, with increases within and near the expansion area. As discussed in Appendix H Air Quality and Greenhouse Gases Discipline Report, these emissions increase and the minor shift in locations of emissions[5] 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. See Appendix H for more on emissions dispersion modeling and anticipated changes in amounts and locations of emissions.

Similarly, Alternative C would not be anticipated to impact the types of discharges affecting water quality relative to Alternative A, but minor changes in the locations and quantities of certain discharges may occur. These changes would not be anticipated to result in any noticeable impacts to water quality, recreation activities, or subsistence fishing for populations of color, low-income populations, or Tribal communities.

[5] Air dispersion modeling analysis performed for the EIS specifically evaluated the potential air emissions impacts in eight receptor areas, each of which meets at least one of the criteria to be considered a community with EJ concerns (i.e., populations of color, low-income populations, and/or Tribal communities). See the Air Quality and Greenhouse Gases Discipline Report for more details on the modeling efforts.

The projected increase in escort tug underway time in the expansion area under Alternative C could exacerbate threats and interactions to Tribal fishing from vessel traffic as described in Section 3.1.5 (Assessment of Current Environmental Justice Impacts from Tug Escort Requirements) and in the Tribal Resources Discipline Report (Appendix K). Vessel activity would be particularly increased in the Strait of Georgia and Strait of Georgia South and could disrupt or hinder access to fishing areas and resources, cause more impacts from wakes, and lead to increased gear loss. Additionally, Alternative C would result in higher potential risk of vessel strikes to culturally significant aquatic species in the Strait of Georgia, but also would decrease strike risks in other areas in the EIS Study Area.

Alternative C would increase the geographic range of the existing tug escort requirements and therefore potentially decrease the risk of a target vessel oil spill from a drift grounding. Under Alternative C, a target vessel drift grounding in the EIS Study Area is a 189-year event. An oil spill from that drift grounding is a 25,830-year event and could be catastrophic. These drift grounding risk rates are lower than those under Alternative A. In Alternative C, escort tugs have an incident rate of 0.88 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). Ecology's trajectory modeling suggests that an oil spill from an escort tug within the expanded rulemaking area could affect communities with EJ concerns near Point Roberts, Strait of Georgia, Boundary Bay (e.g., Birch Bay), Patos Island, Sucia Island, San Juan Island, Waldron Island, and Orcas Island. See Appendix C Environmental Health: Releases Discipline Report for more detailed results of Ecology's oil spill trajectory modeling. Overall, the benefits of decreased target vessel spill risks are expected to outweigh the potential negative effects of slightly increased escort tug incident spill risks.

Expanded escort tug activity under Alternative C would increase escort tug-related greenhouse gas emissions by 317 tons per year CO_2e (approximately 2.63 percent) compared to existing conditions. This increase is comparable to burning an additional 32,360 gallons of gasoline (EPA, 2024c). Although this increase is minor relative to overall emissions in the state, it would still contribute to climate change.

Increases in escort tug activity within and near the expanded rulemaking area would not occur in close proximity to 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.

3.4.2 Mitigation Measures

No additional mitigation measures than those included under Alternative A in Section 3.2.2 (Mitigation Measures) have been identified under Alternative C. Escort tugs and target vessels would adhere to required mitigation measures from rulemakings and other existing regulations as detailed in the discipline reports listed in Section 3.2.2 (Mitigation Measures). Additionally, Ecology recommends that escort tugs and target vessels continue to implement the mitigation measures described within those discipline reports.

3.4.3 Significant and Unavoidable Adverse Impacts

Alternative C would result in the continuation of impacts discussed under Alternative A. Like Alternative A, 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 activity in Alternative C would also expand these risks to the expansion area. Increased vessel activity would also 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 both the current and expanded rule making areas. Significant and unavoidable adverse impacts to Tribes and Tribal resources are discussed in depth in Appendix K Tribal Resources Discipline Report.

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

3.5 Alternative D: Removal of Tug Escort Requirements

3.5.1 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.

The reduction in escort tug underway time would result in less air pollutant and greenhouse gas emissions, as well as water discharges, from escort tugs. However, as discussed in Section 3.2 (Alternative A: No Action), existing tug escort requirements are not likely a substantial contributor to air, climate, or water quality issues for populations of color, low-income populations, or Tribal communities. Therefore, Alternative D would not be anticipated to result in a significant improvement to water, air, and climate quality for populations of color, low-income populations, or Tribal communities.

Resulting in less vessel traffic throughout the EIS Study Area, Alternative D would reduce the risks for marine mammal vessel strike risks and disruptions to Tribal fishing rights. Alternative D would also result in less potential for gear loss and impacts to Tribal resources from wakes.

Under Alternative D, the elimination of tug escort requirements would result in a decreased risk of escort tug incidents that could result in an oil spill to marine waters. However, the probability of a target vessel drift grounding would increase by 11.84 percent within the EIS Study Area (relative to Alternative A [No Action]) and by 90.50 percent within the rulemaking area. A target vessel oil spill would pose serious risks for populations of color, low-income populations, and Tribal communities. Impacts would be greatest for communities closest to the

spill. Ecology's trajectory modeling suggests that a target vessel spill would be more likely to affect communities in areas such as Lummi Island, San Juan Island, Anacortes, and Samish Island.

A target vessel spill would cause vast impacts to populations of color, low-income populations, and Tribal communities. Shoreline communities would be exposed to air pollutants as the oil evaporates and/or as a result of the cleanup methods. Additionally, water-based recreational and economic activities would be disrupted as a result of oil disrupting water quality. Tribal communities in particular would be disproportionately impacted by a spill, as it would threaten treaty fishing activities, wildlife species and habitat of cultural significance, and archaeological resources along the EIS Study Area coastline. See the Tribal Resources: Discipline Report (Appendix K) for more on potentially impacted Tribal resources.

Because regulated escort tug 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.

3.5.2 Mitigation Measures

No additional mitigation measures than those included under Alternative A in Section 3.2.2 (Mitigation Measures) have been identified under Alternative D. Target vessels would adhere to required mitigation measures from existing regulations as detailed in the discipline reports listed in Section 3.2.2 (Mitigation Measures). Additionally, target vessels are encouraged to implement the recommended mitigation measures described within those discipline reports.

3.5.3 Significant and Unavoidable Adverse Impacts

Alternative D would result in disproportionate adverse impacts to populations of color, low-income populations, and Tribal communities in the EJ Study Area. Specifically, a target vessel 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. These impacts could include but are not limited to impacts to boat launches, fishing access points, human health, physical safety, safe consumption of harvested seafood, and damage to fishing equipment, if an oil spill occurred. Additionally, impacts to water quality from a target vessel oil spill would directly and adversely affect recreational, economic, and subsistence activities for populations of color, low-income populations, and Tribal communities.

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Attachment A: Maps of Communities with Potential Environmental Justice Concerns

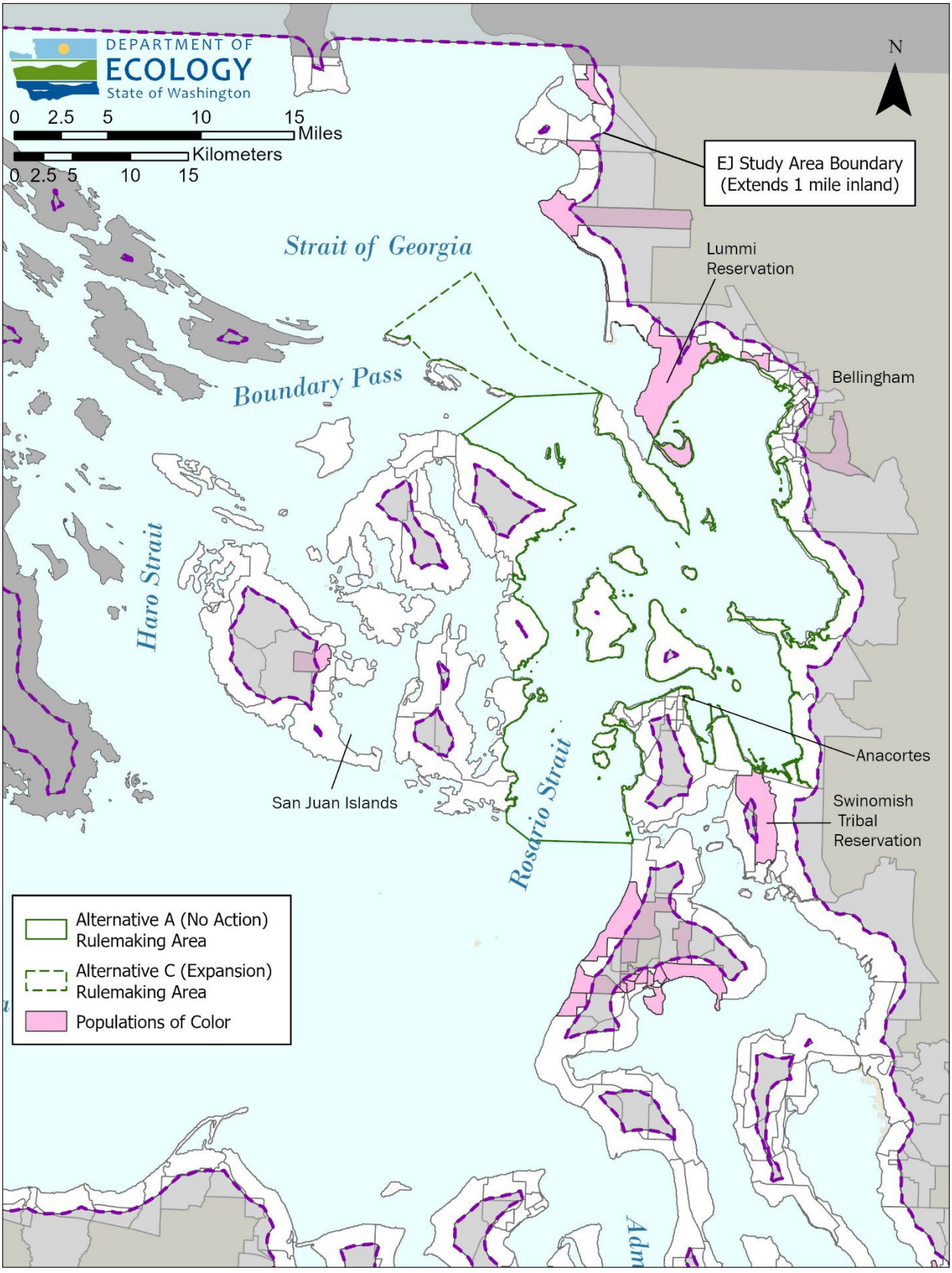

Figure A1. Populations of color in the EJ Study Area (Map 1 of 4 - North).

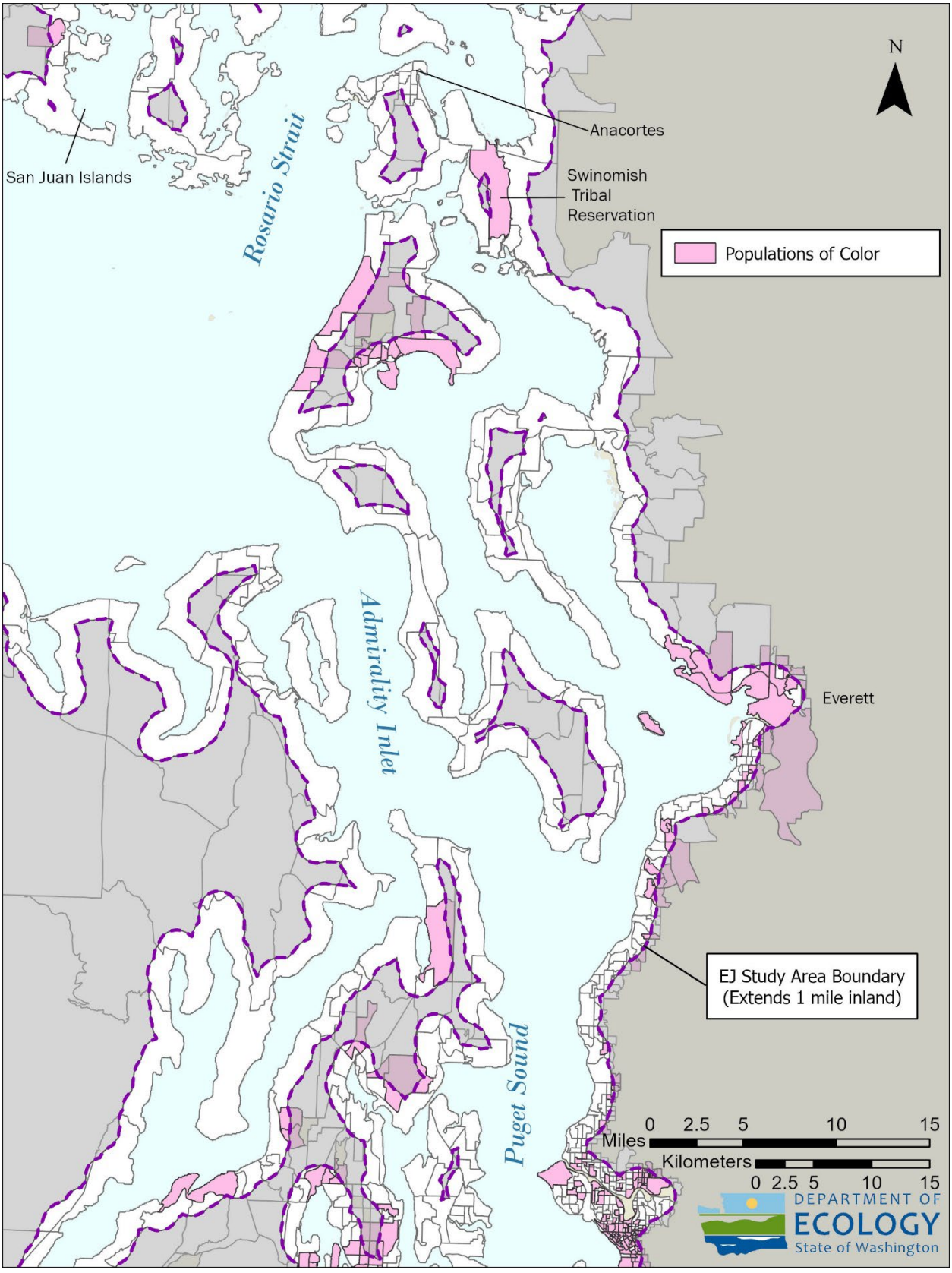

Figure A2. Populations of color in the EJ Study Area (Map 2 of 4 - East).

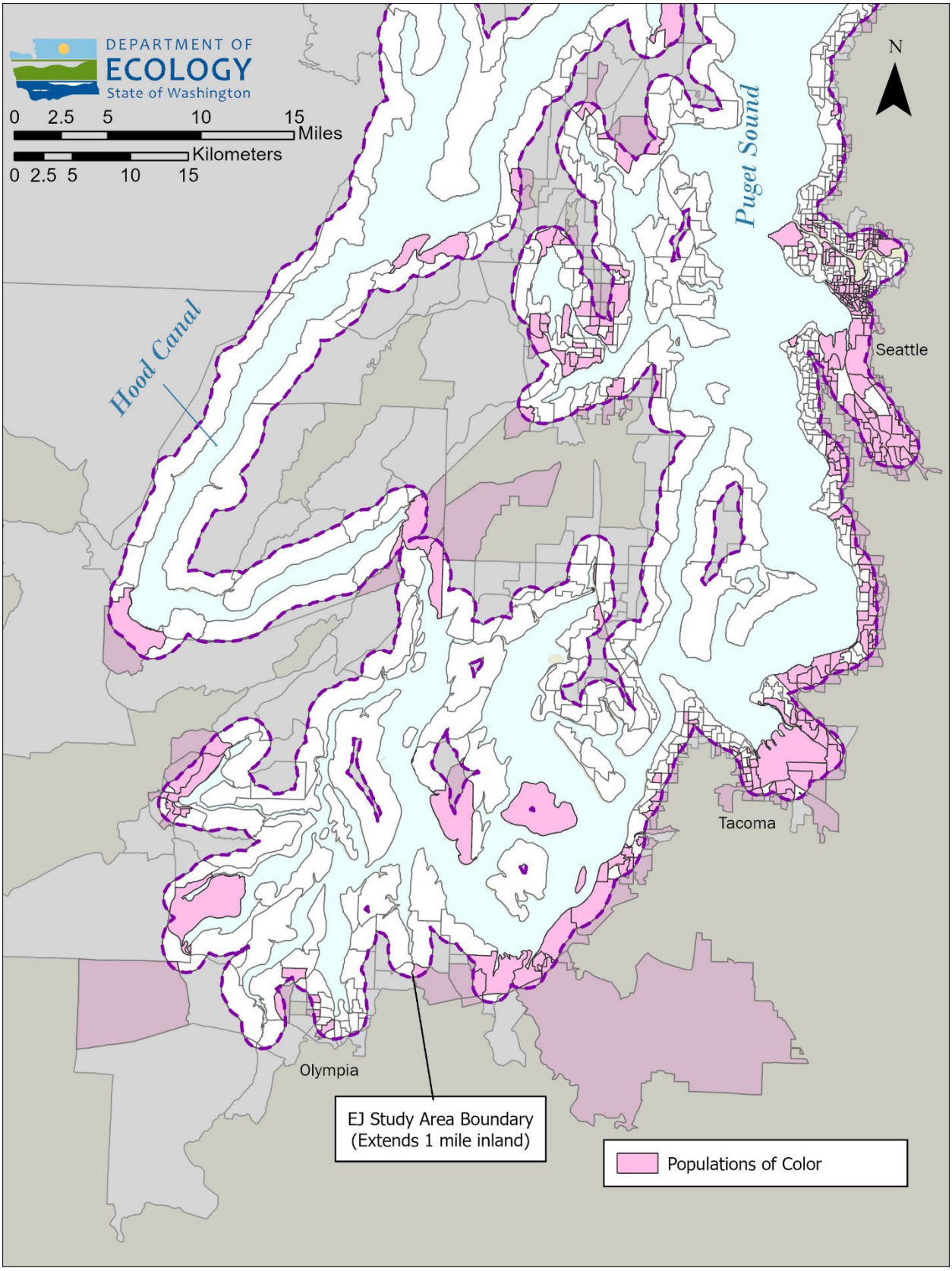

Figure A3. Populations of color in the EJ Study Area (Map 3 of 4 - South).

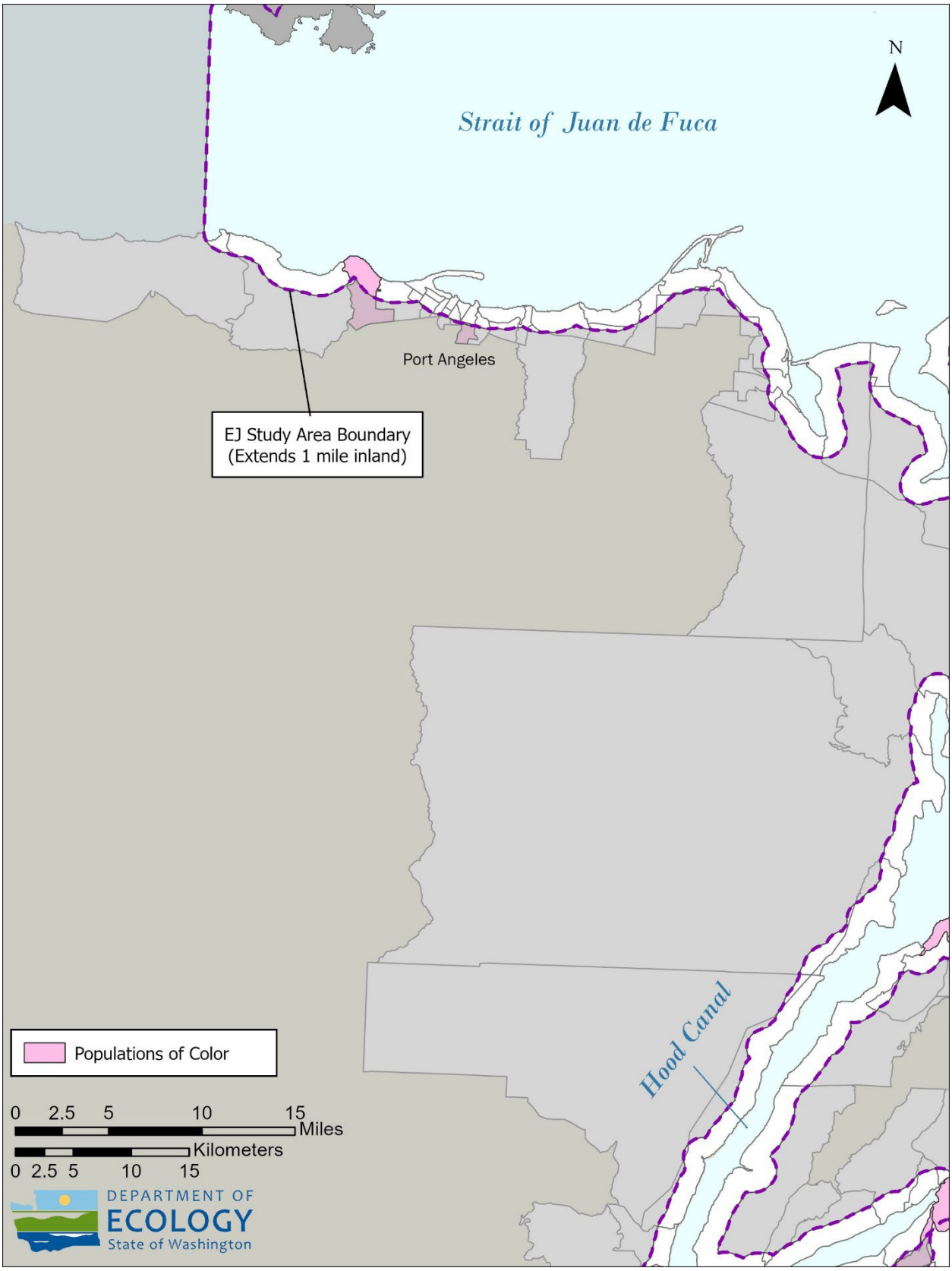

Figure A4. Populations of color in the EJ Study Area (Map 4 of 4 - West).

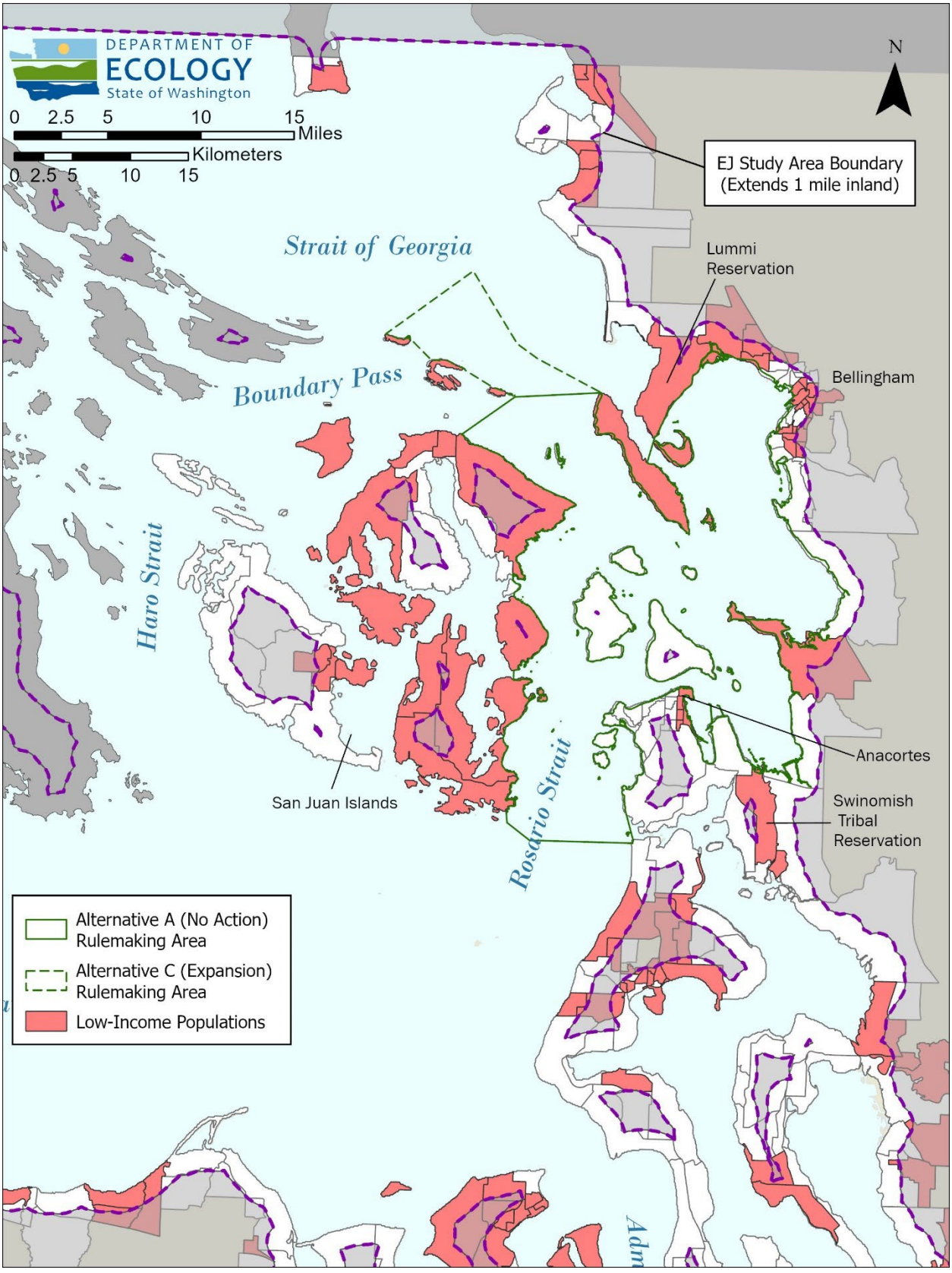

Figure A5. Low-income populations in the EJ Study Area (Map 1 of 4 - North).

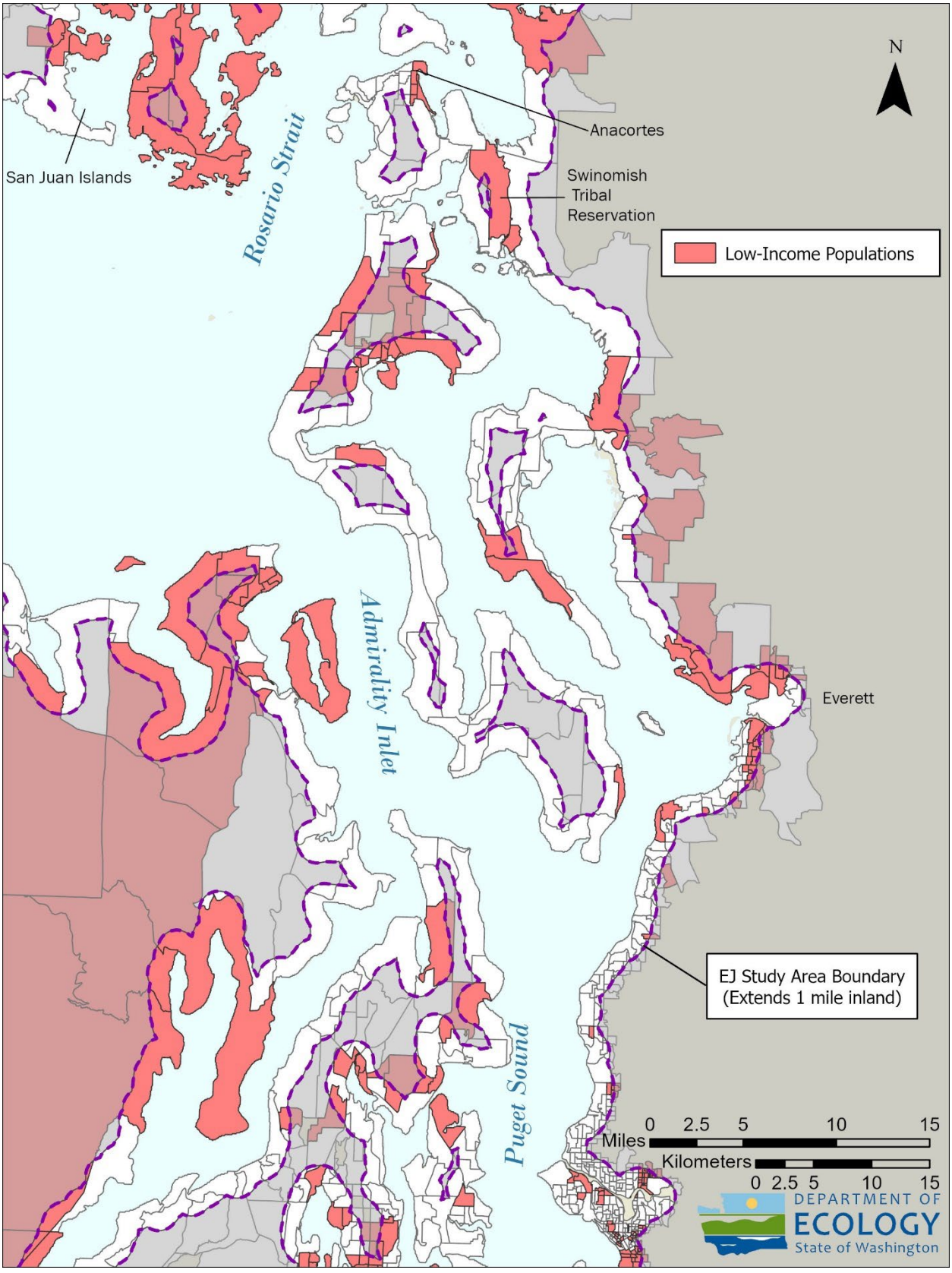

Figure A6. Low-income populations in the EJ Study Area (Map 2 of 4 - East).

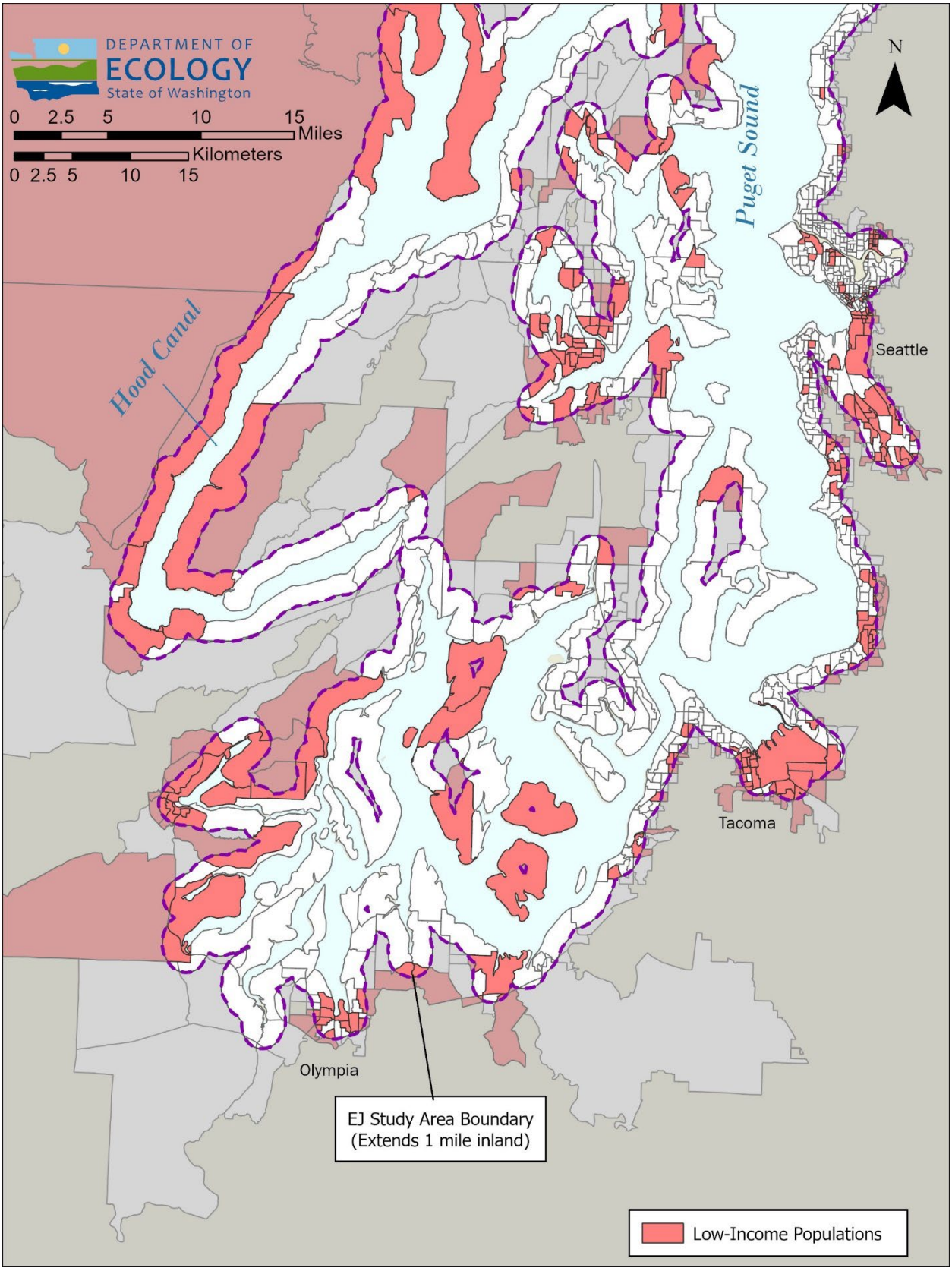

Figure A7. Low-income populations in the EJ Study Area (Map 3 of 4 - South).

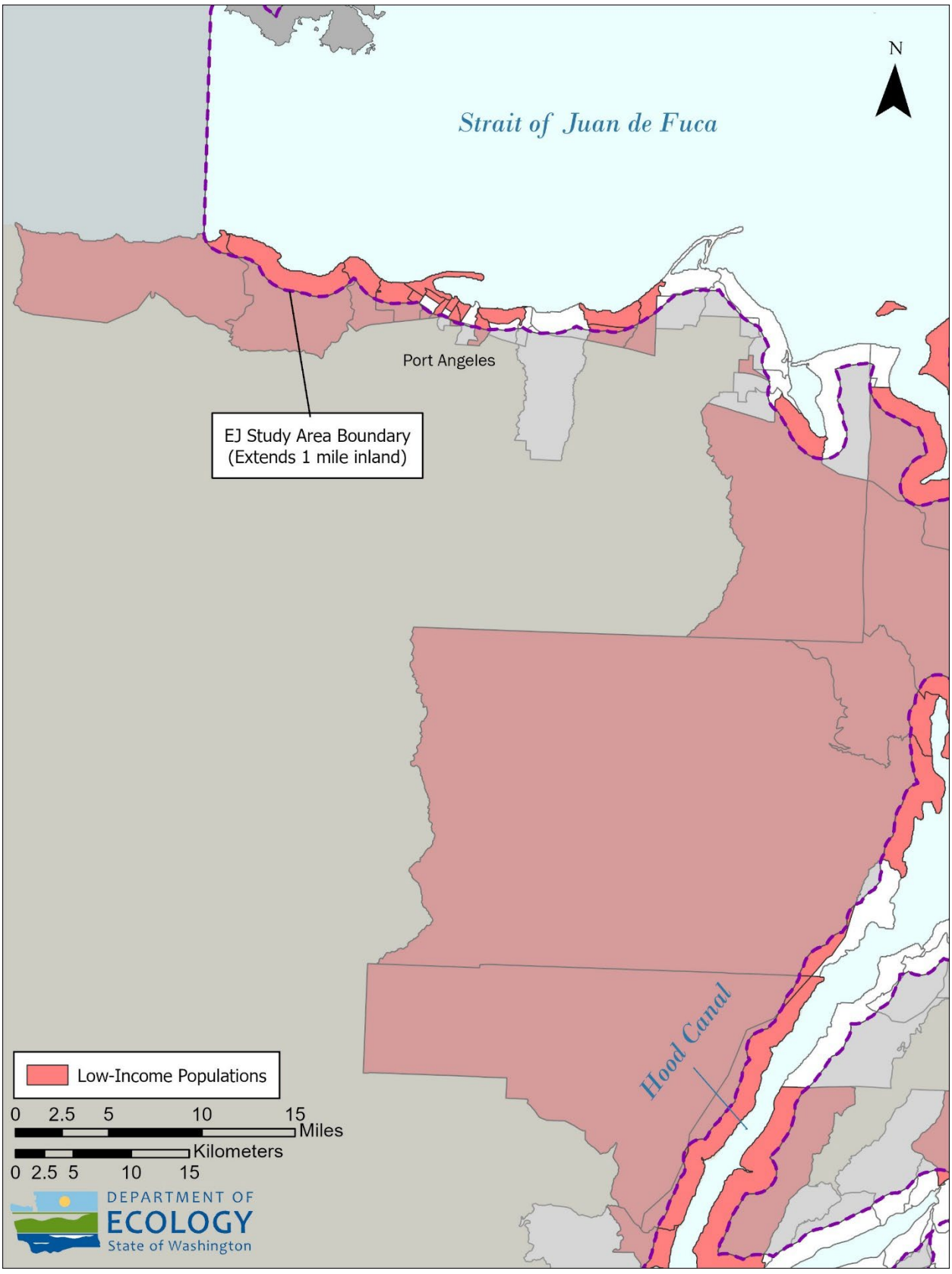

Figure A8. Low-income populations in the EJ Study Area (Map 4 of 4 - West).

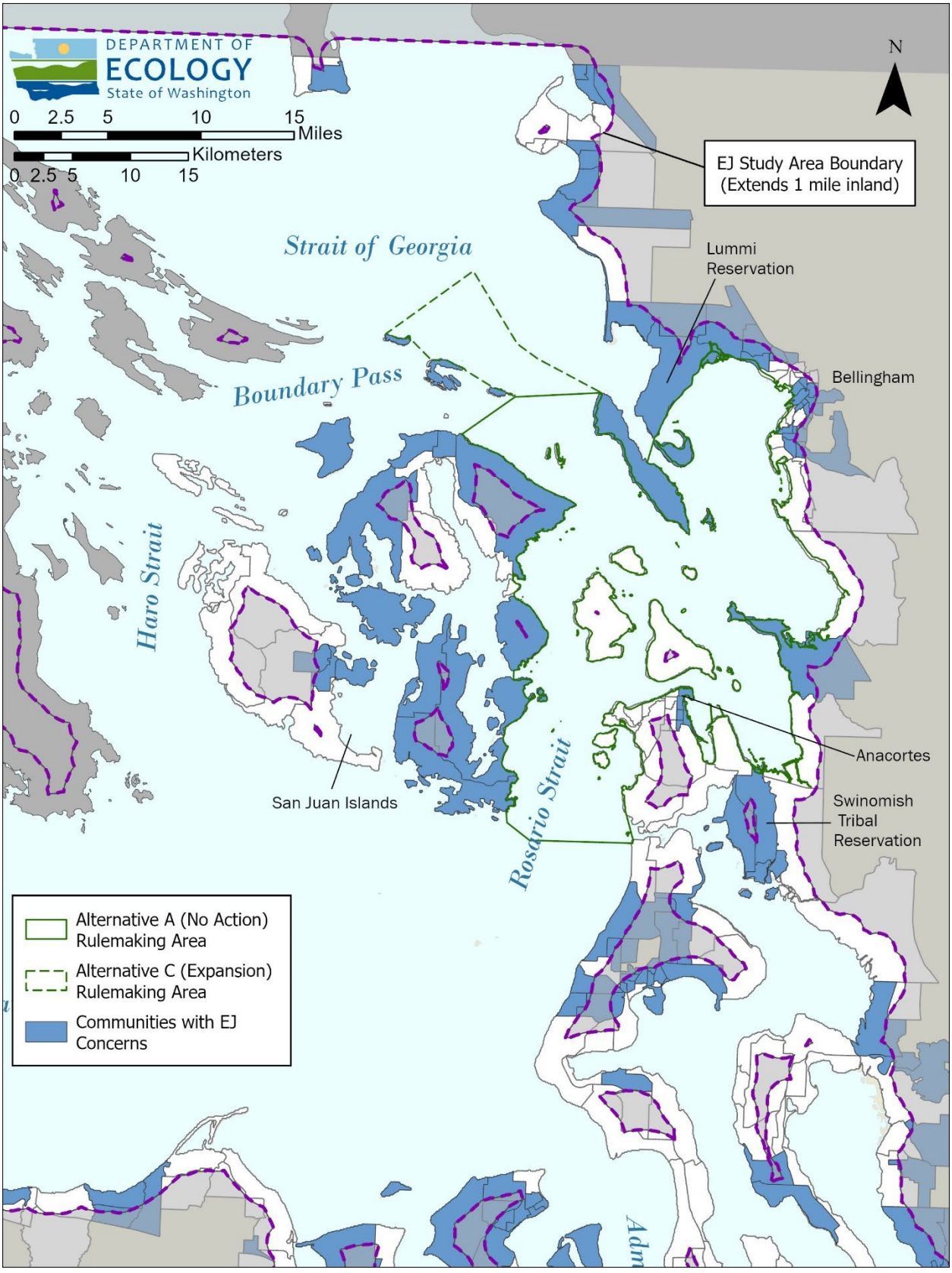

Figure A9. Communities with EJ concerns in the EJ Study Area (Map 1 of 4 - North).

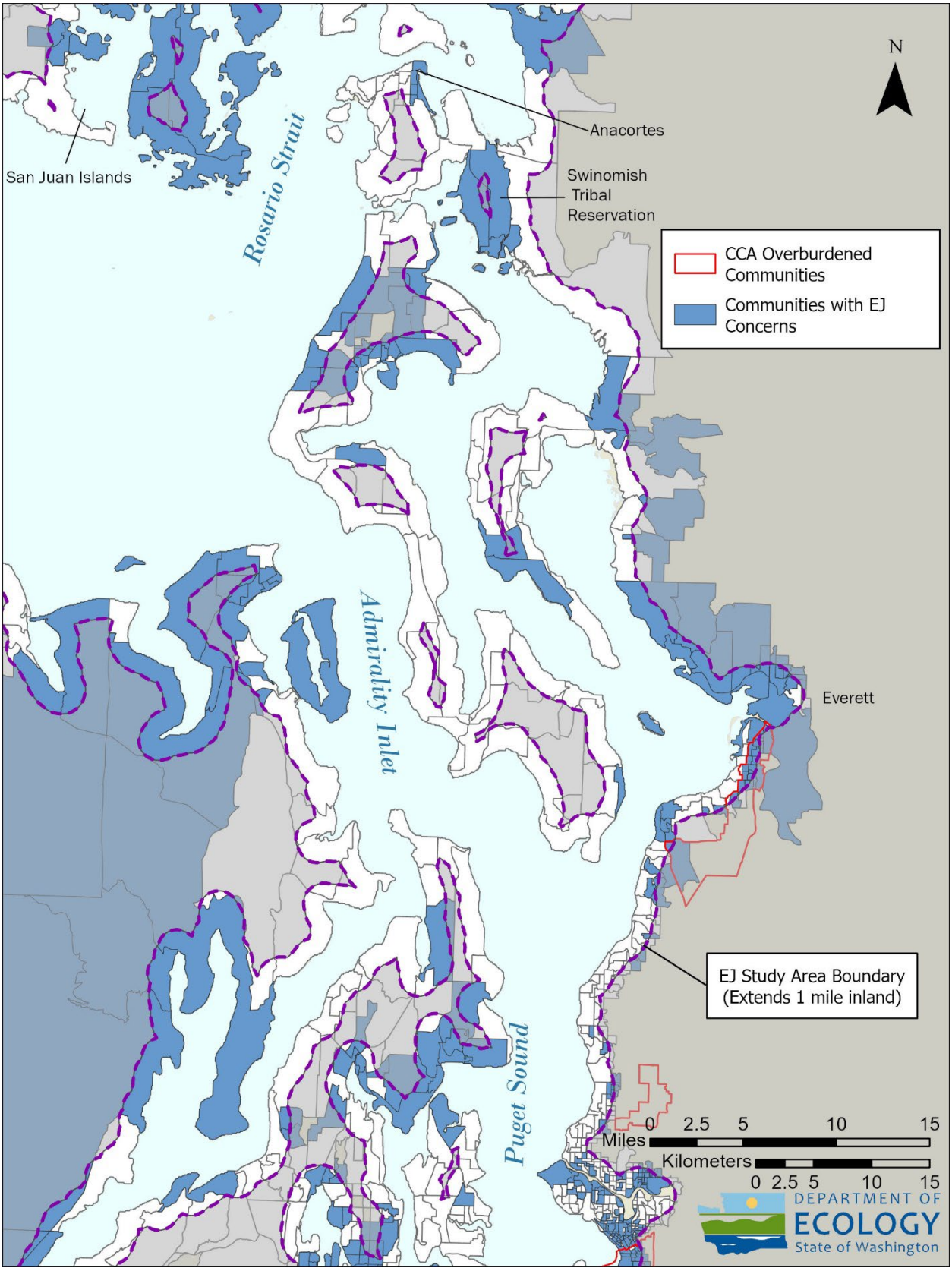

Figure A10. Communities with EJ concerns in the EJ Study Area (Map 2 of 4 - East).

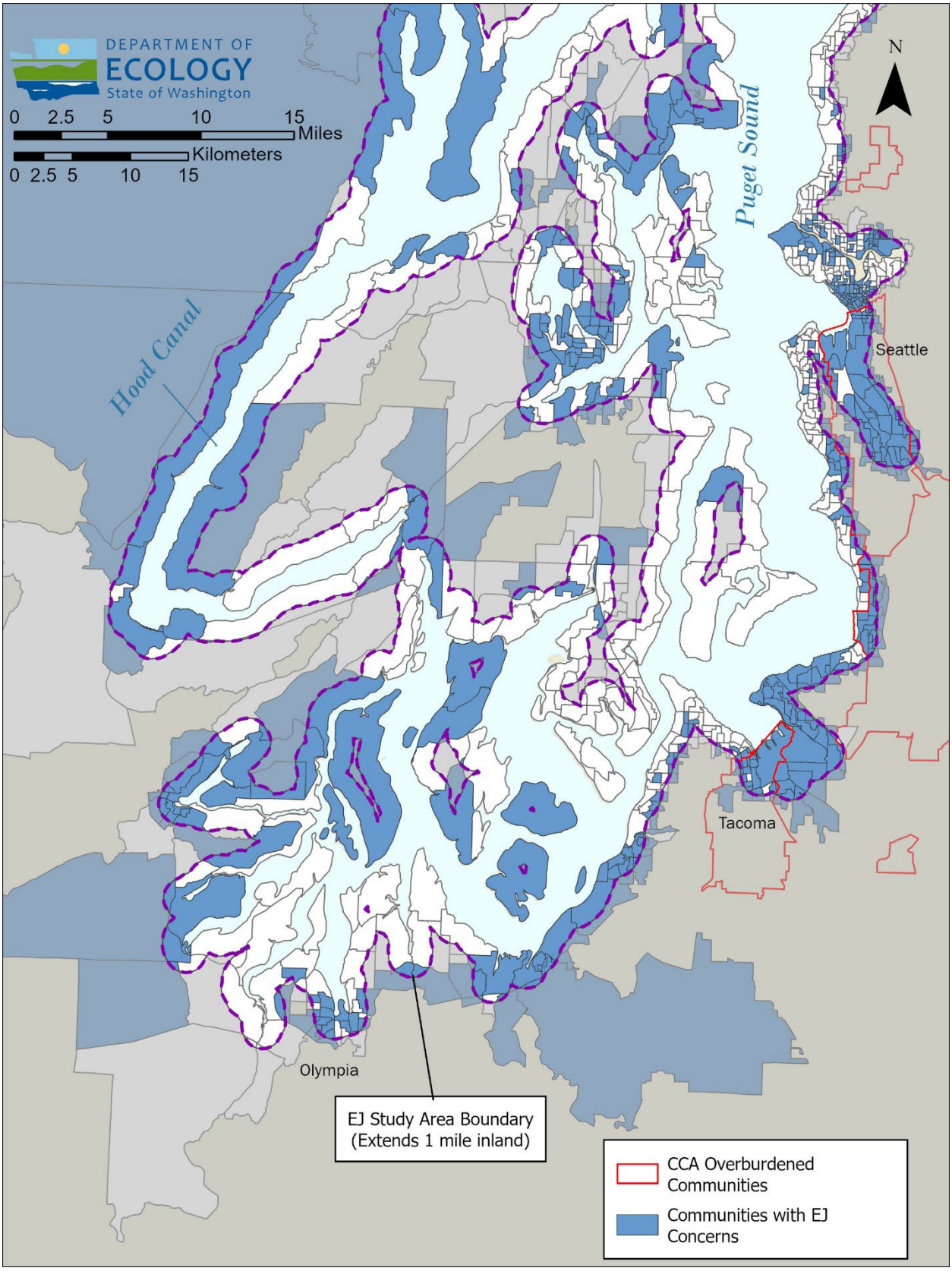

Figure A11. Communities with EJ concerns in the EJ Study Area (Map 3 of 4 - South).

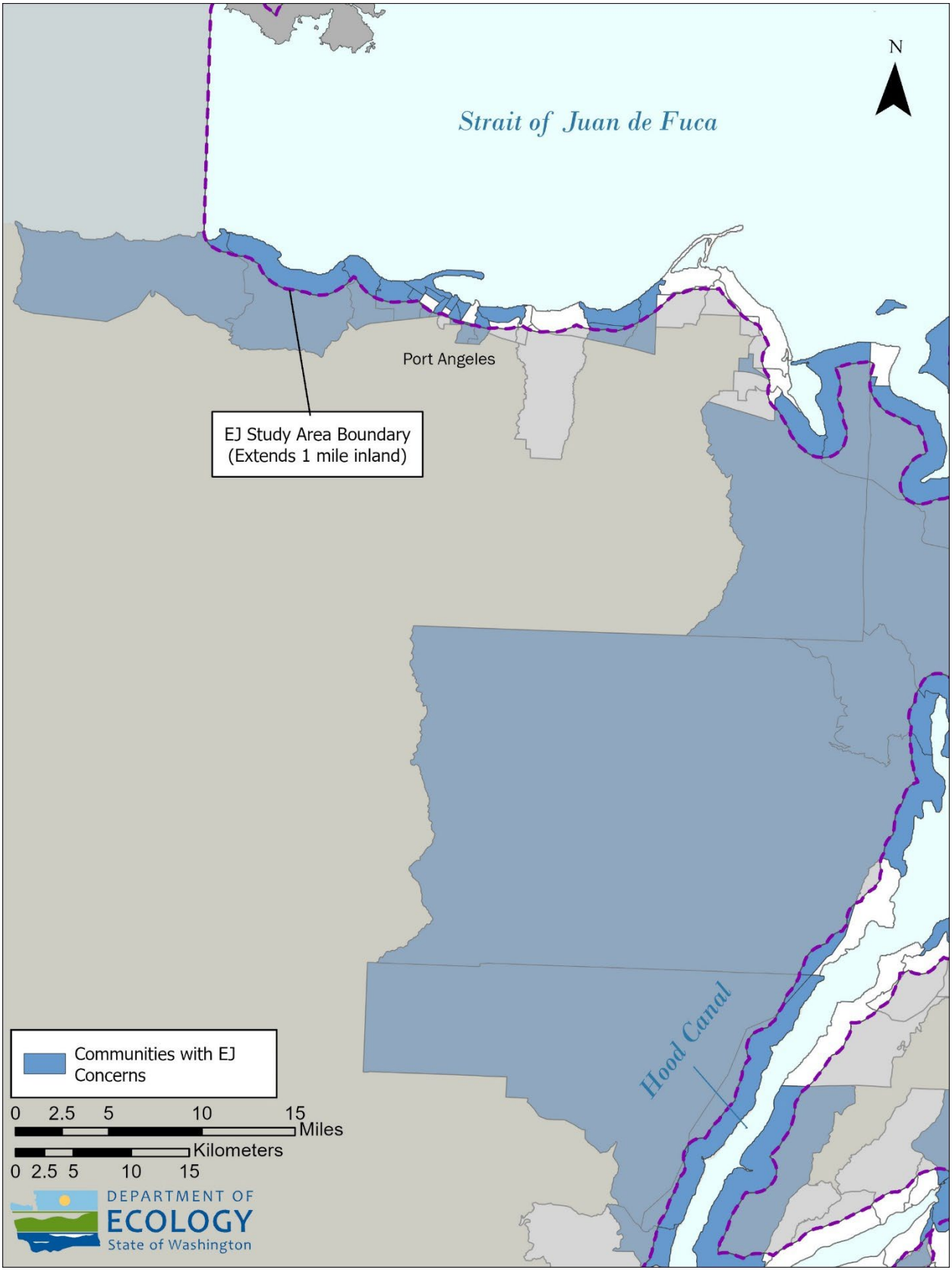

Figure A12. Communities with EJ concerns in the EJ Study Area (Map 4 of 4 - West).

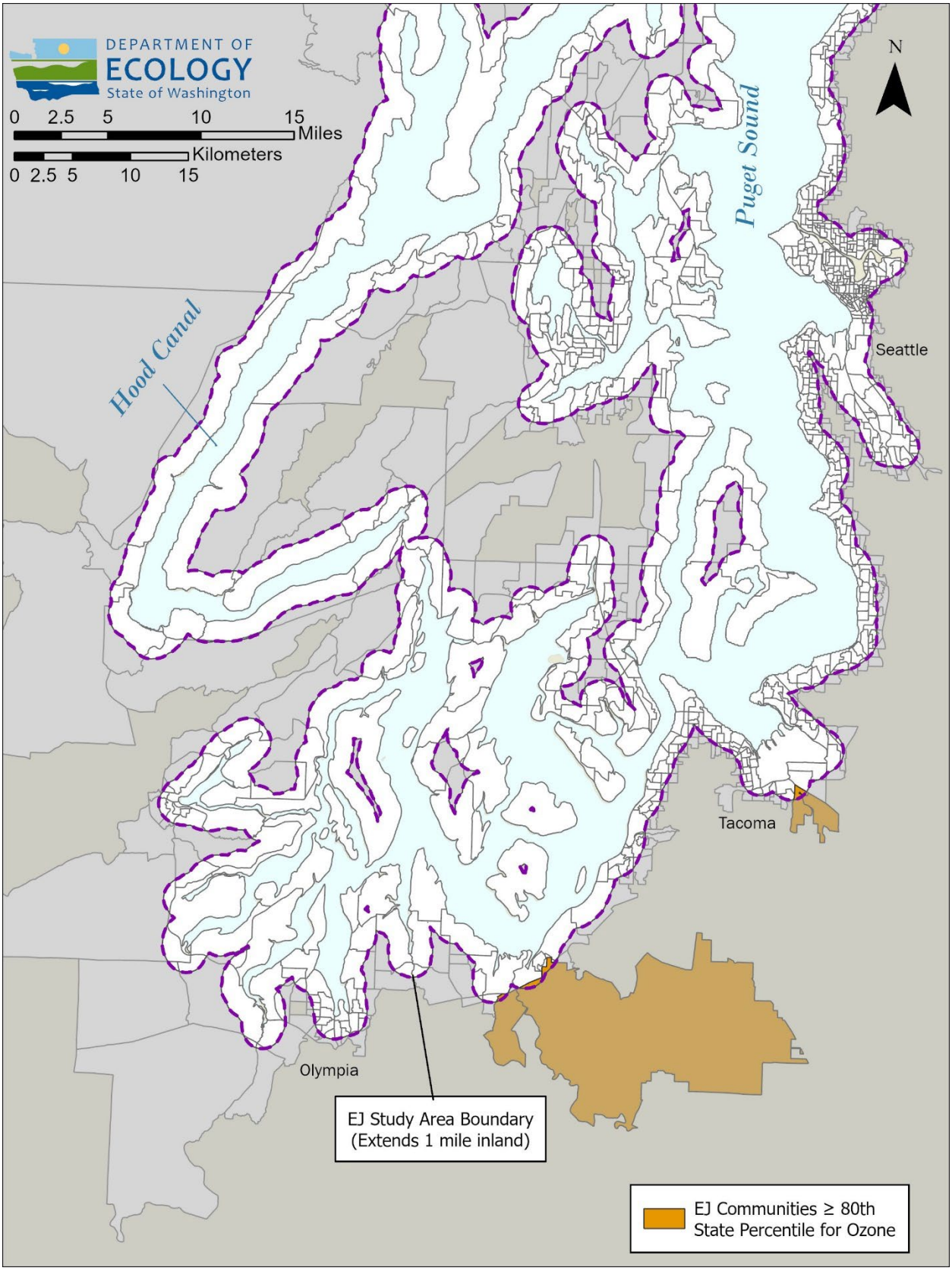

Figure A13. EJ communities ≥ the 80th percentile in the state for ozone in the EJ Study Area.

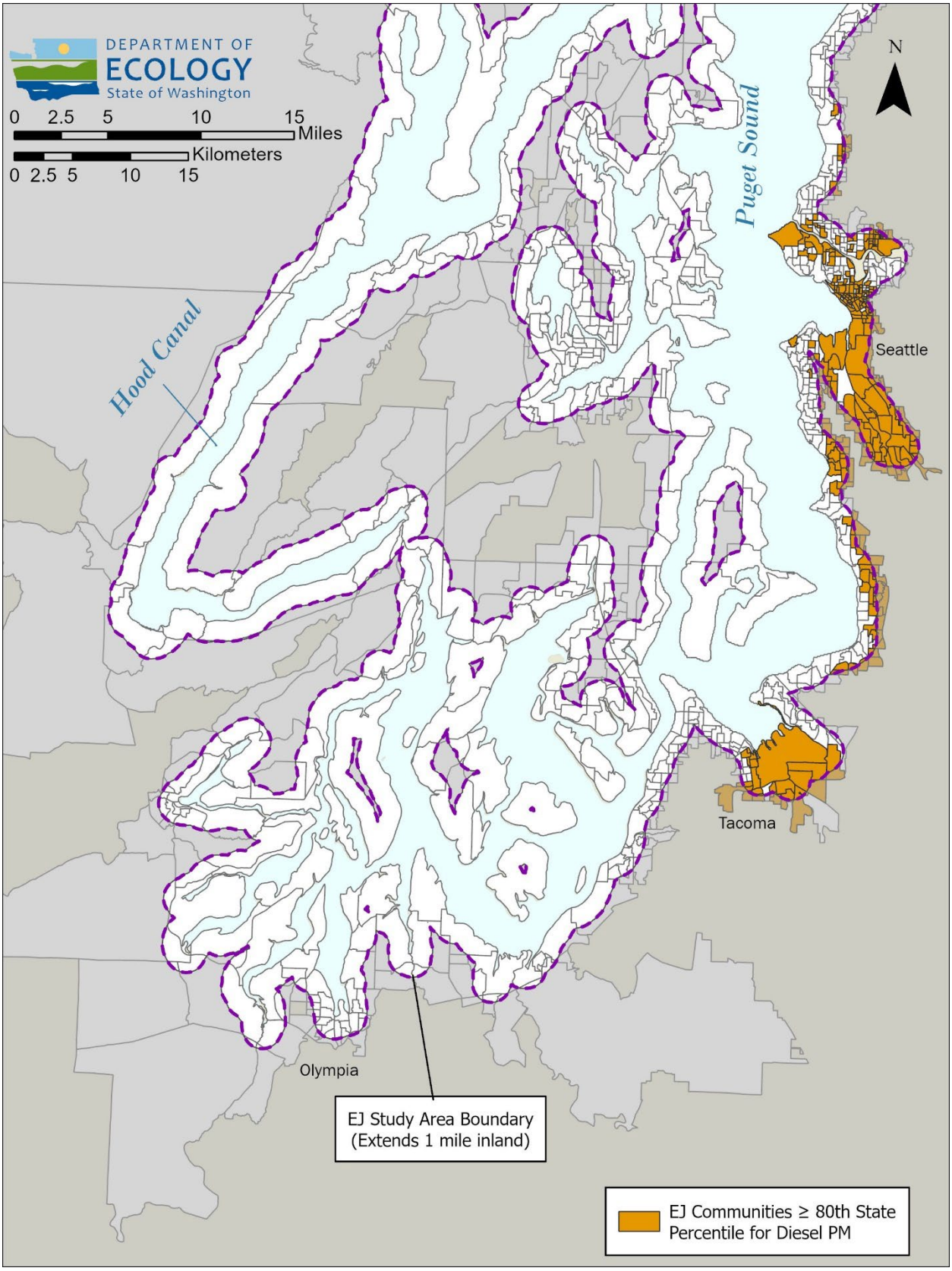

Figure A14. EJ communities ≥ the 80th percentile in the state for diesel PM in the EJ Study Area.

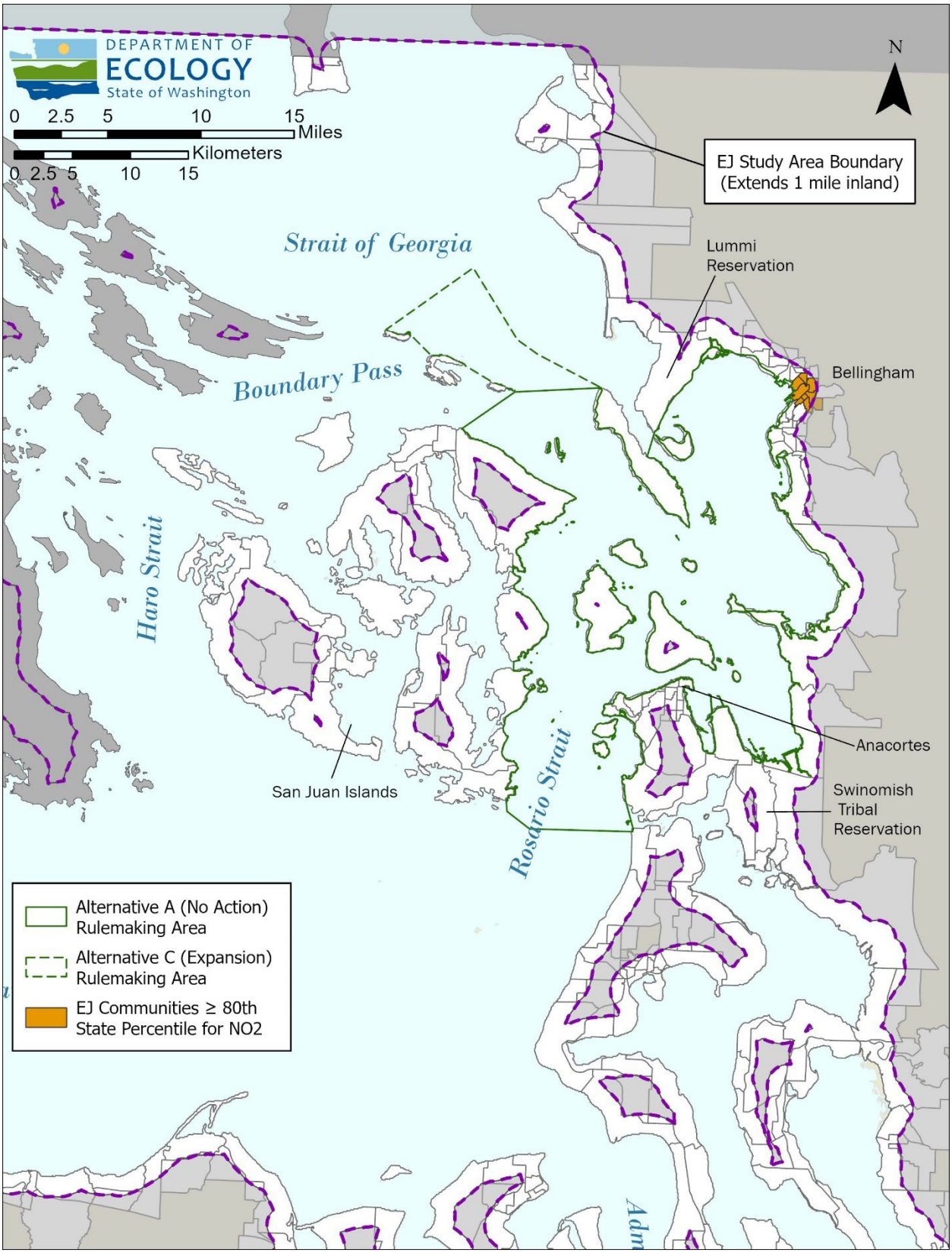

Figure A15. EJ communities ≥ the 80th percentile in the state for NO_2 in the EJ Study Area (Map 1 of 3 - North).

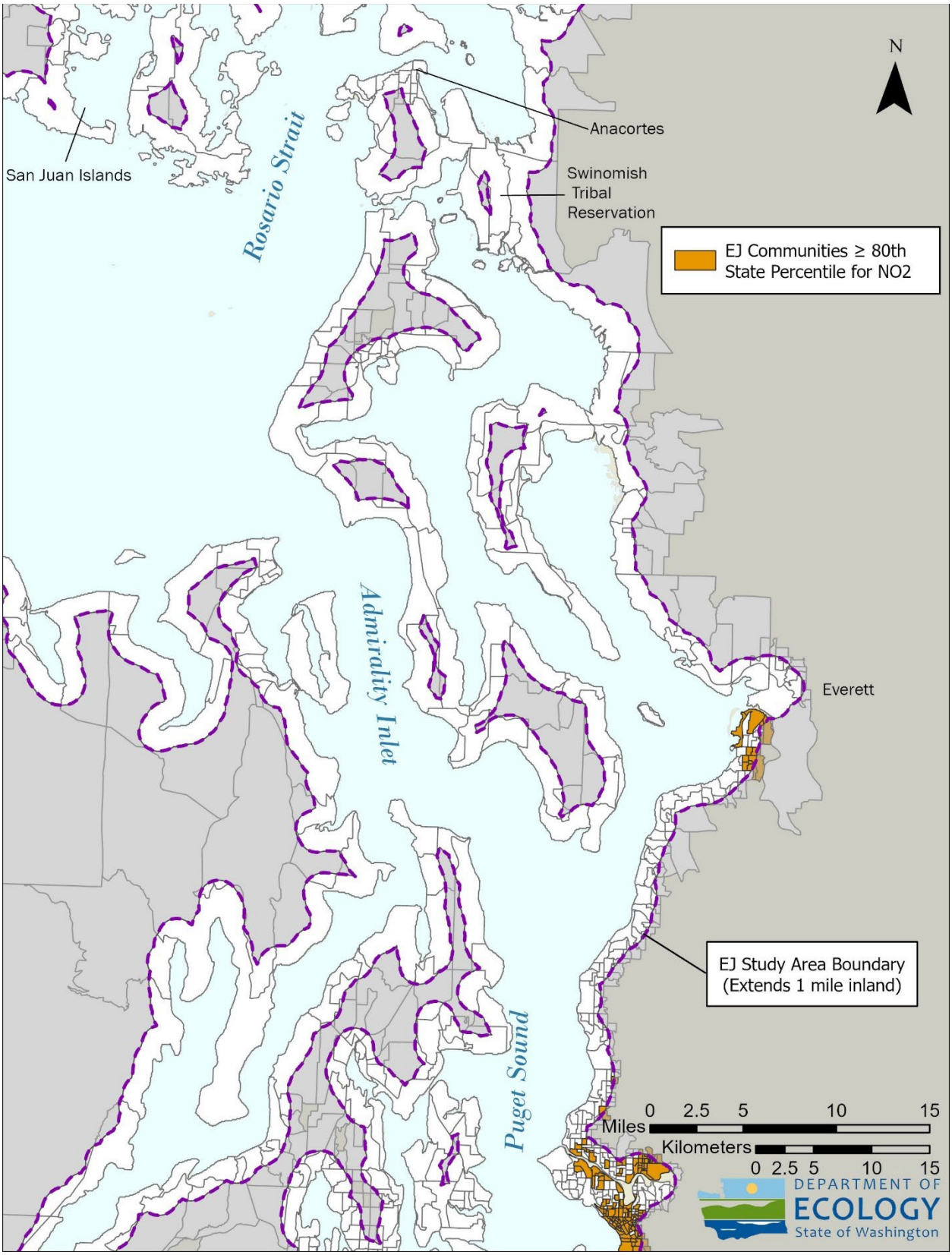

Figure A16. EJ communities ≥ the 80th percentile in the state for NO_2 in the EJ Study Area (Map 2 of 3 - East).

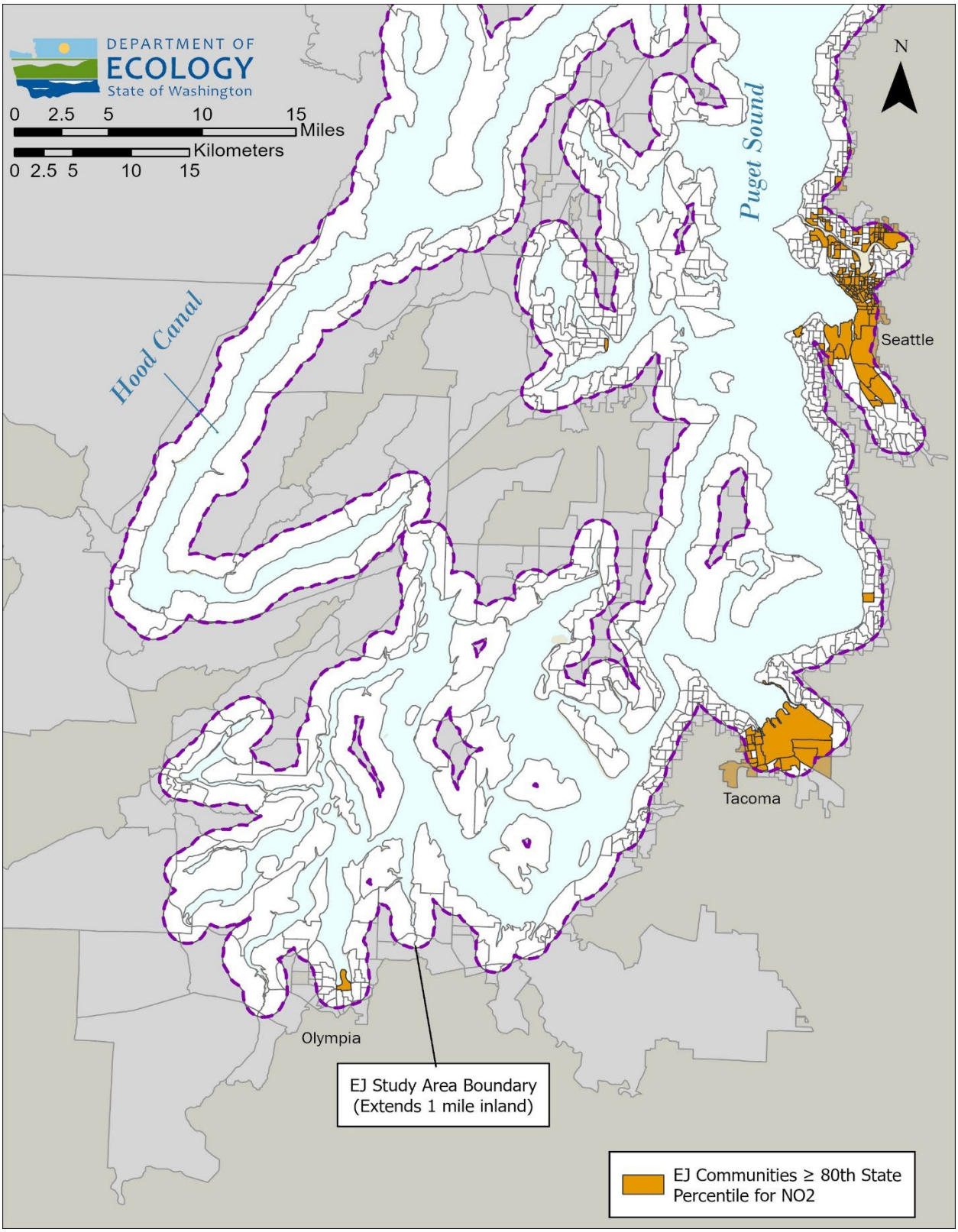

Figure A17. EJ communities ≥ the 80th percentile in the state for NO_2 in the EJ Study Area (Map 3 of 3 - South).

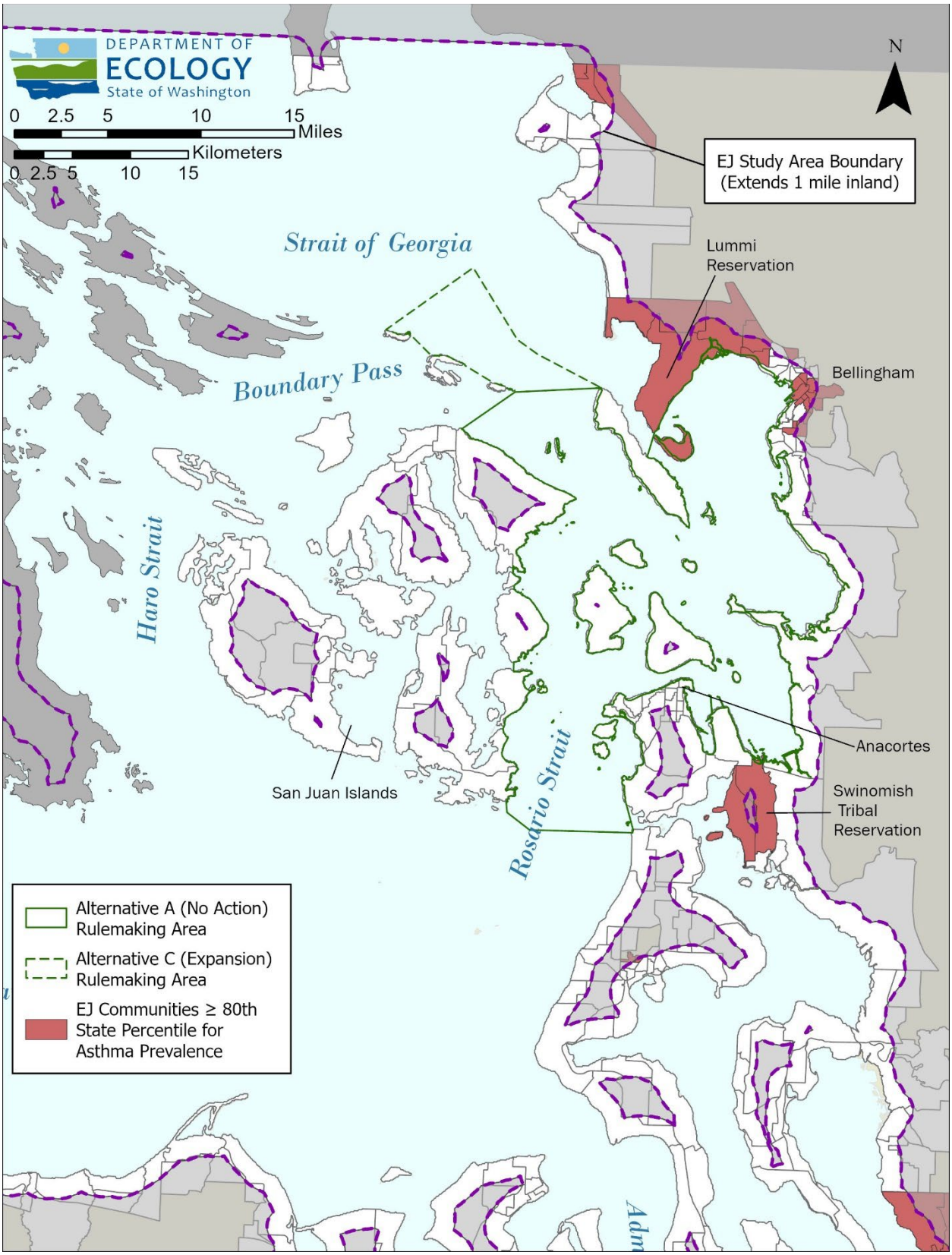

Figure A18. EJ communities ≥ the 80th percentile in the state for asthma prevalence in adults in the EJ Study Area (Map 1 of 4 - North)

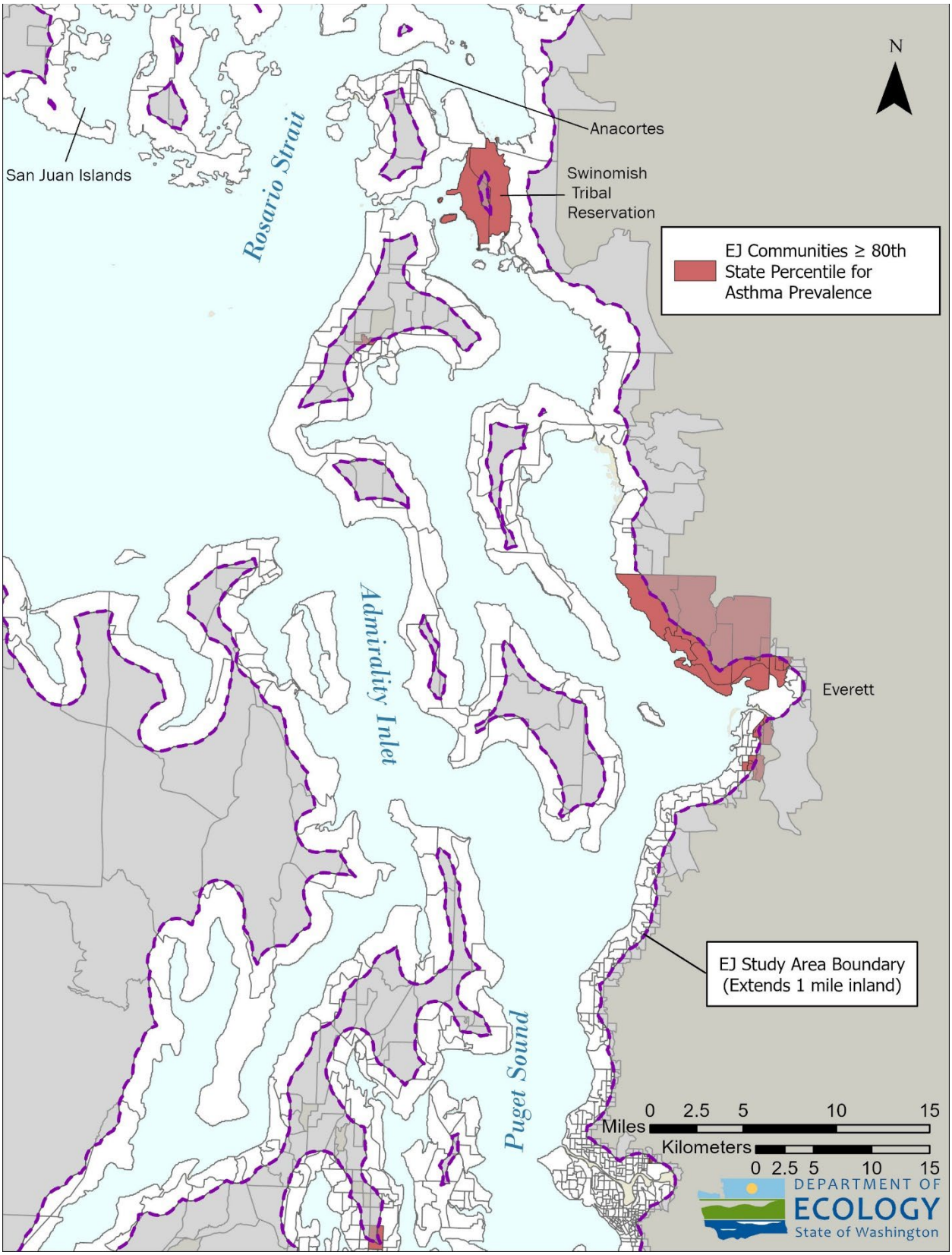

Figure A19. EJ communities ≥ the 80th percentile in the state for asthma prevalence in adults in the EJ Study Area (Map 2 of 4 - East)

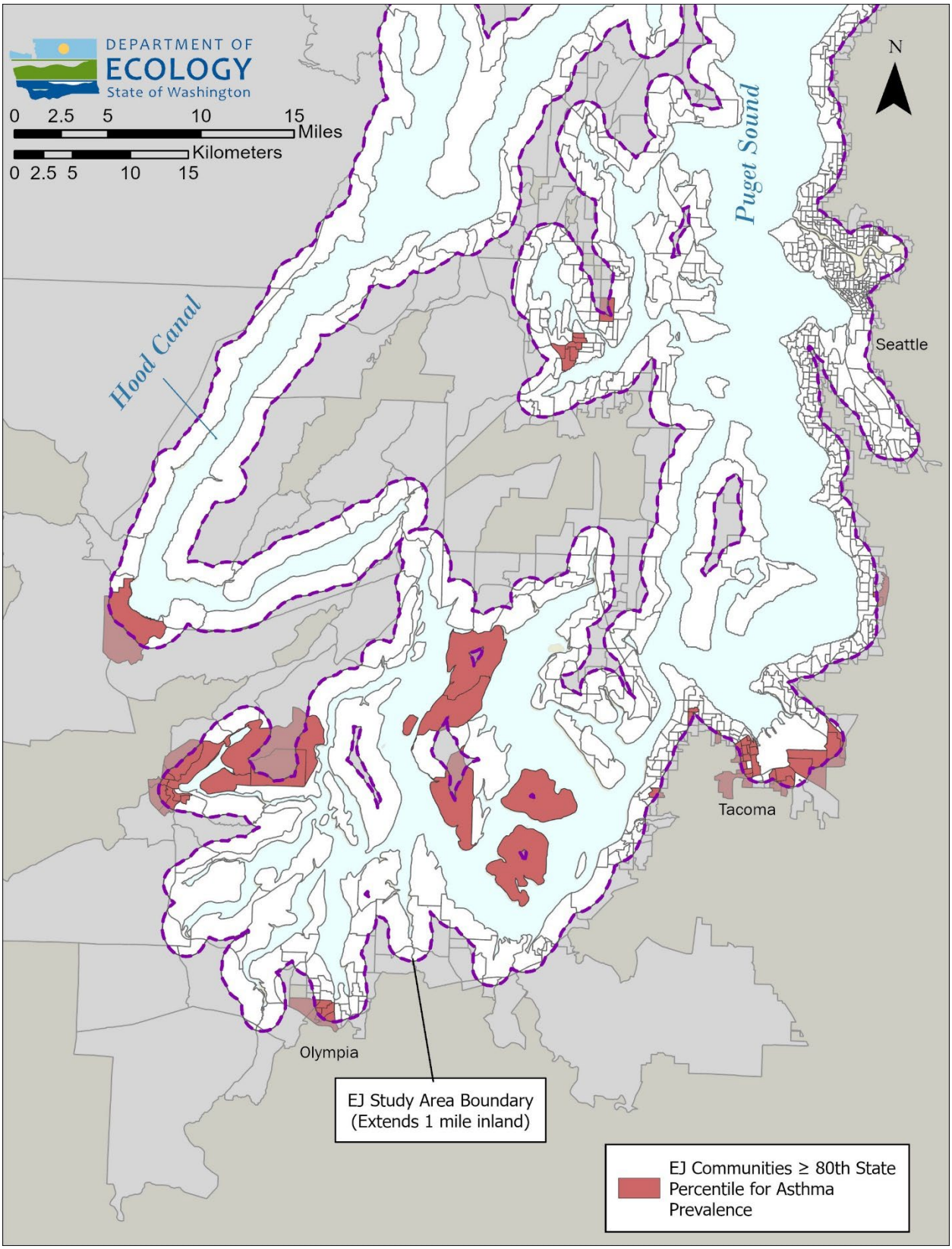

Figure A20. EJ communities ≥ the 80th percentile in the state for asthma prevalence in adults in the EJ Study Area (Map 3 of 4 - South)

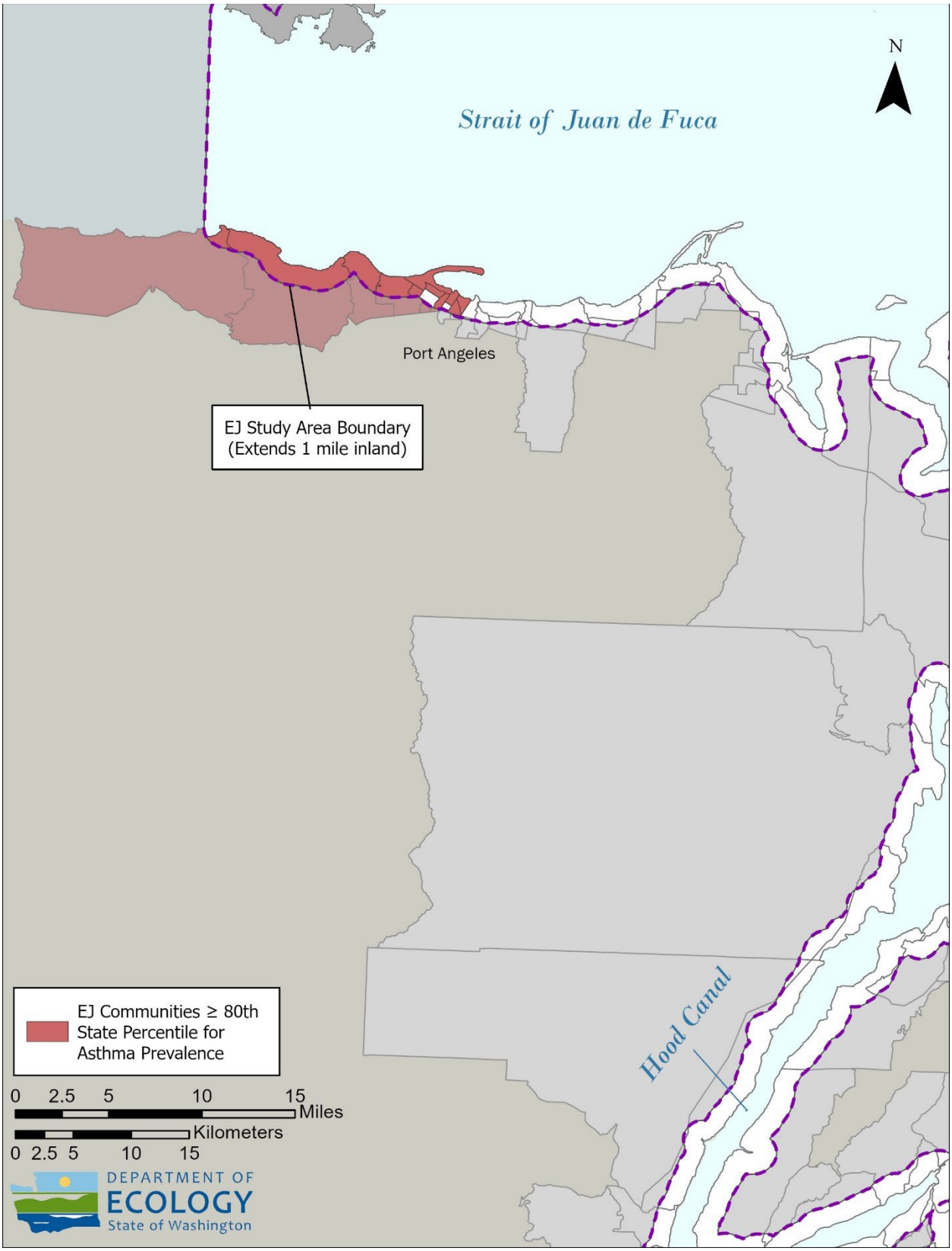

Figure A21. EJ communities ≥ the 80th percentile in the state for asthma prevalence in adults in the EJ Study Area (Map 4 of 4 - West)

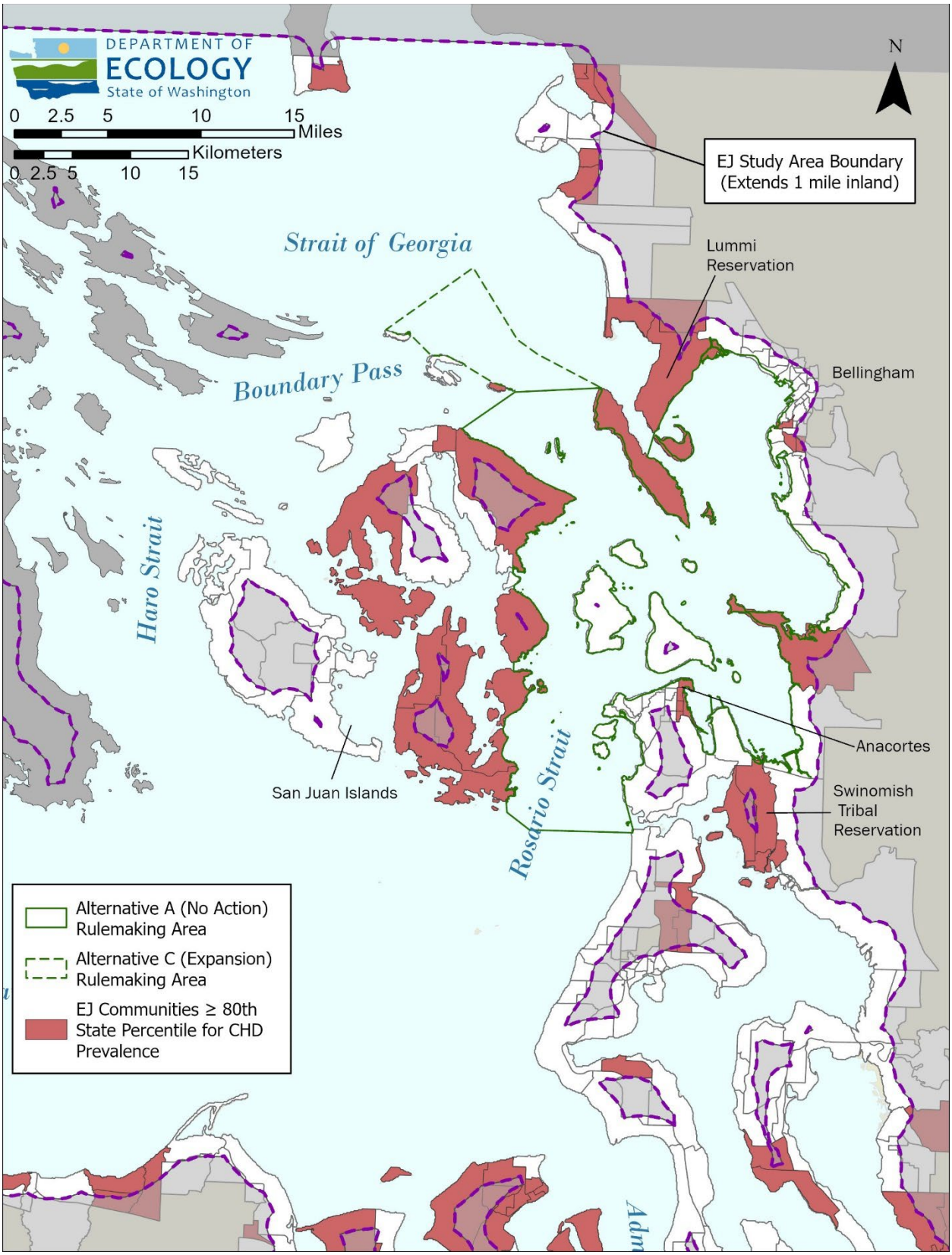

Figure A22. EJ communities ≥ the 80th percentile in the state for chronic heart disease prevalence in the EJ Study Area (Map 1 of 4 - North)

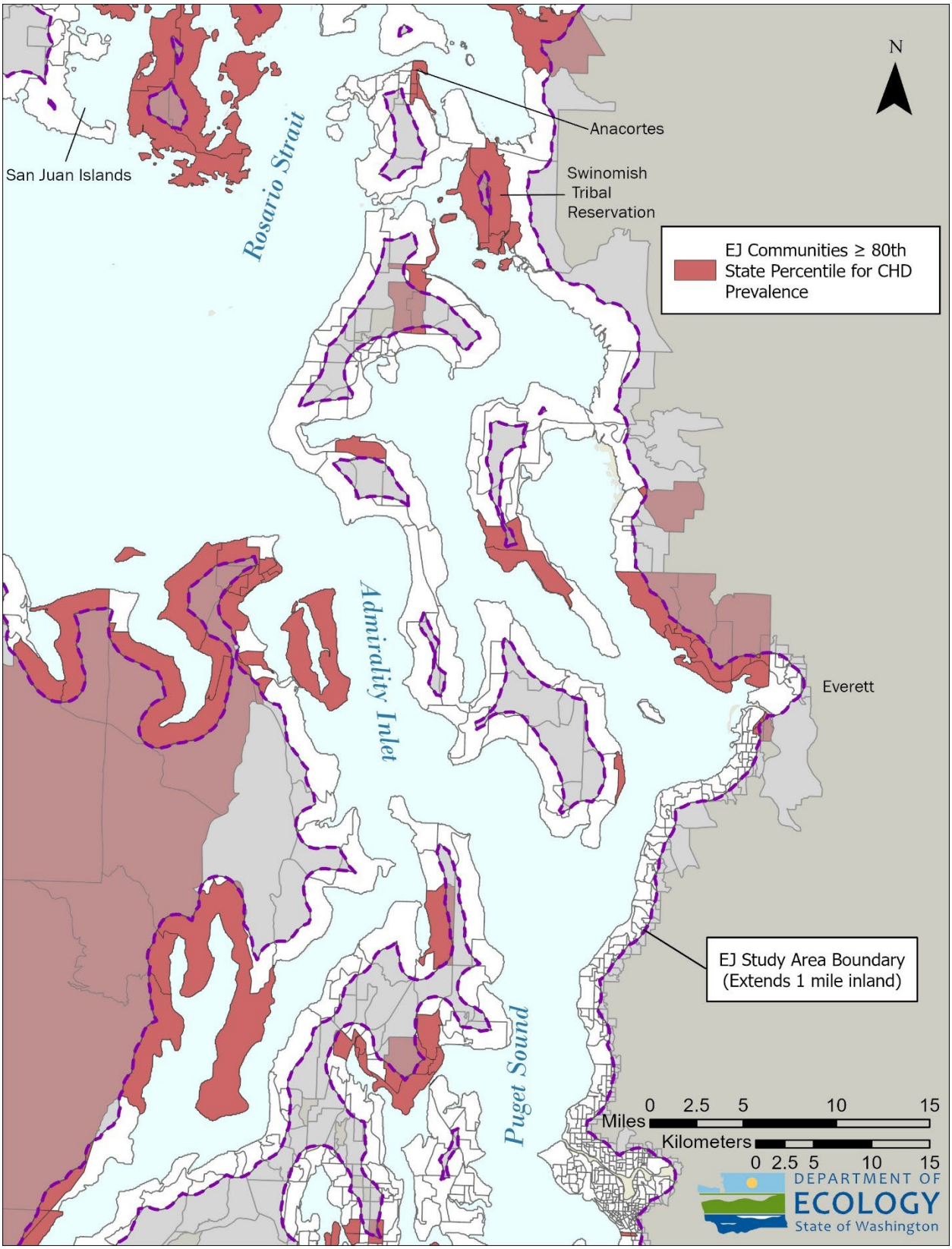

Figure A23. EJ communities ≥ the 80th percentile in the state for chronic heart disease prevalence in the EJ Study Area (Map 2 of 4 - East)

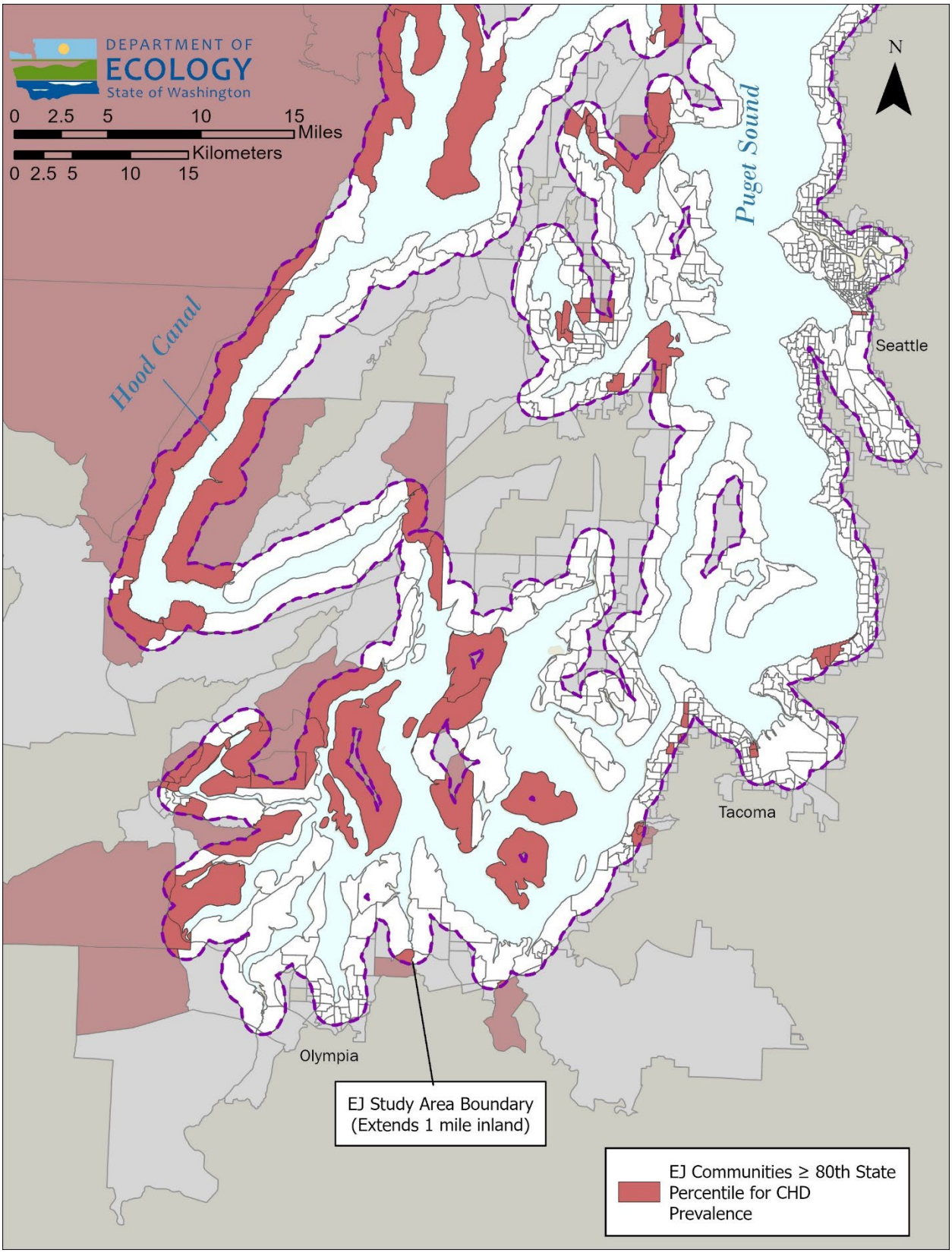

Figure A24. EJ communities ≥ the 80th percentile in the state for chronic heart disease prevalence in the EJ Study Area (Map 3 of 4 - South)

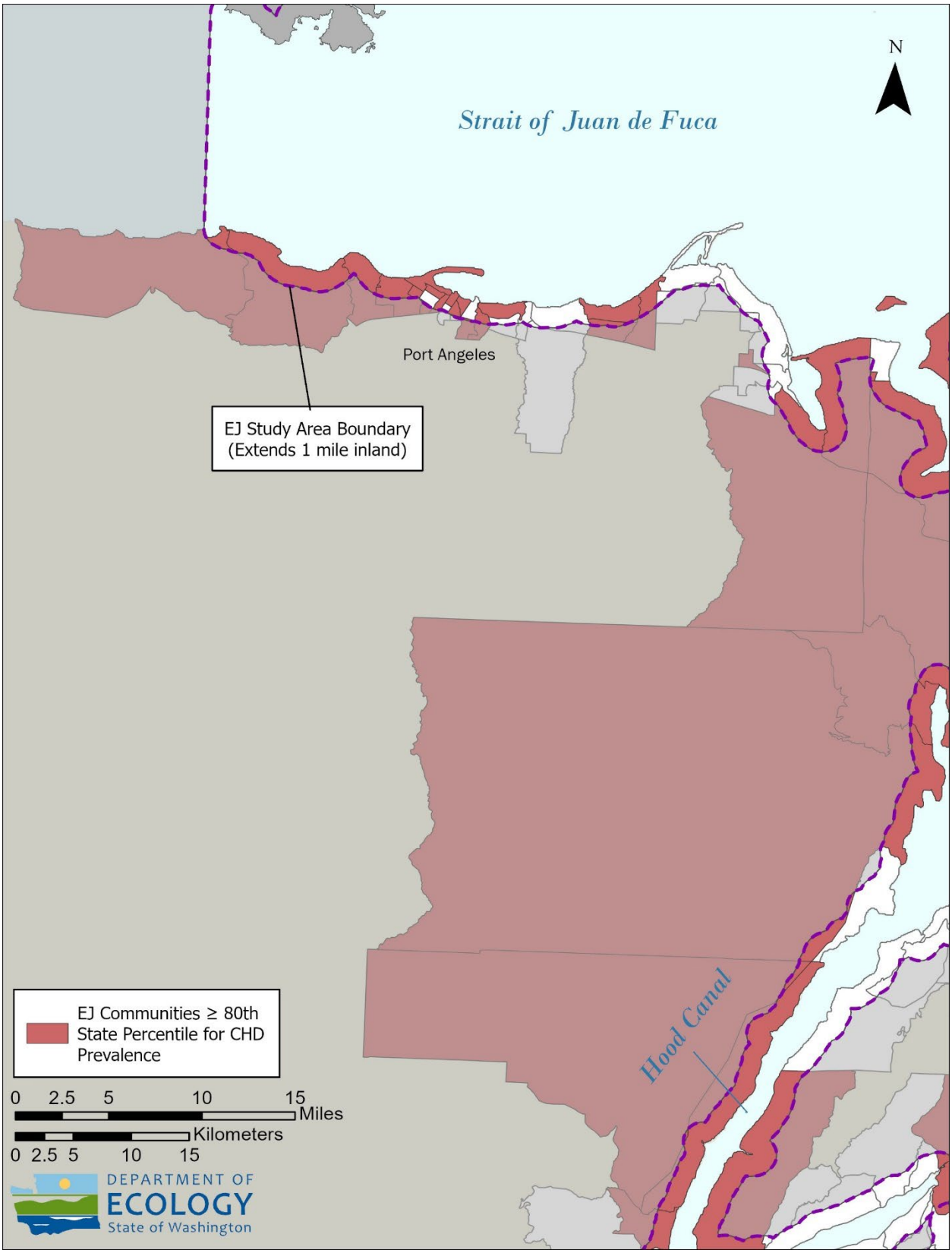

Figure A25. EJ communities ≥ the 80th percentile in the state for chronic heart disease prevalence in the EJ Study Area (Map 4 of 4 - West)