Healthy Beaches for People and Fish:

Protecting shorelines from the impacts of armoring today and rising seas tomorrow

Addressing Sea Level Rise and Cumulative Ecological Impacts in San Juan County, Washington

Through Improved Implementation and Effective Amendment of Local, State, and Federal Laws

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FRIENDS OF THE SAN JUANS

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Healthy Beaches for People and Fish

The goal of the *Healthy Beaches for People and Fish*: *Protecting shorelines from the impacts of armoring today and rising seas tomorrow* project is to improve the long-term protection of nearshore marine ecosystems by developing new technical tools and identifying management strategies that specifically address sea level rise and the cumulative impacts of shoreline armoring.

The *Healthy Beaches for People and Fish* project was completed by Friends of the San Juans in partnership with Coastal Geologic Services, Salish Sea Biological and the Washington Department of Fish and Wildlife in 2014. Project approach and work was guided by a technical advisory group, which included representatives from The University of Washington, United States Geological Survey, Puget Sound Partnership, Skagit River Systems Cooperative, Samish Indian Nation, San Juan County Public Works, San Juan County Salmon Recovery Lead Entity, The Tulalip Tribes, Padilla Bay National Estuarine Research Reserve and the Washington State Departments of Ecology, Natural Resources and Fish and Wildlife.

The project contained four distinct areas that informed management recommendations:

- A legal review of existing local, state and federal shoreline regulations and their ability to address sea level rise and cumulative impacts;
- Sea level rise vulnerability assessment for San Juan County;
- Forage fish spawning habitat research; and
- Surveys of coastal managers, regulators and researchers.

Reports and data products associated with this project can be found online at www.sanjuans.org/NearshoreStudies.htm and include:

Friends of the San Juans. 2014. Healthy Beaches for People and Fish: Protecting shorelines from the impacts of armoring today and rising seas tomorrow. Final Report to WDFW and the U.S. EPA. Friday Harbor, Washington.

Loring, K. 2013. Addressing Sea Level Rise and Cumulative Ecological Impacts in San Juan County Washington Through Improved Implementation and Effective Amendment of Local, State, and Federal Laws. Friends of the San Juans. Friday Harbor, Washington.

MacLennan, A., J. Waggoner and J. Johannessen. 2013. Sea Level Rise Vulnerability Assessment for San Juan County, Washington. Prepared by Coastal Geologic Services for Friends of the San Juans.

Whitman, T., D. Penttila, K. Krueger, P. Dionne, K. Pierce, Jr. and T. Quinn. 2014. Tidal elevation of surf smelt spawn habitat study for San Juan County Washington. Friends of the San Juans, Salish Sea Biological and Washington Department of Fish and Wildlife.

Whitman, T. and S. Hawkins. 2013. The impacts of shoreline armoring on beach spawning forage fish habitat in San Juan County, Washington. Friends of the San Juans. Friday Harbor, Washington.

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I. PREFACE

The cumulative impacts of shoreline development along the Salish Sea long have gone unaddressed, and continue to receive little attention in shoreline permitting even as rising sea levels increase the tension between public lands under those seas and privately-owned uplands along the shoreline. In recent years, thoughtful commentators have identified uncomplicated, fixable flaws in the implementation of a legal system that, on paper, offers the tools to protect our rich natural heritage, but which, in practice, allows continuing natural decline. To alter course and honor Washington's natural abundance, we will need to overcome suggestions that existing laws are inadequate, improve the implementation of those laws, and streamline nearshore marine permitting systems by eliminating duplicative protection schemes and their fiscal overlap. This paper surveys the current legal landscape and identifies several actions that could protect public resources from the cumulative impacts of shoreline modifications as sea levels rise.

In 2005, Washington's leadership set the bold goal of protecting and restoring Puget Sound by 2020. The state and country have spent significant sums of money toward that goal and have achieved some success through planning and restoration projects. Yet the health of the Puget Sound continues to decline. The Puget Sound Partnership's 2012 State of the Sound report concluded that only two (2) of the twenty-one (21) "vital sign" indicators it evaluated--shellfish bed health and estuarine restoration--had showed progress toward the targets established for 2020.[1] All of the others, including water quality of beaches, number of whales, total number of Chinook salmon, and area of eelgrass, reflected a worsened status, mixed progress, or incomplete results. Thus, even a regional priority and focus has not cauterized the decline in Puget Sound's health.

In March 2000, Daniel Jack Chasan penned The Rusted Shield, a white paper that asserted in its title that the "government's failure to enforce—or obey—our system of environmental law threatens the recovery of Puget Sound's wild salmon."[2] That paper cautioned against investing in salmon restoration in the absence of renewed effectiveness in implementing laws meant to protect Washington's fragile ecosystems. Chasan focused on the following impediments: (1) failure to enforce the law; (2) asking the wrong ecological questions; (3) failure to consider

[1] Puget Sound Partnership, *2012 State of the Sound: A Biennial Report on the Recovery of Puget Sound*, *available at* http://www.psp.wa.gov/downloads/SOS2012/sos2012_110812pdfs/SOS2012_ALL_110812.pdf (last visited Feb. 26, 2013).

[2] Daniel Jack Chasan, *The Rusted Shield: government's failure to enforce – or obey – our system of environmental law threatens the recovery of Puget Sound's wild salmon* (March 2000), *available at* http://www.washingtontrout.org/Rusted%20Sheild%20FINAL.pdf (last visited March 10, 2013).

cumulative impacts; (4) reliance on methods that have been proven to fail, such as wetland "mitigation" projects; (5) failure to monitor development to ensure compliance or preservation of functions; (6) government agencies that treat fishers and developers as their constituents, rather than the fish. Chasan also recited the lengthy history of known salmon declines—in 1996, a National Academy of Sciences committee acknowledged that "'for more than a century, overfishing, habitat destruction and degradation, and substitution of naturally reproducing fish runs with hatchery-produced fish ha[ve] depleted the genetic diversity and abundance of salmon.'"[3]

Thirteen (13) years after Chasan's candid accounting of state efforts to protect salmon from continued declines, there remains a lack of political will to establish and implement clear, prescriptive standards to address the ecological impacts as sea level rise exposes additional shoreline resources to shoreline development. This void materializes in planning processes that authorize future development in flood zones and on fish spawning beaches, and in permits for development today that are likely to lead to shoreline alterations tomorrow.[4] In San Juan County, bulkhead construction continues at and above historic rates.[5] Thus, while state agencies like the Department of Ecology ("Ecology") state on websites that Washington State is a leader in dealing with climate change and that new planning efforts will have to consider climate change, other agencies and local governments defer to the future to address sea level rise.[6]

This white paper explores existing federal, state, and local laws and regulations and other legal doctrines that authorize or compel the inclusion of sea level rise and cumulative impacts analyses into planning and permitting processes. It concludes with non-exclusive recommendations for improved implementation of the existing Washington Shoreline Management Act, enforcement of the state's fiduciary to protect public trust interests in nearshore areas and of the federal government's duty to protect tribal fishing rights, and non-legal approaches like conservation easements and revised taxation schemes that reward shoreline property owners for retaining natural shorelines. If Washington is serious about preserving the health of species like whales, salmon, forage fish or marbled murrelets, it can draw upon many tools to do so.

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[3] *Id.* at 3 n.5 (citing Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, Board on Environmental Studies and Toxicology, Commission on Life Sciences, *Upstream: Salmon and Society in the Pacific Northwest*, National Academy Press (1996).

[4] *See, e.g.*, San Juan County Critical Areas Ordinance, adopted December 3, 2012.

[5] Friends of the San Juans, *Shoreline Modification Inventory for San Juan County, Washington*, Background (July 2010).

[6] *Compare* http://www.ecy.wa.gov/climatechange/whatshappening.htm *with* the Washington Hydraulic Code, Chapter 77.55 RCW and San Juan County Critical Areas ordinance, SJCC 18.30.110 - .160.

II. BACKGROUND

Before evaluating federal, state, and local laws and regulations that may authorize a response to cumulative and sea level rise impacts along Salish Sea shorelines, this paper summarizes:

- the ecological status of San Juan County's shorelines;
- a working definition for the term "cumulative impacts analysis";
- sea level rise estimates and likely impacts for Washington;
- state guidance for addressing sea level rise; and
- potential and proposed responses to sea level rise.

2.1. San Juan County Shorelines.

Washington's Salish Sea shorelines extend for approximately 2,380 miles, including more than 400 miles in San Juan County alone.[7] The San Juans' shorelines have seen a significant amount of change since Europeans arrived there. Between 1884 and 2005, they lost an estimated 59% of historic tidal marshes.[8] Shoreline parcels developed in the San Juans since 1977 have lost an average of 20% of their trees.[9] The removal of trees and other shoreline vegetation to improve views and install recreational areas has increased erosion and destabilized shorelines and likely has contributed to shoreline armoring like bulkheads.[10] Armoring covers approximately 22% of the length of "soft," non-bedrock shorelines, including nearly 20% of documented forage fish spawning habitat.[11] The adoption of state no-net-loss policies in the 1990s has not reduced the rate of permitting for shoreline activities that impact priority nearshore habitats like eelgrass and forage fish spawning beaches.[12]

2.2. Cumulative Impacts Analysis Defined.

As development pressures increase along Washington's shorelines at the same time that climate change impacts like sea level rise alter the interface between land and sea, rational

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[7] Jim Johannessen and Andrea MacLennan, *Beaches and Bluffs of Puget Sound, Prepared in support of the Puget Sound Nearshore Partnership*, Technical Report 2007-04, v (undated).

[8] Brian P. Collins and Amir J. Sheikh, *Historical reconstruction, classification, and change analysis of Puget Sound tidal marshes*, Washington Department of Natural Resources, 3-23 (2005).

[9] San Juan Initiative, *An Assessment of Ecosystem Protection: What's Working, What's Not, a Preliminary Report*, 9 (June 16, 2008) (noting significant variability in amount of tree loss, from nearly 0% to 95%).

[10] *See Beaches and Bluffs of Puget Sound*, *supra* note 7, at 12.

[11] Tina Whitman, *The Cumulative Effects of Shoreline Armoring on Forage Fish Spawning Beach Habitat in San Juan County, Washington*, 3, 5 (Aug. 2011), *available at* http://www.sanjuans.org/documents/FSJcumulativeeffectsofarmorreportandmapbook.pdf) (last visited Nov. 15, 2012) (.

[12] Friends of the San Juans, *Shoreline Modification Inventory for San Juan County, Washington*, Background (July 2010).

planning efforts will require an understanding of the ecological impacts that will result from the cumulative impacts of shoreline build-out as seas rise.

While some individual projects along San Juan County shorelines may impose negligible impacts on shoreline ecosystems, the combined effects of numerous, incremental development activities can impose a substantial toll on a resource, ecosystem, or human community. These impacts are defined by the National Environmental Policy Act ("NEPA") as the incremental impact of a proposed action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions.[13] These impacts can be additive, whereby the impacts of the new action merely add to the impacts of the existing activities, or synergistic, in which the combined effects of two different actions create an impact that neither one would create individually.

The scale of review can determine whether cumulative impacts are deemed significant. The Environmental Protection Agency recognizes that cumulative impacts often occur at the landscape or regional level, and therefore proposes that thresholds for significance be developed at a similar scale.[14] Such thresholds might include: (1) total change in land cover; (2) estimates of fragmentation and connectivity; and (3) water quality indicators.[15]

2.3. Sea Level Rise Estimates and Likely Impacts.

The height of local sea level rise is affected by both global and local factors. Global factors include thermal expansion of ocean waters and melting glaciers and ice fields caused by increased temperatures.[16] Local factors include vertical land rise or subduction as tectonic plates shift along their common boundaries, isostatic rebound as land rises with decreased glacial weight, seasonal water surface elevation changes, oceanic winds, coastal winds, local atmospheric pressure patterns, and interannual sea level variability from forces such as El Nino.[17] A report by the National Academies of Science notes that melting of land ice is the

[13] 40 C.F.R. § 1508.7 (the definition notes as well that "[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time.").
[14] U.S. Environmental Protection Agency, Office of Federal Activities (2252A), *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*, EPA 315-R-99-002, 18 (May 1999).
[15] *Id.*
[16] Philip Mote, et al., *Sea Level Rise in the Coastal Waters of Washington State*, 3 (Jan. 2008).
[17] *Id*.; *San Juan County Best Available Science for Frequently Flooded Areas*, Chapter 5, 7-13, *available at* http://www.co.san-juan.wa.us/cdp/docs/CAO_BASsynthesis/FINAL_Frequently_Flooded_Areas.pdf) (last visited Sept. 25, 2012) (seasonal variability results in winter sea levels that rise approximately 20-32 inches higher than in summer levels).

largest contributor to global sea level rise, accounting for approximately 65% of the total sea level rise from 1993 to 2008.[18]

Sea levels have already risen in Friday Harbor—historical data show an increase in water levels of approximately 1.31 mm/year between 1934 and 2008—and recent projections for sea level rise in Washington estimate an additional increase in the Seattle area of 10-143 cm by 2100.[19] The 10 cm local estimate is lower than the 50 cm global estimate because it accounts for vertical land rise.[20] That land rise consists in part of isostatic uplift as ancient ice sheets melt and the underlying land no longer bears its weight, as reflected by data that show that sea levels along the outer Washington coast have been falling over the past 6 to 10 decades.[21] In addition, as the marine Juan de Fuca plate slides under the North American Plate, it causes the North American plate to bunch up and rise near the shoreline. In the event of an earthquake, however, that plate will settle and is anticipated to reach a sea level rise similar to neighboring coastlines, resulting in a sudden increase of one (1) or more meters above the projected sea level rise.[22]

The failure to incorporate sea level rise considerations into growth planning likely will result in numerous adverse and costly impacts. It is anticipated to increase flooding that will overwhelm flood control structures like dikes and tide gates, increase erosion on beaches and coastal bluffs, and require longer drainage periods.[23] Increased coastal flooding and erosion may, in turn, lead to a desire to construct new seawalls, dikes, and tidal barriers that directly impact shoreline ecosystems through burial and erosion, and indirectly impact them by starving them of new sediment and by squeezing those ecosystems between the walls and the rising tides.[24] Species like shellfish, forage fish, resident and migratory shorebirds, and salmon likely will be placed at risk as they lose habitat.[25] Other upland-based species dependent on the nearshore,

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[18] Committee on Sea Level Rise in California, Oregon, and Washington, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, 2 (National Academies Press 2012).
[19] *Id.* at 96, 156 (note that sea levels in Friday Harbor have risen at approximately 78% of the rate of rise for waters in Seattle, which experienced a rate of 1.67 mm/yr from 1900 to 2008).
[20] *Id.* at 4.
[21] *Id.* at 3-5.
[22] *Id.* at 6.
[23] Washington State Department of Ecology, *SMP Handbook, Appendix A, Addressing Sea Level Rise in Shoreline Master Programs*, 3-4 (May 24, 2012), *available at* http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/sea_level_guidance.pdf (last visited Nov. 15, 2012).
[24] *Id.* at 4.
[25] Wash. Dep't of Ecology, *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy*, Pub. No. 12-01-004, 4, 18, 67-68, 86 (April 2012), *available at* www.ecy.wa.gov/climatechange/ipa_responsestrategy.htm (citing Climate Leadership Initiative (2010).

such as herons, osprey, kingfishers, and otters, are also likely to be affected by reduced tidelands, decreased tideland access, and changes in tideland characteristics like water depth.

2.4. State Guidance for Addressing Sea Level Rise.

In 2009, the Washington legislature responded to the knowledge of impending climate change impacts like sea level rise by directing state agencies to develop an integrated climate change response strategy. In May 2009, Governor Gregoire likewise signed an executive order mandating that Ecology collaborate with affected local, state, and federal agencies to develop recommendations, guidelines, and tools to address sea level rise impacts.[26] In April 2012, Ecology completed a comprehensive plan of action entitled Preparing for Climate Change and expressly identified the risk that coastal communities and ecosystems could face from sea level rise and storm surge.[27] Ecology estimated that a failure to address climate change conditions could cost Washington nearly $10 billion per year by 2020 due to increased health costs, storm damage, coastal destruction, rising energy costs, increased wildfires, drought, and other impacts.[28]

Notwithstanding the recent direction to address sea level rise, few laws or regulations expressly address the need to perform sea level rise analyses. The absence of such express direction has convinced some state officials that they do not have the authority to incorporate sea level rise into their shoreline planning. At a workshop on sea level rise in November 2012, Ecology officials stated their belief that they cannot compel local jurisdictions to address sea level rise through their local Shoreline Master Programs ("SMPs"), even though SMPs require Ecology approval for implementation.[29] In addition, officials with the Washington Department of Fish and Wildlife ("WDFW") typically assert a lack of authority to deny permits for shoreline development, and specifically to address cumulative impacts or sea level rise considerations. And some local jurisdictions, like San Juan County, have rejected the opportunity to address sea level rise through current legislative updates in favor of postponed action at an unspecified future date.

2.5. Potential Responses to Sea Level Rise.

As sea levels rise, communities are likely to apply one of the following methods to protect their built environment: (1) armoring the shoreline to prevent erosion and flooding; (2) elevating land surfaces and buildings; (3) accommodating sea level rise by retaining some existing

[26] *Id.* at 12.
[27] *Id.* at 3, 4, 17.
[28] *Id.* at 3, 4, 17.
[29] Statements made during presentations and table discussions at A One Day Workshop to Explore Washington State Coastal Hazards and Sea Level Rise, Everett, WA (Nov. 1, 2012).

development but allowing wetlands and beaches to migrate inland; and (4) relocating development inland.[30] To limit the amount of shoreline modification that accompanies sea level rise, jurisdictions might employ mechanisms like: (1) setbacks or buffers; (2) rolling easements; (3) eliminating public subsidies; or (4) preferential taxation.[31] Setbacks prevent the construction of structures within a certain distance from shorelines that may erode or inundate with sea level rise. Rolling easements can prevent shoreline modifications by recognizing that the future ownership of some coastal areas will shift to the public as those lands become covered by water and by preventing development in the present that would interfere with ownership. A laissez-faire approach would not regulate shoreline development but would eliminate government subsidies, like guaranteed flood insurance, with the intent that natural forces and economic costs would prevent landowners from repeatedly armoring their shorelines. Preferential taxation could decrease the tax burden for shoreline property owners who retained naturally-functioning shorelines.

In April 2012, Ecology published its blueprint for responding to climate change, titled *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy*.[32] To address sea level rise, Ecology proposes the following three (3) high priority actions:[33]

- reducing the risk of damage to buildings, transportation systems, and other infrastructure by identifying vulnerable areas and taking proactive steps to reduce risks to infrastructure, avoiding climate risks when siting new infrastructure and planning for growth, and enhancing the capacity to prepare for more frequent and severe flooding, rising sea levels, wildfires, and changes in energy supply and demand;
- reducing risks to ocean and coastlines by helping communities prepare for rising sea levels and storm surge and protecting people and property. In addition, preventing the degradation of habitats and creating opportunities for upland habitat creation and reducing shellfish vulnerability by reducing land-based contributions of carbon and polluted runoff to the marine environment; and
- safeguarding fish, wildlife, habitat, and ecosystems and improving the ability of wildlife to migrate to more suitable habitat as the climate shifts, as well as protecting and restoring habitat and sensitive and vulnerable species. Reducing existing stresses from development, pollution, unsustainable harvest, and other factors.

[30] *See* Intergovernmental Panel on Climate Change, *Climate Change: The IPCC Response Strategies*, 146-49 (1990).
[31] James G. Titus, *Rolling Easements*, 2 (June 2011) (*available at* www.epa.gov/cre/downloads/rollingeasementsprimer.pdf).
[32] *Preparing for a Changing Climate*, *supra* note 25.
[33] *Id.* at 5-6.

Earlier, in 2008, Washington's Preparation and Adaptation Working Groups made several similar recommendations to address sea level rise, including the following:[34]

- Revise state land use, shoreline, and flood control planning statutes and regulations, and clarify the State Environmental Policy Act to effectively address sea level rise and other climate change impacts.[35]
- Develop guidelines for local governments, tribes, non-governmental organizations, and other stakeholders to address sea level rise impacts in coastal habitat restoration and protection projects;[36]
- Incorporate best available sea level rise and other climate change data and information into state and local government planning to promote resiliency of ecological systems and communities, including design of coastal facility construction and major repair projects;[37]
- Direct state agencies to incorporate future sea level rise concerns and other climate change impacts in prioritization for funding, design, and post-project operations and maintenance, including those for state-managed and supported coastal restoration and protection projects;[38]
- Improve mapping and characterization of sea level rise vulnerability for all of Washington's coasts;[39]
- Inform property purchasers and investors regarding risk of sea level rise that may affect coastal property;[40]
- Discourage building in areas identified at risk from sea level rise, including the failure of bluffs that may be undermined by sea level rise, storm surges, or flooding;[41]

In the five (5) years since the work group offered these recommendations, it is not clear that state agencies have begun implementing them. As noted above, Ecology officials take the

[34] Washington State Department of Ecology and Washington State Department of Community, Trade and Economic Development, *Leading the Way on Climate Change: The Challenge of Our Time, Interim Report*, Ecology Pub. #08-01-008 (Feb. 2008), *available at* https://fortress.wa.gov/ecy/publications/publications/0801008a.pdf (last visited Feb. 10, 2014).
[35] *Id.* at 9, 131.
[36] *Id.* at 131.
[37] *Id.*
[38] *Id.*
[39] *Id.* at 10.
[40] *Id.*
[41] *Id.* at 110 (one component of Recommendation 3.2: Adapt the built environment to reduce the impacts of climate change on human health).

position that they will encourage local jurisdictions to address sea level rise impacts, potentially through these high priority actions, but that they cannot compel localities to do so. This position has been reflected in San Juan County's critical areas ordinance, which it completed in December 2012 without addressing sea level rise for critical areas in the marine shoreline, and the County's shoreline master program update, drafts of which do not address sea level rise.

III. EXISTING LEGAL FRAMEWORK

This section explores several sources of law that either expressly or impliedly address cumulative impacts or those environmental impacts likely to occur as sea levels rise. This legal authority can be found in federal, state, and local laws, as well as common law doctrines and tribal treaty rights.

3.1. Federal Laws.

Several federal laws expressly require cumulative impacts analyses, either for programmatic or project-level activities, though only one federal law expressly references sea level rise. The Clean Water Act ("CWA"), Endangered Species Act ("ESA"), Magnuson Stevens Fishery Conservation and Recovery Act, and the National Environmental Policy Act ("NEPA") all mandate cumulative impacts analyses. While the Coastal Zone Management Act ("CZMA") is the only federal law that expressly directs states to anticipate and plan for sea level rise, the CWA and NEPA both require an analysis of a project's secondary and cumulative impacts that could be interpreted to require an evaluation of sea level rise impacts. In addition, through its critical habitat provisions and direction to avoid the take of an endangered species, the ESA authorizes and may compel a response to sea level rise concerns.

3.1.1. Clean Water Act (1972).

The CWA regulates discharges of pollutants to waters of the United States through end-of-pipe controls, water quality standards, and dredge and fill requirements. The CWA addresses cumulative impacts primarily through the water quality standards that set pollutant thresholds for receiving waters and through the analysis of dredge and fill activities. For example, the EPA's Section 404(b)(1) Guidelines for the discharge of dredge and fill material require the U.S. Army Corps of Engineers ("Corps") to analyze and mitigate secondary and cumulative impacts.[42]

[42] 40 C.F.R. § 230; *see also Buttrey v. United States*, 690 F.2d 1170, 1184 (5th Cir. 1982) (Corps' denial of permit for stream channelization that would have destroyed approximately 40 acres of tupelo gum swamp upheld, including determination that "[t]he cumulative effects of this proposed activity will seriously impact the remainder of Gum Bayou and possibly the West Pearl River.").

This requirement to analyze and mitigate secondary and cumulative impacts could be interpreted to include secondary impacts related to sea level rise. As explained in greater detail in the Endangered Species Act discussion at section 3.1.3. below, the National Marine Fisheries Service ("NMFS") determined in 2012 that the cumulative impacts of the Corps' Nationwide Permit for bulkheading potentially jeopardized the continued existence of endangered or threatened species and thus conflicted with the ESA. Although NMFS analyzed the cumulative impacts of that program through the lens of the ESA, the CWA may already have required the Corps to perform its own cumulative impacts analysis of dredge and fill activities like bulkheading.

3.1.2. Coastal Zone Management Act (1972).

In 1972, Congress enacted the CZMA to protect, develop, and enhance coastal zone resources and to encourage and assist states in developing and implementing management programs for coastal areas.[43] Congress made several pertinent findings in adopting the CZMA, including that:

- the key to more effective protection and use of the land and water resources of the coastal zone is to encourage the states, in cooperation with Federal and local governments and other vitally affected interests, to develop land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance;[44]
- land uses in the coastal zone, and the uses of adjacent lands that drain into the coastal zone, may significantly affect the quality of coastal waters and habitats, and efforts to control coastal water pollution from land use activities must be improved;[45] and
- because global warming may result in a substantial sea level rise with serious adverse effects in the coastal zone, coastal states must anticipate and plan for such an occurrence.[46]

To address these findings, the CZMA establishes policies such as those to:

- protect and, where possible, restore or enhance coastal resources for future generations;[47]

[43] 16 U.S.C. § 1451 et seq.
[44] 16 U.S.C. § 1451(i).
[45] 16 U.S.C. § 1451(k).
[46] 16 U.S.C. § 1451(l) (emphasis added).
[47] 16 U.S.C. § 1452(1).

- encourage and assist states in developing and implementing coastal management plans;[48] and
- encourage the preparation of special management plans to provide increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, such as those likely to be affected by sea level rise, and improved predictability in governmental decisionmaking.[49]

The CZMA offers two incentives for state cooperation in its shoreline planning and protection program: (1) funding; and (2) state control over Federal projects though a legal relationship called "federal consistency".[50] In 1976, Washington became the first state to obtain federal approval for its coastal zone management program, allowing it to obtain CZMA grant funding and to impose state laws on Federal projects.[51] Washington has used this grant funding to update the Shoreline Master Program Guidelines that assist Washington counties in updating their Shoreline Master Programs.[52] Since 1976, Washington has received $2 million per year to pay for Ecology's review of shoreline permits, enforcement, technical assistance, and education.[53]

While the CZMA does not expressly require a cumulative impacts analysis for shoreline planning, its robust support for broad statewide planning, coupled with its comprehensive policies for the protection and restoration of shoreline resources generally, suggests that it would support a cumulative impacts review for those planning processes.[54]

CZMA regulations require state coastal management programs to address sea level rise for approval pursuant to the CZMA. For example, the state management program "must provide for the management of those land and water uses having a direct and significant impact on coastal waters and those geographic areas which are likely to be affected by or vulnerable to sea level rise."[55] The management program must also identify authorized land and water uses that impose direct and significant impacts on coastal waters or on geographic areas likely to be

[48] 16 U.S.C. § 1452(2).
[49] 16 U.S.C. § 1452(3) (emphasis added).
[50] 16 U.S.C. § 1456(c).
[51] *See* http://www.ecy.wa.gov/programs/sea/czm/prgm.html (last visited Sept. 26, 2012).
[52] 16 U.S.C. §§ 1452(c), 1454, 1456a, 1456b.
[53] *See* Washington State Department of Ecology, Introduction to Washington's Shoreline Management Act (RCW 90.58), Ecology Pub. 99-113 (Dec. 1999), *available at* http://www.mercergov.org/files/1971%20Shoreline%20Mgmt%20Act.pdf (last visited Sept. 27, 2012).
[54] *See* 16 U.S.C. § 1452(1), (2).
[55] 15 C.F.R. § 923.3(b) (noting as well that the program must assure the protection of significant resources and areas that make the state's coastal zone a unique, vulnerable, or valuable area, such as wetlands, beaches and dunes, and barrier islands).

affected by or vulnerable to sea level rise.[56] In addition, coastal zone enhancement grant objectives include anticipating and managing the effects of potential sea level rise.[57]

Notwithstanding the CZMA's findings, policies, and regulations to encourage states to address the impact of sea level rise on shoreline development, Washington has not adopted laws that expressly evaluate or manage the ramifications of sea level rise on shoreline development.[58]

3.1.3. Endangered Species Act (1973).

In 1973, Congress enacted the ESA to protect fish, wildlife, and plants from extinction, to restore viable populations threatened with extinction, and to protect their habitats.[59] The ESA requires federal agencies to list species that are endangered with extinction or threatened with becoming endangered, to designate critical habitat necessary for their continued survival, and to establish a recovery plan for the species' conservation and survival.[60] Once a species is listed, federal agencies must consult with wildlife agencies to ensure that actions they authorize, fund, or perform are not likely to jeopardize its continued existence or result in the destruction or adverse modification of its designated critical habitat.[61] The ESA also prohibits any action that "takes" an endangered fish or wildlife species;[62] take means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[63]

The ESA expressly requires agencies to evaluate the cumulative impacts on listed species of actions it authorizes, funds, or carries out.[64] The ESA directs federal agencies to consult with the appropriate expert agency when a prospective agency action gives reason to believe that a project is likely to affect an endangered or threatened species in the project area.[65] The ESA regulations state that federal agencies must include in their requests for formal consultation "[a] description of the manner in which the action may affect any listed species or critical habitat and an analysis of any cumulative effects."[66] The ESA defines "cumulative effects" as "those effects of future State or private activities, not involving Federal activities, that are

[56] 15 C.F.R. § 923.11.
[57] 15 C.F.R. § 923.122.
[58] *See, e.g.*, State master program approval/amendment procedures and master program guidelines, Chapter 173-26 WAC (hereafter "SMP Guidelines").
[59] 16 U.S.C. § 1531 *et seq.*
[60] 16 U.S.C. § 1533.
[61] 16 U.S.C. § 1536(a)(2).
[62] 16 U.S.C. § 1538.
[63] 16 U.S.C. § 1532(19).
[64] 16 U.S.C. §§ 1536(a)(2), (3); 50 CFR §§ 402.14, 402.02.
[65] 16 U.S.C. § 1536(a)(2).
[66] 50 C.F.R. § 402.14(c)(4).

reasonably certain to occur within the action area of the Federal action subject to consultation."[67]

In addition, the ESA regulations broadly define the "effects of the action" to include a more traditional concept of cumulative impacts: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline."[68] The regulations further note that "[t]he environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration."[69]

Recent documents indicate that federal agencies are increasingly aware of the need to conduct a cumulative impacts analysis under the ESA, as well as the need to evaluate climate change impacts. In a February 17, 2012 biological opinion ("Biological Opinion") on the Corps' Nationwide Permit for dredge and fill discharges, the National Marine Fisheries Service ("NMFS") concluded that the Corps "ha[d] not structured the proposed Nationwide Permits in a manner that insures that the direct, indirect, or cumulative effects of the activities that would be authorized by the proposed Nationwide Permits are not likely to jeopardize the continued existence of endangered or threatened species under NMFS' jurisdiction or result in the destruction or adverse modification of critical habitat that has been designate [sic] for those species."[70] With regard to cumulative impacts specifically, the Biological Opinion evaluated whether the Nationwide Permit Program was structured to provide feedback to the Corps when specific waters of the U.S. were degraded as the result of individual or cumulative effects of discharges.[71]

The Biological Opinion determined that the Nationwide Permit 13 authorization for "bank stabilization" activities would destroy aquatic habitat and likely would degrade or modify

[67] 50 C.F.R. § 402.02.
[68] *Id.*
[69] *Id.*
[70] NMFS, *Endangered Species Consultation Biological Opinion on U.S. Army Corps of Engineers' Nationwide Permit Program* (Feb. 2012).
[71] *Id.* at 46.

aquatic habitat.[72] The Biological Opinion identified the following potential impacts of bulkheading: loss of shallow edge water rearing habitat, changes to benthic vegetation, impacts to eelgrass and other vegetation important for herring spawning, loss of shoreline riparian vegetation and reduction in leaf fall, loss of wetland vegetation, alteration of groundwater flows, loss of large woody debris, changes in food resources, and loss of migratory corridors.[73] NMFS did not propose a reduction in the activities approved pursuant to the nationwide permits, instead requesting only that the Corps gather information and report the direct, indirect, and cumulative impacts of the permits.[74]

Notably, the Biological Opinion incorporated into its jeopardy analysis the question of political will—it factored in an agency's willingness to exercise its authority to modify its approach when new information demonstrates that particular authorizations have been inconsistent with the ESA.[75]

Similarly, in 2008, NMFS evaluated the National Floodplain Insurance Program ("NFIP") and determined that the NFIP was likely to jeopardize the continued existence of species like Puget Sound Chinook salmon and was likely to adversely modify their critical habitat.[76] NMFS found that the NFIP resulted in two separate categories of cumulative impacts, long-term development in floodplains and climate change impacts.[77] NMFS predicted that rural, suburban, and urban development would lead to increased flood damage, further reductions in habitat functions through water withdrawal, storm water quality and quantity degradation, loss of riparian functions, and encroachment of channels and floodplains.[78] Consequently, NMFS directed the Federal Emergency Management Agency to modify its implementation of the NFIP to prevent and/or minimize degradation of floodplain habitat by retaining undeveloped floodways or by compensating for development impacts on floodplain functions.[79]

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[72] *Id.* at 171-72 (noting that Nationwide Permit 13 likely would result in about 9,268 activities each year, impacting approximately 200 acres and resulting in about 440 acres of compensatory mitigation).
[73] *Id.* at 172 (the Biological Opinion suggests that armoring that is engineered and executed according to best practices produces minimal adverse consequences and substantial benefits for aquatic ecosystems, but the report cited for that position limits itself to river shorelines and does not support the position that armoring offers substantial benefits, instead stating that most measures benefit some component of an ecosystem at the expense of others). *See* Craig Fischenich, *Impacts of Stabilization Measures*, 1 (May 2001).
[74] *Id.* at 225-231.
[75] Biological Opinion, *supra* note 70, at 43.
[76] NMFS, *Endangered Species Act – Section 7 Consultation Final Biological Opinion and Magnuson-Stevens Fishery Conservation and Mgmt. Act Essential Fish Habitat Consultation*, NMFS Tracking No. 2006-00472 (Sept. 22, 2008).
[77] *Id.* at 142.
[78] *Id.* at 143 (noting as well that "maintenance dredging, removing vegetation along channel walls, and adding riprap and concrete can completely prevent restoration of biological communities and lead to long-term or permanent disruption….").
[79] *Id.* at 153-54.

The text of the ESA does not expressly address sea level rise, but its direction to analyze indirect effects, including those that the project is reasonably certain to cause at a later time, could be interpreted to require an evaluation of future sea level rise impacts exacerbated by shoreline development. Indeed, the Biological Opinion expressly examines threats posed by the direct and indirect effects of global climate change in the Pacific Northwest, including anticipated beach loss, increased coastal erosion, earlier annual peaks in stream flow, higher stream temperatures, and increased ocean acidity.[80] In addition, because the Corps' jurisdiction is established by a tidal elevation--the "high tide line"--the Corps' authority will move inland in conjunction with rising sea levels.[81]

Thus, the ESA can compel federal agencies to incorporate policies that address cumulative impacts and the impacts of sea level rise into their programs and project approvals.

3.1.4. Magnuson-Stevens Fishery Conservation and Management Act (1976).

In 1976, Congress promulgated the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish fisheries management systems that protect both fish themselves and their "essential fish habitat."[82] Essential fish habitat consists of "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."[83] Like the ESA, projects funded, authorized, or undertaken by a federal agency that may adversely impact essential fish habitat require consultation between the action agency and NMFS.[84]

The Magnuson-Stevens Act requires cumulative impacts analyses at both the programmatic and project level. In preparing a Fishery Management Plan, agencies should analyze, to the extent feasible and practicable, the cumulative impacts of fishing and non-fishing activities that influence the function of essential fish habitat on an ecosystem or watershed scale.[85] As under the ESA, cumulative impacts under the Magnuson-Stevens Act include impacts that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of the identity of the person undertaking the actions.[86] In addition to this programmatic review, during project consultation, a project agency must analyze the cumulative effects of the project as part of the Essential Fish Habitat Assessment that it must supply to NMFS.[87]

[80] *Id.* at 58-62.
[81] 33 C.F.R. § 328.3.
[82] 16 U.S.C. § 1801 *et seq.*
[83] 16 U.S.C. § 1802(10).
[84] 16 U.S.C. § 1855(b)(2).
[85] 50 C.F.R. § 815(a)(5).
[86] *Id.*
[87] 16 U.S.C. § 1855(b)(2).

The Magnuson-Stevens Act may also direct agencies to evaluate sea level rise impacts. The regulations direct agencies to assess the cumulative and synergistic effects of multiple threats, including the effects of natural stresses like climate-based environmental shifts and an assessment of the ecological risks resulting from the impact of those threats on essential fish habitat.[88]

3.1.5. National Environmental Policy Act (1970).

In 1970, Congress enacted NEPA to declare a national policy to encourage productive and enjoyable harmony between humans and the environment and to promote efforts to better understand and prevent damage to ecological systems and natural resources. NEPA often is characterized as a "stop and think" law because it does not dictate a substantive environmental outcome for projects, but instead directs federal agencies to consider and publicize potential environmental impacts associated with projects before agencies approve, fund, or conduct them.[89] NEPA has two objectives: (1) to force federal agencies to "consider every significant aspect of the environmental impact of a proposed action"; and (2) to ensure that the agency informs the public that it has performed that evaluation in making its substantive decision.[90] Reviewing courts evaluate agency processes to determine whether the agency did, indeed, take a "hard look" at the relevant environmental considerations.[91] For any "major Federal actions significantly affecting the quality of the human environment," agencies must prepare an Environmental Impact Statement ("EIS"). An EIS must include a detailed statement of the impacts of a proposal, including those that cannot be avoided, and alternatives to the proposal.[92]

NEPA requires an evaluation of the cumulative impacts of a proposed action and reasonably foreseeable connected and similar actions.[93] Cumulative impacts are those actions that, when viewed with other proposed actions, have cumulatively significant impacts.[94] While neither the statute nor its regulations expressly requires a discussion of cumulative impacts within an EIS, courts have interpreted NEPA's guidance to consider the cumulative impacts when determining the scope of an EIS as a directive to consider the cumulative impacts of a proposed action.[95]

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[88] 50 C.F.R. § 815(a)(5).
[89] 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1500.1 (Council on Environmental Quality regulations noting that accurate scientific analysis, expert agency comments, and public scrutiny are essential for implementing NEPA).
[90] *Kern v. Bureau of Land Mgmt.*, 284 F.3d 1062, 1066 (9th Cir. 2002).
[91] *Id.*
[92] 42 U.S.C. § 4332(2)(C).
[93] 42 U.S.C. § 4332(2)(C)(i); 40 C.F.R. § 1508.25(c)(3); *Kern*, 284 F.3d at 1075-76.
[94] 40 C.F.R. § 1508.25.
[95] *Kern*, 284 F.3d at 1076.

Agencies must also identify the cumulative impacts of a proposal in a less stringent Environmental Assessment ("EA") where those impacts would be significant.[96]

In determining whether a proposed action is significant, agencies must consider whether the action is related to another action with individually insignificant but cumulatively significant impacts.[97] A cumulative impacts analysis requires "'some quantified or detailed information…[g]eneral statements about "possible" effects and "some risk" do not constitute a "hard look" absent a justification regarding why more definitive information could not be provided.'"[98] The cumulative impacts analysis must be both timely and more than perfunctory; it must provide a "'useful analysis of the cumulative impacts of past, present, and future projects.'"[99] Courts will defer to agency determinations of "reasonably foreseeable future actions" where they are fully informed and well-considered.[100]

NEPA does not directly address impacts from sea level rise, but the comprehensive nature of the environmental impacts analysis likely requires such an evaluation. Projects likely to impact shoreline resources in conjunction with anticipated sea level rise should warrant analysis pursuant to NEPA's requirement to evaluate indirect effects, which include those reasonably foreseeable impacts caused by the action even where they are later in time or farther removed in distance.[101] Indirect effects may also include "growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."[102]

3.2. Washington State Laws.

Washington laws that promote ecological protection vary significantly in the extent to which they address cumulative impacts or sea level rise. For example, the Aquatic Lands Law ("ALL") that establishes the Washington Department of Natural Resources ("DNR") as the proprietor of public waters and aquatic lands does not use the terms cumulative impacts or sea level rise, but does require DNR to ensure that activities it authorizes on those lands are consistent with sound environmental practices, which at this time should include those concepts. The Growth

[96] *Id.* (noting that EA's must "'include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E) [of NEPA], of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.'"). The U.S. Court of Appeals for the Ninth Circuit concluded that EAs should identify cumulative impacts after noting that many cumulative impacts could otherwise go unevaluated because 45,000 Environmental Assessments occur in the U.S. each year compared to just 450 EISs.
[97] *Id.* at 1075.
[98] *Id.* (quoting *Neighbors of Cuddy Mountain v. USFS*, 137 F.2d 1372, 1379-80 (9th Cir. 1998)).
[99] *Id.* at 1075 (quoting *Muckleshoot Indian Tribe v. USFS*, 177 F.3d 800, 810 (9th Cir. 1999)
[100] *Id.*
[101] 40 C.F.R. § 1508.8(b).
[102] *Id.*

Management Act ("GMA") requires the protection of critical areas, like wetlands and shoreline fish habitat, that logically would need to consider cumulative and sea level rise impacts, though it does not use either of those terms. The Hydraulic Code regulations suggest that they have already incorporated cumulative impacts considerations into individual permit standards. And the Shoreline Management Act ("SMA") and State Environmental Policy Act ("SEPA") each expressly require cumulative impacts analyses for planning programs and some project reviews. Only the Marine Spatial Planning law adopted in 2010 expressly uses the term "sea level rise," though as indicated above, the SMA, SEPA, Hydraulic Code, and GMA require ecological protection through land use controls that likely must incorporate an understanding of sea level rise to avoid impacts over the life of the development project.

3.2.1. Aquatic Lands Law (1984).

In adopting the ALL, the legislature found that "state-owned aquatic lands are a finite natural resource of great value and an irreplaceable public heritage."[103] The ALL empowers the DNR to manage approximately 2.6 million acres of state-owned aquatic lands, acting in both a proprietary and trustee capacity.[104] The ALL directs DNR to manage state-owned aquatic lands for the benefit of all state residents by: (1) encouraging direct public use and access; (2) fostering water-dependent uses; (3) ensuring environmental protection; (4) utilizing renewable resources; and (5) generating revenue consistent with criteria 1-4.[105] As the proprietor of public lands below extreme low tide and those public lands remaining between the ordinary high water mark and extreme low tide, DNR may require authorization for their private use, such as licenses for marinas, piers, docks, mooring buoys, and shellfish harvest.[106] While DNR has established regulations that require it to authorize approval, the agency does not enforce against unlicensed activities where it does not have the capacity to address them.[107]

The ALL does not expressly address cumulative impacts. However, if DNR determines that a recreational dock or mooring buoy that it authorizes contributes to the degradation of aquatic

[103] RCW 79.105.010.
[104] *See* Washington Department of Natural Resources, *Aquatic Land Leasing and Other Uses*, http*://www.dnr.wa.gov/businesspermits/topics/shellfishaquaticleasing/pages/aqr_aquatic_land_leasing.aspx* (last visited February 25, 2013).
[105] RCW 79.105.030.
[106] RCW 79.105.200 - .430.
[107] Although DNR regulations mandate at WAC 332-30-122(1)(a) that "[i]n addition to other requirements of law, aquatic land activities that interfere with the use by the general public of an area will require authorization from the department by way of agreement, lease, permit, or other instrument," DNR has not been able to respond to Friends of the San Juans' requests that it remove or license the 1,466 unlicensed mooring buoys that Friends surveyed in San Juan County in 2009 (of 1,914 total mooring buoys in the county).

habitat, it may revoke the permission to install and maintain those activities.[108] DNR's website also expresses some concern about the potential cumulative impacts of geoduck operations on public aquatic lands.[109] In addition, if DNR learns of an unauthorized use of aquatic land, it must immediately notify the responsible party of the trespass status and issue a notice to vacate if it will not permit the unauthorized use.[110] However, as noted above, DNR may not have the capacity to address the cumulative impacts of trespassing activities—of the approximately 1,914 mooring buoys in San Juan County, approximately 1,466 have not received DNR authorization.[111]

The ALL does not expressly address sea level rise. However, the following language could be interpreted to require measures to address sea level rise: "[a]uthorization instruments shall insure that structures and activities on aquatic lands are properly designed, constructed, maintained and conducted in accordance with sound environmental practices" and "[u]ses which cause adverse environmental impacts may be authorized on aquatic lands only upon compliance with applicable environmental laws and regulations and appropriate steps as may be directed are taken to mitigate substantial or irreversible damage to the environment."[112] The implementation of sound environmental practices may require practices that address the certainty and growing accuracy of sea level rise estimates.

3.2.2. Growth Management Act (1990).

The purpose of the GMA is to facilitate local comprehensive land use planning to conserve lands, respond to threats to the environment, support sustainable economic development, and safeguard the health, safety, and high quality of life enjoyed by Washington residents.[113] To achieve this purpose, the GMA directs counties and cities to adopt comprehensive plans and development regulations that implement fourteen (14) planning goals and establish several requirements, including the protection of critical areas and conservation of designated farm

[108] RCW 79.105.430(3).
[109] *See* Washington State Department of Natural Resources, *DNR and Geoduck Aquaculture*, *available at* http://www.dnr.wa.gov/BusinessPermits/Topics/ShellfishAquaticLeasing/Pages/aqr_aqua_geoduck_aquaculture.asp (last visited February 25, 2013).
[110] WAC 332-30-127(2).
[111] *See* Friends of the San Juans, *Shoreline Modification Inventory for San Juan County, Washington*, unnumbered page 6 (July 2010) *available at* http://www.sanjuans.org/documents/FSJ_shoreline_modification_inventory_2010.pdf. The Shoreline Modification Inventory identifies total mooring buoy and float presence in San Juan County at 1,914 mooring buoys, and subsequent contacts with DNR identified licenses for 448 of those structures.
[112] WAC 332-30-122(2)(a).
[113] RCW 36.70A.010.

and forest lands.[114] Critical areas include wetlands, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, and critical aquifer recharge areas.[115]

Because the GMA guides local planning processes, rather than project-level reviews, it requires a cumulative impacts analysis of local comprehensive plan provisions but does not directly mandate review of the cumulative impacts of individual land use projects.[116] Likewise, the GMA prevents counties from amending their comprehensive plans more frequently than once per year to encourage united review of the cumulative impacts of the amendments as a single action under SEPA.[117]

Although the GMA does not expressly combine a review of the cumulative impacts of proposed comprehensive plan amendments with those authorized by existing comprehensive plan provisions, the GMA's definition for "protection" suggests that a cumulative impacts analysis is essential for protecting critical areas like wetlands and fish and wildlife habitat areas. Protection means "to prevent harm or be prepared to recognize and respond effectively to any unforeseen harm that arises."[118] To protect critical areas, regulations may not "allow a net loss of the functions and values of the ecosystem that includes the impacted or lost critical areas."[119] Consequently, a cumulative impacts analysis might be necessary both to understand likely impacts of a regulatory change and to establish the baseline for measuring the net loss of critical area functions and values at a future date.

The GMA does not expressly address sea level rise, but its implementing regulations recommend that counties and cities consider the potential effects of sea level rise when designating and classifying frequently flooded areas as part of their critical areas ordinances.[120] In addition, the GMA requires counties and cities to include the Best Available Science ("BAS") when designating and protecting critical areas.[121] Because the BAS recognizes sea level rise and has offered estimates for its magnitude, the GMA likely requires its use in adopting updates such as critical areas ordinances.

Consideration of sea level rise may be necessary to meet the GMA requirement to give special consideration to conservation or protection measures necessary to preserve or enhance

[114] RCW 36.70A.020, .040, .060.
[115] RCW 36.70A.030(5).
[116] RCW 36.70A.130(2)(b); WAC 365-196-620(3)(d).
[117] WAC 365-196-620(3)(d).
[118] *Swinomish Indian Tribal Cmty. v. W. Wash. Growth Mgmt. Hearings Bd.*, 161 Wn.2d 415, 166 P.3d 1198, 1209 (2007).
[119] WAC 365-196-830; *see also, e.g.*, *Pilchuck, et al., v. Snohomish County*, CPSGMHB No. 95-3-0047, Final Decision and Order, 16-18 (Dec. 6, 1995).
[120] WAC 365-190-110.
[121] RCW 36.70A.172.

anadromous fisheries.[122] The GMA's implementing regulations note that such measures include those related to juvenile rearing and migration, including habitat protection measures related to water quality and temperature, migratory access, and maintenance of salmon prey species. Therefore, the GMA salmon protection element likely requires consideration of conservation measures necessary to maintain surf smelt, Pacific sand lance and Pacific herring spawning habitat and terrestrial insect habitat.

3.2.3. Hydraulic Code (1943).

The purpose of the Hydraulic Code and Hydraulic Code Rules ("Hydraulic Rules") is to assist the Washington Department of Fish and Wildlife ("WDFW") in its mission to preserve, protect, and perpetuate Washington's fish and shellfish resources.[123] The Hydraulic Code requires a Hydraulic Project Approval ("HPA") for any construction project that will use, divert, obstruct, or change the natural flow or bed of state waters.[124] WDFW may deny or condition an HPA to protect fish life, but as of October 2009 had not denied an application for development in San Juan County.[125]

The Hydraulic Rules reference cumulative impacts by stating that, "[i]mplementation of [the technical] provisions is necessary to minimize project specific and cumulative impacts to fish life."[126] The Hydraulic Rules also authorize the denial of an HPA that will indirectly harm fish life, which might be interpreted to establish the need to consider the cumulative impacts of a project during HPA review.[127] In addition, WDFW's Policy for Requiring or Recommending Mitigation, WDFW POL-M5002 states that, "[c]umulative impacts of projects shall be considered and appropriate measures taken to avoid or minimize those impacts."[128] Lastly, until at least March 18, 2011, WDFW's website for HPAs recognized that "[m]ajor construction projects individually have a large potential for damage, but more habitat is lost from the cumulative effects of many smaller projects, each with a minimal level of impact."[129] That

[122] RCW 36.70A.172(1); WAC 365-195-925.
[123] Chapter 77.55 RCW (Hydraulic Code); RCW 77.04.012 (establishing WDFW mandate).
[124] RCW 77.55.021(1), .011 (hydraulic project defined).
[125] RCW 77.55.021(7)(a); WAC 220-110-030(14), (15); K. Loring personal communication with C. Turcotte, WDFW Public Disclosure Officer (Oct. 9, 2009) (in response to a public records request by Friends of the San Juans, Ms. Turcotte stated that as of October 9, 2009, WDFW had not denied an HPA in San Juan County since inception of the HPA program in approximately 1943).
[126] WAC 220-110-021(3).
[127] WAC 220-110-030(14).
[128] Department of Fish and Wildlife, *POL-M5002: Requiring or Recommending Mitigation*, 5 (undated), *available at* http://www.ecy.wa.gov/programs/wr/wstf/images/pdf/mitigatn.pdf (last visited Nov. 15, 2012).
[129] Friends of the San Juans cited this website (http://wdfw.wa.gov/licensing/hpa/) in a legal challenge that requested that WDFW assess the cumulative impacts to saltwater habitats of special concern, such as eelgrass, from permitting new activities that would impact those habitats in exchange for the removal of unauthorized activities, such as applicants' unlicensed mooring buoys.

statement has since been removed from the website, at approximately the same time that environmental protection groups increased their requests for WDFW evaluation of the cumulative impacts of riparian and marine shoreline development projects.

In addition, in *Spokane Riverkeeper v. WDFW*, the Pollution Control Hearings Board ("PCHB") indicated a willingness to consider a WDFW duty to analyze cumulative impacts when it denied WDFW's motion for summary judgment as to whether WDFW is required to analyze and mitigate for cumulative impacts in issuing an HPA.[130] In exploring this potential duty, the PCHB requested additional testimony to address the following questions: (1) in what ways does WDFW consider the technical provisions governing HPAs to account for cumulative impacts of multiple individual projects? (2) how should WDFW's state policy on cumulative impacts be interpreted and implemented? (3) how was the policy developed and how has it been applied? (4) how does the regulatory regime for HPAs deal with concentration of impacts from multiple actions? (5) how should actual knowledge of a large integrated project affect WDFW's exercise of regulatory discretion in issuing an HPA for a single component of the project? and (6) what are the regulatory challenges WDFW would face in addressing cumulative impacts in the context of a large integrated project with multiple HPAs?[131] Communications with the appellant's counsel in that matter reveal that the matter has not yet returned for the hearing that would adduce that testimony.

WDFW has resisted evaluating either the cumulative impacts or sea level rise impacts of projects it approves through its HPA program. In an informal appeal of a pier, ramp, and float that lay largely over an eelgrass bed, WDFW declined to address a legal issue regarding the cumulative impacts of the HPA program on eelgrass in San Juan County.[132] In response to questions regarding WDFW's evaluation of sea level rise when permitting bulkheads on surf smelt spawning beaches, the Region 4 Habitat Manager responded that WDFW does not account for climate change-induced sea level rise when evaluating impacts, and that it does not seek advice from other agency officials knowledgeable about coastal geologic impacts of sea level rise.[133]

Over the last five years, applicants for shoreline substantial development permits under San Juan County's Shoreline Master Program have routinely relied on WDFW HPAs to support those

[130] PCHB No. 10-097 (June 18, 2011) (Order on Motions for Summary Judgment).
[131] *Id.* at 12-13.
[132] WDFW, *Decision on Third Party Informal Appeal of HPA 116440-2 Issued to Larry and Sandra Walker on April 30, 2009 for constructing a new pier, ramp, and float on Post Office Bay (WRIA 02.9070 Marine), tributary to Puget Sound in San Juan County*, 9 (Aug. 14, 2009).
[133] K. Loring personal communication with David Brock, Region 4 manager responsible for San Juan County.

applications notwithstanding deficiencies in the HPA process.[134] These HPAs have undermined San Juan County's attempts to protect its shoreline resources from cumulative impacts and sea level rise, as seen in the following examples:

- Dock shading eelgrass. In 2008, a WDFW official testified at the Shorelines Hearings Board as a witness for an applicant seeking to construct a dock over dense eelgrass in the San Juans.[135] That testimony contradicted other testimony that identified the dock's potential impacts to the eelgrass underneath it. Although the SHB denied the dock, the Washington Court of Appeals later reversed that decision, relying in part on the WDFW testimony.
- Bulkheads on documented and potential spawning beaches. In 2009, WDFW issued an after-the-fact HPA for an unpermitted, 800-foot-long bulkhead on a feeder bluff and potential forage fish spawning habitat and an HPA for a 100-foot-long bulkhead on documented surf smelt spawning habitat.[136] The 800-foot-long bulkhead increased in size as a result of WDFW enforcement against the unpermitted development. Neither one of these approvals included an evaluation of the cumulative impacts or sea level rise impacts that would be associated with the operation of those structures.

Thus, although the Hydraulic Code likely authorizes, and may mandate, an evaluation of the cumulative impacts and those from sea level rise due to new shoreline development, the HPA program would benefit from clear instructions regarding the need for such evaluation when permitting development that may not protect fish life. In the absence of an express, legislative directive to evaluate sea level rise and cumulative impacts, such review likely will not occur.

3.2.4. Marine Spatial Planning (2010).

In 2010, following the federal government's lead, the Washington legislature adopted legislation to enable marine spatial planning.[137] The law is intended to improve marine resource management by planning for human uses in a way that balances social, economic, and

[134] *E.g.*, *In re: Pohl*, PSJ000-12-0009. At a March 4, 2013 hearing in that matter, applicants for a dock on Lopez Island adduced an email from a WDFW habitat biologist to the applicants that purportedly allowed the applicants to conduct an eelgrass survey without complying with the WDFW Eelgrass/Macroalgae Habitat Interim Survey Guidelines (rev. 6/16/2008). One of the witnesses for the applicants asserted that he had received blanket approval from WDFW to perform eelgrass surveys outside the timeframes established by the survey guidelines.
[135] *See Friends of the San Juans v. San Juan County, et al.*, SHB No. 08-005, Findings of Fact and Conclusions of Law and Order (Aug. 25, 2008).
[136] Hydraulic Project Approval No. 119009-1 (Nov. 30, 2009); Hydraulic Project Approval No. 117771-1 (July 27, 2009). Note that WDFW takes the position that it does not issue after-the-fact HPAs and therefore characterized HPA No. 119009-1 as a restoration project that allowed the bulkhead to remain and expand.
[137] Chapter 43.372 RCW.

ecological benefits from ocean resources.[138] The "comprehensive" marine management plan requires an ecosystem assessment[139] that by its very nature would appear to require a cumulative impacts analysis. For example, the ecosystem assessment must "analyze[] the health and status of Washington marine waters including key social, economic, and ecological characteristics and incorporate[] the best available scientific information, including relevant marine data."[140] In addition, by its design, the marine spatial plan could address cumulative impacts of the use of marine areas by establishing a marine zoning scheme. The law also expressly identifies sea level rise and requires that marine management plans "[a]ddress[] potential impacts of climate change and sea level rise upon current and projected marine waters uses and shorelines and coastal impacts."[141]

3.2.5. Shoreline Management Act (1971).

In 1971, the Washington legislature enacted the SMA after finding that "the shorelines of the state are among the most valuable and fragile of its natural resources" and that "ever increasing pressures of additional uses are being placed on the shorelines necessitating increased coordination in [their] management and development."[142] Consequently, the legislature determined that "coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest."[143] In *Lund v. Department of Ecology*, the Washington Court of Appeals stated that the primary purpose of the SMA is "to protect the state shorelines as fully as possible."[144] To achieve that policy, all shoreline development must conform to the SMA, which "is to be broadly construed in order to protect the state shorelines as fully as possible."[145]

The SMA implements the CZMA for Washington and regulates development within 200 feet of Washington's marine shorelines.[146] The SMA addresses environmental protection, public

[138] *See* Washington Department of Ecology, *Marine Spatial Planning*, *available at* http://www.ecy.wa.gov/programs/sea/msp/index.html (last visited February 25, 2013).
[139] RCW 43.372.040(2), (6)(a).
[140] RCW 43.372.040(6)(a).
[141] RCW 43.372.040(4)(c). Note that the development of a marine management plan is contingent upon the receipt of federal, private, or other funding. RCW 43.372.040(1).
[142] RCW 90.58.020; *see also Buechel v. Dep't of Ecology*, 125 Wn.2d 196, 203, 884 P.2d 910 (1994); *Citizens for Rational Shoreline Planning v. Whatcom County*, 155 Wn. App. 937, 943, 230 P.3d 1074 (2010).
[143] RCW 90.58.020.
[144] *Lund v. Dep't of Ecology*, 93 Wn. App. 329, 336-37, 969 P.2d 1072 (1998).
[145] RCW 90.58.900; *Buechel*, 125 Wn.2d at 203.
[146] RCW 90.50.040, .030(f) (definition of shorelines, identifying them as lands that extend landward for two hundred feet from the ordinary high water mark).

access to shorelines and public waters, and limited alterations of state shorelines.[147] For shorelines of statewide significance, which include all of Washington's marine shorelines below extreme low tide, the SMA establishes a hierarchy of preferred uses as follows: (1) recognize and protect the statewide interest over local interest; (2) preserve the natural character of the shoreline; (3) result in long term over short term benefit; (4) protect the resources and ecology of the shoreline; (5) increase public access to publicly owned areas of the shorelines; (6) increase recreational opportunities for the public in the shoreline; (7) provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.[148]

Local Shoreline Master Programs ("SMP") serve as the primary mechanism for implementing SMA policies.[149] The SMA establishes SMPs as cooperative programs between local jurisdictions and the state, whereby local jurisdictions have the primary responsibility for creating and administering shoreline master programs and the Washington Department of Ecology supports the local governments with funding and expertise.[150]

3.2.5.1. Cumulative Impacts.

The SMA requires the incorporation of a cumulative impacts analysis in the SMP update process, and requires it for at least two categories of individual shoreline projects. The Shoreline Master Program Guidelines, which guide the creation of local SMPs, expressly address cumulative impacts through the following provisions:

- "Local master programs shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions fostered by the policy goals of the act."[151]
- "Local governments shall also identify a process for periodically evaluating the cumulative effects of authorized development on shoreline conditions."[152]
- "The principle that regulation of development shall achieve no net loss of ecological function requires that master program policies and regulations address the cumulative impacts of shoreline ecological functions that would result from future shoreline development and uses that are reasonably foreseeable from proposed master programs."[153]

[147] *Id.*
[148] *Id.*
[149] RCW 90.58.050.
[150] RCW 90.58.050.
[151] WAC 173-26-186(8)(d).
[152] WAC 173-26-191(2)(a)(iii)(D).
[153] WAC 173-26-201(3)(d)(iii).

- "Assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions."[154]
- To avoid cumulative impact of shoreline stabilization, "[n]ew development should be located and designed to avoid the need for future shoreline stabilization to the extent feasible."[155]

In addition, the following provisions imply the need for a cumulative impacts review:

- "Local master programs shall include policies and regulations designed to achieve no net loss of those ecological functions."
- "Local master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline." [156]

Thus, as local jurisdictions update their SMPs, they must evaluate the cumulative impacts of the development authorized by those SMPs.

There is some dispute regarding whether the SMA requires a cumulative impacts analysis when permitting individual projects other than those that require a variance or conditional use permit, but it unequivocally authorizes local entities to request such analysis.[157] On May 1, 2007, the Shorelines Hearings Board ("SHB"), which adjudicates appeals of shoreline permitting decisions, issued a decision in *Fladseth v. Mason County* that stated that "the Supreme Court has held that it is within the Board's statutory duties to be concerned over the ultimate cumulative impact of piecemeal development on the state's shorelines."[158] In *Bishop v. San Juan County*, the SHB stated that "[i]n considering any shoreline development, particularly a dock or pier, it is essential to evaluate the cumulative impacts of similar proposals."[159] In *Hayes v. Yount*, the Washington Supreme Court upheld the SHB decision to restrict landfilling due to the cumulative effects of similar future development, declaring that "[l]ogic and common sense suggest that numerous projects, each having no significant effect individually, may well have very significant effects when taken together."[160] The court noted that the SMA's policies to prevent piece-meal development of the shorelines through coordinated planning reflected the legislature's recognition of the need to control cumulative adverse effects.[161] Similarly, in *Harman v. City of Bellevue*, the SHB rejected a proposed dock expansion after concluding that

[154] WAC 173-26-231(2)(d).
[155] WAC 173-26-231(3)(a)(iii).
[156] WAC 173-26-186(8)(b)(ii).
[157] *See*, *e.g.*, *Hayes v. Yount*, 87 Wn.2d 280, 287-88, 552 P.2d 1038 (1976); *Bishop v. San Juan County*, SHB No. 99-034, Conclusion of Law ("COL") No. 11 (2000) (Final Findings of Fact, Conclusions of Law, and Order).
[158] *Fladseth v. Mason County,* SHB No. 05-026, COL No. 13. (May 1, 2007).
[159] SHB No. 99-034, at COL No. 11.
[160] 87 Wn.2d at 287-88.
[161] *Id.* at 288.

the approval would set a precedent for the expansion of all residential facilities on Meydenbauer Bay.[162]

In addition, the SMA regulations require an evaluation of cumulative impacts for requests for variances and conditional use permits.[163]

3.2.5.2. Sea Level Rise.

Neither the SMA nor its regulations expressly addresses sea level rise, but adjudicative bodies have suggested the need to evaluate project-level sea level rise impacts and the SMP Guidelines require the use of scientific information that likely would include sea level rise estimates. In addition, Ecology guidance recommends that SMP updates address sea level rise. And conditional use permits and variances must avoid a substantial detrimental effect to the public interest, suggesting the need to consider whether sea level rise will result in project impacts on public lands.[164]

The SHB has recognized the threat that sea level rise imposes on state shorelines. In *Caldwell v. Department of Ecology*, the SHB upheld Ecology's denial of a variance request to construct a house seaward of the top of an eroding bluff after recognizing that future sea level rise could lead to both: (1) bulkheading of the applicant's shoreline; and (2) requests for similar construction by nearby beachfront homeowners displaced by that sea level rise.[165] Notably, the SHB folded its assessment of sea level rise impacts into its cumulative impacts analysis in determining that sea level rise would increase the likelihood of requests from other homeowners to locate their houses over feeder bluffs if the variance were approved.[166]

In addition, the SMP Guidelines offer numerous instructions that suggest the need to analyze sea level rise, including its "best science" mandate -- master program provisions must be based on "an analysis incorporating the most current, accurate, and complete scientific and technical information available."[167] Other provisions that could be interpreted to require an evaluation of sea level rise include those stating that:

- "Evaluation of such cumulative impacts should consider: (i) [c]urrent circumstances affecting

[162] SHB No. 94-75, 5 (July 7, 1995) (Final Findings of Fact, Conclusions of Law, and Order) (citing *Hayes v. Yount*, 87 Wn.2d 280 (1976)).
[163] WAC 173-23-160(2) ("[c]umulative impacts of like conditional use permits cannot produce substantial adverse effects to the shoreline environment); WAC 173-27-170(4) ("[c]umulative impacts of like variances cannot produce substantial adverse effects to the shoreline environment).
[164] WAC 173-27-160(1)(e), 170(2)(f).
[165] SHB No. 11-012, FOF No. 5, COLs No. 23-24 (March 29, 2012) (Findings of Fact, Conclusions of Law, and Order).
[166] *Id.* at COL No. 23.
[167] WAC 173-26-201(2)(a).

the shorelines and relevant natural processes; (ii) [r]easonably foreseeable future development and use of the shoreline…."[168]

- "Shoreline master programs shall address ecological functions associated with applicable ecosystem-wide processes, individual components and localized processes…."[169]
- One of the ecosystem-wide processes to be evaluated is the sediment regime under which aquatic ecosystems evolved, elements of which include the timing, volume, and character of sediment input, storage, and transport.[170]

For shorelines of statewide significance, there is a "greater imperative on identifying, understanding, and managing ecosystem-wide processes and ecological functions that sustain resources of statewide importance."[171] And master programs must preserve the shorelines for future generations. In addition, "[w]here natural resources of statewide importance are being diminished over time, master programs shall include provisions to contribute to the restoration of those resources."[172]

In its Sea Level Rise guidance, Ecology recommends to local planners that "SMPs provide a direct opportunity for you to incorporate sea level rise into a broader planning framework."[173] Moreover, Ecology guidance reminds local jurisdictions of their obligation to adopt SMPs that achieve no-net-loss, and that they should take sea level rise into account as an indicator of net loss because it will reduce the availability of upper intertidal habitats where development and armoring act as a barrier to natural upward migration of those habitats.[174]

Thus, an SMP update that does not identify and address the individual and cumulative impacts of sea level rise on authorized future development likely would be inconsistent with the SMA.

3.2.6. State Environmental Policy Act (1971).

SEPA, Washington's analogue to NEPA, requires local governments and state agencies to fully consider the environmental impacts of major actions.[175] SEPA embodies four purposes: (1) to declare a state policy that will encourage productive and enjoyable harmony between humans

[168] WAC 173-26-186(8)(d) (emphasis added).
[169] WAC 173-26-201(2)(c).
[170] WAC 173-26-201(3)(d)(i)(D).
[171] WAC 173-26-251(2).
[172] WAC 173-26-251(3)(b).
[173] Washington State Dep't of Ecology, *SMP Handbook, Appendix A, Addressing Sea Level Rise in Shoreline Master Programs*, (May 24, 2012), *available at* http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/sea_level_guidance.pdf (last visited Nov. 15, 2012).
[174] *Id.* at 10-11.
[175] RCW 43.21C.030; *Boehm v. City of Vancouver*, 111 Wn. App. 711, 717, 47 P.3d 137 (2002).

and their environment; (2) to promote efforts that will prevent or eliminate damage to the environment and biosphere; (3) to stimulate human health and welfare; and (4) to enrich the understanding of the ecological systems and natural resources important to the state and nation.[176] To achieve these purposes, and unlike NEPA, SEPA grants state and local agencies the substantive authority to condition or deny a proposal based on its cumulative impacts.[177]

SEPA review commences when the lead agency for a project reviews an environmental checklist of the proposed activities, alternatives, and impacts and determines whether it is a major action that significantly affects the environment. A major action significantly affects the environment when "more than a moderate effect on the quality of the environment is a reasonable probability."[178] Like NEPA, SEPA requires the preparation of an Environmental Impact Statement ("EIS") for such actions.[179] An EIS, in turn, requires an analysis of the "probable," "significant," adverse environmental impacts.[180]

The SEPA rules expressly require analysis of the likely direct, indirect, and cumulative impacts of a project, including both the short-term and long-term impacts.[181] Although neither the statute nor the rules defines "cumulative impacts," the rules identify the scope of reviewable impacts as follows, "[i]mpacts shall include those that are likely to arise or exist over the lifetime of a proposal or, depending on the particular proposal, longer."[182] In addition, impacts include both effects that result from growth caused by a proposal and the likelihood that the present proposal will serve as a precedent for future actions.[183]

A cumulative impacts analysis is required to evaluate future development only where some evidence in the record indicates that the project under review will facilitate future action that will result in additional impacts.[184] A future action that is either substantially independent from an existing proposal or whose impacts are speculative or remote does not warrant cumulative impacts analysis.[185] In *Gebbers v. Okanogan County Public Utility District No. 1*, a cumulative impacts analysis for the construction of a new electricity transmission line did not need to include impacts from the replacement of an existing electric transmission line because

[176] RCW 43.21C.010.
[177] WAC 197-11-660; *City of Federal Way v. Town & Country Real Estate*, 161 Wn. App. 17, 49, 252 P.3d 382 (2011).
[178] *Norway Hill Pres. & Prot. Ass'n v. King County Council*, 87 Wn.2d 267, 278, 552 P.2d 674 (1976).
[179] WAC 197-11-330.
[180] RCW 43.21C.031(1).
[181] WAC 197-11-060.
[182] WAC 197-11-060(4)(c).
[183] WAC 197-11-060(4)(d).
[184] *See, e.g.*, *Boehm v. City of Vancouver*, 111 Wn. App. 711, 720, 47 P.3d 137 (2002)
[185] *Gebbers v. Okanogan County Pub. Util. Dist. No. 1*, 144 Wn. App. 371, 380-86, 183 P.3d 324 (2008) (citing *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 345, 552 P.2d 184 (1976); *SEAPC v. Cammack II Orchards*, 49 Wn. App. 609, 614, 744 P.2d 1101 (1987).

replacement had not been proposed for the existing line and the record demonstrated that replacement would be unnecessary for 10-15 years.[186] Thus, any potential rebuild was not imminent or dependent on the proposed new transmission line and "was not probable but only hypothetical and speculative."[187] Similarly, a cumulative impacts analysis was not warranted for a fueling station in *Boehm v. City of Vancouver* where the appellants had not offered evidence of its potential impacts.[188]

In contrast, where an action, such as a zoning redesignation, will encourage future development that is likely to adversely impact the environment, a cumulative impacts analysis for that redesignation should include the impacts of the future development.[189] For example, in *King County v. Boundary Review Board*, the annexation of rural lands into an urban town led the court to conclude that "[t]he likelihood of development of the annexation properties is unquestionable," and the annexing town therefore incorrectly failed to assess the impacts of the certain development as part of the environmental review for the annexations.[190] Likewise, in *Douglass v. City of Spokane Valley*, the hearing examiner did not err in concluding that SEPA required an assessment of the cumulative impacts of a new development on a community's ability to evacuate a wildfire.[191]

Where an agency declines to perform a cumulative impacts analysis, a reviewing court will overturn that decision as clearly erroneous where the entire evidence in the record leaves the court with "the definite and firm conviction that a mistake has been committed," despite evidence supporting the decision.[192] In contrast with this strict standard of review, the court's scope of review broadly includes the entire record before the agency, in light of SEPA's public policy and environmental values, rather than merely a review to ascertain whether substantial evidence in the record supports the government's decision.[193] Consequently, in *Sisley v. San Juan County*, the court held that San Juan County's Board of Commissioners' Determination of Nonsignificance for a marina in Deer Harbor was clearly erroneous because the record included ample concerns about the project's cumulative impacts, including a letter from the U.S. Fish

[186] *Gebbers*, 144 Wn. App. at 386.
[187] *Id.*
[188] 111 Wn. App. at 720-21 (noting that the nature of cumulative impacts is general prospective rather than retrospective).
[189] *King County v. Boundary Review Bd.*, 122 Wn.2d 648, 860 P.2d 1024 (1993).
[190] *Id.* at 663-66 (noting that "[o]ne of SEPA's purposes is to provide consideration of environmental factors at the earliest possible stage to allow decisions to be based on complete disclosure of environmental consequences.").
[191] 154 Wn. App. 408, 422-25, 225 P.3d 448 (2010).
[192] *Norway Hill Pres. & Prot. Ass'n v. King County*, 87 Wn.2d 267, 274, 552 P.2d 674 (1976).
[193] *Sisley v. San Juan County*, 89 Wn.2d 78, 84, 569 P.2d 712 (1977).

and Wildlife Service identifying impacts of marinas on Deer Harbor's biologically unique shoreline.[194]

The rules also encourage GMA-planning counties and cities to establish a process for monitoring the cumulative impacts of permit decisions and conditions, and to use those data to update the information about existing conditions for the built and natural environment.[195]

Although SEPA does not expressly address sea level rise, its mandate to review direct, indirect, and cumulative impacts that are likely to arise over the lifetime of the proposal or longer may require a review of the impacts associated with likely sea level rise.[196] Moreover, SEPA mandates review of project impacts for erosion and accretion, species habitat, and surface water movement, quantity, and quality, which should include an understanding of the effects of sea level rise.[197]

3.3. Local Laws.

3.3.1. Critical Areas Ordinance.

The GMA directs counties and cities to promulgate Critical Areas Ordinances ("CAO") to protect the functions and values of critical areas, to protect people, and to protect public and private property.[198] The five types of critical areas are: (1) geologically hazardous areas; (2) frequently flooded areas; (3) critical aquifer recharge areas; (4) wetlands; and (5) fish and wildlife habitat conservation areas.

CAOs often do not expressly address cumulative impacts. However, as identified above under the GMA review, an analysis of a project's impacts on a critical area may necessitate a cumulative impacts evaluation to ensure that the project protects the critical area. In addition, the comprehensive plan portion of a CAO can be amended only once per year to ensure that "all proposals shall be considered by the governing body concurrently so the cumulative effect of the various proposals can be ascertained."[199]

CAOs also have not historically addressed sea level rise. However, the long-term protection of property in or near geologically hazardous and frequently flooded areas necessarily requires an analysis of sea level rise impacts. In addition, it would appear to be necessary to evaluate sea level rise to insure against sea water intrusion into critical aquifer recharge areas, and to

[194] *Id.* at 87-88.
[195] WAC 197-11-238.
[196] WAC 197-11-060, -792.
[197] WAC 197-11-060(2)(b); -444.
[198] SJCC 18.30.110.A.
[199] RCW 36.70A.130(2)(d).

protect against impacts to critical shoreline spawning habitat from shoreline armoring. In 2003, the state legislature transferred the statutory authority for critical areas within the shoreline jurisdiction from the GMA to the SMA, requiring compliance with the SMP guidelines and related CZMA provisions for sea level rise.

In recently updating its CAO, San Juan County synthesized the Best Available Science and prepared a report ("BAS Synthesis") that recognizes the need to address sea level rise. The BAS Synthesis noted that although the character and magnitude of sea level rise impacts to aquatic ecosystems are difficult to predict, "[a]t a minimum, increases in sea level and the frequency and intensity of storms would likely result in additional shoreline erosion and requests for approval of new armoring structures, as well as the narrowing of beaches adjacent to existing bulkheads, with a decrease in the area available for spawning forage fish."[200] The BAS Synthesis recognizes that "[p]lanning for potential sea level rise is however, something that can be incorporated into land use regulations, particularly those that pertain to the siting of roads and shoreline structures in areas prone to wind and wave erosion. In these locations, it is likely that some will be threatened by rising waters and potentially greater intensity storms, resulting in additional construction of bulkheads which are known to harm marine species and ecological functions."[201]

Notwithstanding this clear direction, San Juan County decided to forego addressing sea level rise during its 2012 update to its CAO.[202]

3.3.2. Shoreline Master Program.

Shoreline Master Programs ("SMP") establish development standards for activities that occur up to 200 feet inland from the Ordinary High Water Mark of marine waters and lakes larger than 20 acres. For non-exempt shoreline development, landowners must obtain a shoreline substantial development permit. Exempt development need not follow the permitting process, but must comply with the substantive SMP regulations.[203]

The San Juan County SMP expressly addresses cumulative impacts primarily only for variances and conditional use permits.[204] In addition, when determining whether alternatives are

[200] Herrera and The Watershed Company, *Chapter 3: Best Available Science for Marine Fish & Wildlife habitat Conservation Areas*, 9 (April 2011).
[201] *Id.* at 60.
[202] San Juan County Ordinance Nos. 26-2012, 27-2012, 28-2012, and 29-2012 (adopted December 3, 2012), *available at*: http://www.co.san-juan.wa.us/council/ordinances.aspx.
[203] SJCC 18.50.020.F.
[204] SJCC 18.80.110.I.3.c. ("In the granting of shoreline variances, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if variances were granted to other developments in the area where similar circumstances exist, the total of the variances shall also remain consistent

reasonable or feasible, the County may take into consideration the "[p]robable intensity, severity, and cumulative impacts of the original proposal and alternative approaches, and opportunity for the avoidance or reduction in the number, intensity, or severity of significant impacts, or of the aggregate adverse impact."[205] Also, the SMP policy to avoid the porcupine effect of multiple docks along County shorelines reflects a concern over at least visual cumulative impacts. [206]

In addition, since 1983, the Shorelines Hearings Board ("SHB") has recognized the need to evaluate the cumulative impacts of shoreline development.[207] The SHB has stated that "[i]n considering any shoreline development, particularly a dock or pier, it is essential to evaluate the cumulative impacts of similar proposals."[208] The SHB has determined that a cumulative impacts assessment is warranted "in any case where there is proof of impacts that risk harm to habitat, loss of community use, or significant degradation of views and aesthetic values," and that development on shorelines of statewide significance, such as San Juan County's shorelines, is more likely to merit a cumulative impacts review.[209]

The SMP does not expressly address sea level rise. However, provisions like the prohibition against siting a house where it will require armoring in the foreseeable future may call for an evaluation of sea level rise and shoreline erosion.[210]

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with the policies of RCW 90.58.020 and shall not produce substantial adverse effects to the shoreline environment."); SJCC 18.80.110.J.4.e ("The cumulative impacts of additional requests for like actions in the area, or for other locations where similar circumstances exist, shall not produce substantial adverse effects to the shoreline environment, e.g., the total of the conditional uses shall remain consistent with the policies of RCW 90.58.020 and the Shoreline Master Program").

[205] SJCC 18.20.060 (defining "feasible alternative").

[206] San Juan County Comprehensive Plan, §3.5.C.11 ("[t]o spare San Juan County from the so-called 'porcupine effect' created by dozens of individual private docks and piers on the same shoreline, preference should be given to the joint use of a single structure by several waterfront property owners, as opposed to the construction of several individual structures.").

[207] *See, e.g.*, *Hart* v. *San Juan County,* SHB No. 83-7 (1983). The SHB takes its direction from the Washington State Supreme Court, which has held that the approval of one project can set a precedent for similar projects and that the SHB's duties include a concern over the cumulative impact of piecemeal development of Washington shorelines. *See Skagit County v. Dep't of Ecology*, 93 Wn.2d 742, 750, 613 P.2d 121 (1980); *Hayes v. Yount*, 87 Wn.2d 280, 288, 552 P.2d 1038 (1976)).

[208] *Bishop v. San Juan County*, SHB No. 99-034, Conclusion of Law ("COL") No. 16 (May 6, 2000).

[209] *Fladseth*, SHB No. 05-026, at COL No. 15.

[210] SJCC 18.50.330.

3.4. Common Law

3.4.1. The Public Trust Doctrine.

The Public Trust doctrine is a common law principle that protects public resources by recognizing public ownership of those resources and by imposing upon governmental entities an obligation to protect those resources. The Public Trust doctrine grew out of principles of Roman law that recognized the public right to use navigable waters for navigation, commerce, and fisheries. Upon statehood, Washington received from the U.S. the title in, and dominion over, its tidelands and shorelands.[211] Thus, the state government holds publically-navigable waters and their beds, such as those in and under the Salish Sea, Lake Washington, or Snohomish River, in trust for the public and, although it can convey the title to those lands, it retains the authority and duty to control activities on those lands to protect the public interest.[212] The public trust operates as a covenant that runs with the land and ensures that future property owners do not harm the public's interest.[213]

Although the state of Washington sold approximately 60% of its tidelands and 30% of its shorelands to private owners, it did not have the power to abdicate its sovereignty over those lands, and so retains control of them as necessary to protect the public trust.[214] When the state conveyed land to private owners, it did so subject to an implied reservation of the public's right to use the navigable waters.[215] The state Supreme Court, in *Caminiti v. Boyle*, held that "[t]he state can no more convey or give away this jus publicum interest than it can 'abdicate its police powers in the administration of government and the preservation of the peace.'"[216]

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[211] *Caminiti v. Boyle*, 107 Wn.2d 662, 666, 732 P.2d 989 (1987) (this public ownership of the beds and shores of navigable waters up to the ordinary high water mark is ensconced in the state constitution. Wa. Const. art. 17, 1).

[212] *See Citizens for Responsible Wildlife Mgmt. v. State*, 124 Wn. App. 566, 571-72, 103 P.3d 203 (2004); *see also* concurring opinion, C.J. Quinn-Brintnall, stating that "the sovereign's duty to manage its natural resources recognized in the public trust doctrine is not time limited, and the primary beneficiaries of the sovereign's exercise of its public trust are those who have not yet been born or who are too young to vote. Thus, the sovereign authority to regulate natural resources is circumscribed by its duty to manage natural resources well for the benefit of *future* generations." *Id.* at 577 (emphasis in original). For a discussion of the jus privatum (private property interest) and jus publicum (public authority interest) aspects of the state's ownership of tidelands, *see Caminiti*, 107 Wn.2d at 668-69. This paper uses the term public trust to refer to the latter aspect, the state's duty to protect the public interest in waters and beds against undue harm by private activity.

[213] *Orion Corp. v. State*, 109 Wn.2d 621, 640, 747 P.2d 1062 (1987).

[214] *Caminiti*, 107 Wn.2d at 666-74. Tidelands are the "[l]and between the lines of the ordinary high and low tides, covered and uncovered successively by the ebb and flow of those tides; land covered and uncovered by the ordinary tides." Bryan A. Garner, *Black's Law Dictionary*, 719 (3rd Pocket ed. 1996). Shorelands are "those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark." RCW 90.58.030(2)(f).

[215] *Id.* at 667 (citing *New Whatcom v. Fairhaven Land Co.*, 24 Wash. 493, 499, 64 P. 735 (1901)).

[216] *Id.* (quoting *Illinois Cent. R.R. v. Illinois*, 146 U.S. 387, 456-59, 13 S. Ct. 110, 453, 36 L. Ed. 1018 (1892)).

Washington courts have not fully explored the scope of the public interests that the Public Trust doctrine protects, but have indicated its flexibility for protecting the public interest and suggested that it should evolve to sustain natural resources.[217] In *Weden v. San Juan County*, a challenge to San Juan County's jet ski ban, the court noted that "since as early as 1821, the public trust doctrine has been applied throughout the United States 'as a flexible method for judicial protection of public interests' . . . ."[218] In *Citizens for Responsible Wildlife Management*, the Washington Court of Appeals confirmed that the doctrine "protects 'public ownership interests in certain uses of navigable waters and underlying lands, including navigation, commerce, fisheries, recreation, and environmental quality.'"[219] Consequently, the court there held that to the extent the Public Trust doctrine applied to the state's interest in animals for hunting, publicly-adopted initiatives that prohibited bear bait and other types of less humane hunting did not run afoul of the Public Trust. Also, in a 1993 dissent in *Rettkowski v. Department of Ecology,* two Washington Supreme Court justices asserted that the Public Trust should evolve as necessary to achieve one of its central purposes, to maintain social stability by protecting and perpetuating natural resources.[220]

The Public Trust doctrine may include an element of environmental protection in Washington. The Washington Supreme Court has extended the doctrine beyond the traditional right of navigation to protect the incidental rights of fishing, boating, swimming, water skiing, and other related recreational purposes that are corollary to the use of public waters.[221] In *Orion Corporation v. State*, that court relied upon the Public Trust doctrine to hold that the appellant did not have a property right to dredge and fill its tidelands where it would have substantially impaired the public rights of navigation and fishing, and that the SMA and Skagit County Shoreline Management Master Program prevention of that project did not constitute a taking.[222] Similarly, a 1991 Department of Ecology white paper asserts that environmental quality and water quality likely fall within the interests protected by the Public Trust.[223] In addition to citing the language in *Orion Corporation* that favors a Public Trust that protects

[217] *See Weden v. San Juan County*, 135 Wn.2d 678, 698, 958 P.2d 273 (1998); *Citizens for Responsible Wildlife Mgmt. v. State*, 124 Wn. App. 566, 571-75, 103 P.3d 203 (2004).
[218] *Weden*, 135 Wn.2d at 698.
[219] *Id.* at 571 (emphasis added) (quoting *Weden*, 135 Wn.2d at 698).
[220] *Rettkowski v. Dep't of Ecology*, 122 Wn.2d 219, 241-42, 858 P.2d 232 (1993) (Utter, Guy, JJ. dissenting) (noting that the protection of natural resources is necessary to prevent social crises that would arise due to the sudden depletion of natural resources necessary for a stable social system) (citing Sax, *Liberating the Public Trust Doctrine from Its Historical Shackles*, 14 U.C. Davis L. Rev. 185, 188-89 (1980-81)).
[221] *Wilbour v. Gallagher*, 77 Wn.2d 306, 316, 462 P.2d 232 (1969), cert. denied 400 U.S. 878, 91 S. Ct. 119, 27 L. Ed. 2d 115 (1970).
[222] *Orion Corp.*, 109 Wn.2d at 638-42.
[223] Wa. State Dep't of Ecology, *The Public Trust Doctrine and Coastal Zone Management in Washington State*, Pub. No. 93-54, 5 (Oct. 1991).

vegetation, wildlife, waters of the state, and aquatic life, the paper notes that the historic right to fishing can only be guaranteed with water quality and quantity sufficient to support fish life.[224]

However, there is currently a question whether the Shoreline Management Act has subsumed the Public Trust as it applies to marine shorelines in Washington. Although the Washington Supreme Court suggested in *Caminiti v. Boyle* that the SMA largely incorporates and thus statutorily supersedes the public trust doctrine, that court separately evaluated issues under the Public Trust and the SMA in *Orion Corporation* that same year.[225]

Although each state develops its own unique brand of Public Trust doctrine, the doctrine evolves over time as its development in one state influences its scope in another.[226] Consequently, Washington's Public Trust doctrine may over time incorporate environmental protection elements of the doctrine that have arisen in other states, such as California.[227] In *National Audubon Society v. Superior Court of Alpine County*, the California Supreme Court held that the Public Trust required the retention of sufficient water in Mono Lake to protect natural resources, such as brine shrimp, nesting birds, and natural beauty, from damage caused by the withdrawal of water for use in Los Angeles.[228] Similarly, in *Marks v. Whitney*, the California Supreme Court determined that the public trust could be used to protect ecological values and to preserve tidelands in a natural state.[229] In discussing the scope of the Public Trust, the court noted that "[t]he public uses to which tidelands are subject are sufficiently flexible to encompass changing needs" and "[i]n administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another."[230] Consequently, while the court declined to enumerate all of the Public Trust uses of shorelines, it recognized that

> [t]here is a growing public recognition that one of the most important public uses of the tidelands—a use encompassed within the tidelands trust—is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which

[224] *Id.* at 42.
[225] *See, e.g.*, *Caminiti*, 107 Wn.2d at 670; *but see Orion Corp.*, 109 Wn.2d at 661-62 (separately evaluating the public trust and SMA).
[226] *See, e.g.*, *Citizens for Responsible Wildlife Mgmt.*, 124 Wn. App. at 571 (referencing the seminal U.S. Supreme Court decision, *Illinois Cent. R.R. v. Illinois*, 146 U.S. 387, 453, 13 S. Ct. 110, 36 L.Ed. 1018 (1892)).
[227] *See Orion Corp.*, 109 Wn.2d at 641 (citing *In re Steuart Transp. Co.*, 495 F. Supp. 38 (E.D. Va. 1980) (state can claim oil spill damages to waterfowl under trust doctrine); *Marks v. Whitney*, 6 Cal. 3d 251, 491 P.2d 374 (1971).
[228] 33 Cal.3d 419, 658 P.2d 709 (1983).
[229] *Marks*, 6 Cal. 3d at 259-60.
[230] *Id.* at 259.

provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area.[231]

Given this modern interpretation of the Public Trust, it may apply to prevent activities in the shoreline that would cause impacts either cumulatively or as sea levels rise.

Tribunals that have reviewed the Public Trust doctrine have not expressly linked it to a cumulative impacts analysis. However, it is a uniquely cumulative approach to preventing impacts to navigation, commerce, fisheries, and the environment through many individual, private activities.

The Public Trust doctrine may be sufficiently dynamic to apply to waters as sea levels rise to inundate upland areas. This would be consistent with the doctrines of accretion and erosion below, whereby property lines migrate with gradual changes to coastlines by the iterative addition or loss of sediment.

3.4.2. Rolling Easements.

The term "rolling easement" encompasses a variety of legal approaches that can be employed to ensure that wetlands and beaches are allowed to migrate inland through the removal of roads, structures, and other development as the underlying land becomes submerged by sea level rise.[232] Rolling easements typically limit shoreline armoring and require the removal of preexisting structures located seaward of an identifiable line on the shore through either a regulation that prohibits shoreline armoring or a property right in the migration of wetlands, beaches, or shoreline access as sea levels rise.[233] Rolling easements generally establish two consecutive ownership regimes for shoreline land so that: (1) between the present and the time the development is threatened, it can be put to its highest use; and (2) once the development is threatened, wetland or beach are allowed to continue to migrate inland as the development is relocated.[234] This approach allows the use of the land for its existing owners while avoiding the societal and ecological costs of erecting barriers to natural inland migration.

Rolling easements can be created through both voluntary and regulatory mechanisms. A voluntary approach, by which a landowner sells or donates an easement to private land trusts, government agencies, or private citizens, likely would garner stronger support.[235] The following

[231] *Id.* at 259-60.
[232] James G. Titus, *Rolling Easements*, iii (June 2011), *available at*: www.epa.gov/cre/downloads/rollingeasementsprimer.pdf (the term submergence is used to describe the conversion of dry land to wetland or open water through either actual submergence or shoreline erosion).
[233] *Id.* at 6.
[234] *Id.* at 4-5.
[235] *Id.* at 6.

list identifies largely voluntary approaches, some of which may occur in the context of underlying regulations: (1) affirmative easements that establish a public right to walk along dry beach even as beaches migrate inland; (2) conservation easements that prevent landowners from constructing shoreline armoring or adding fill to elevate their land; (3) restrictive covenants that prohibit shoreline armoring and allow shoreline public access; (4) future interests that transfer ownership of land as the seas reach a specified elevation; (5) migrating property lines that move inland as the shore erodes or is submerged; (6) legislative or judicial amendment that specifies public shoreline access and the rights of landowners to armor the shoreline; and (7) transferable development rights that offset lost property ownership in submerged land with the right to develop elsewhere.[236]

Regulatory rolling easements can include: (1) local zoning or shoreline programs that restrict or prohibit shoreline armoring or require removal of structures standing on the beach or in wetlands; (2) permit conditions that require public access to the dry beach in exchange for a building permit; or (3) permit conditions that require public access along shoreline armoring in exchange for authorization to build that structure.[237]

The basic elements of a rolling easement typically include: (1) a prohibition against shoreline armoring; (2) a shoreline boundary, like mean higher high water, seaward of which the owner's property rights are reduced; (3) a prohibition against structures seaward of the boundary; (4) either encouragement or a requirement to remove structures when erosion places them seaward of the boundary; (5) notice of the existence of the easement to prospective buyers; (6) provisions for public access; and (7) notice whether beach nourishment allowed.[238]

Texas offers an example of a rolling easement approach to shoreline access. The Texas Open Beaches Act prohibits any structure seaward of the dune vegetation line for beaches where the public has historically established some right of use or easement in that beach.[239] Because Texans have used their beaches for travel since before statehood, they had established their preexisting use of the dry sandy beaches in most populated locations.[240] To enforce the rolling easement, the state's General Land Office notifies owners of structures that they are subject to an order to remove once the vegetation line migrates inland of the structure.[241]

[236] *Id.* at 7.
[237] *Id.* at 6-7.
[238] Titus, at 14.
[239] Tex. Nat. Res. Code Ann. § 61.011(a).
[240] Titus, at 47.
[241] *Id.*

In the alternative to a regulation, a rolling easement can be established by transferring property rights to another entity.[242] Such a transfer could occur through mechanisms that include: (1) an easement or covenant; (2) a future interest in the land; or (3) ambulatory boundaries.[243] An easement or covenant related to sea level rise would typically take the form of a landowner's promise not to armor the shoreline that could be enforced by a governmental entity, nonprofit organization, or another person. A future interest would arise where a landowner divides the property temporally into two pieces, the ownership of the shoreline area before sea level reached a set height and ownership of that area after it reached that height. An ambulatory boundary is created when a property owner enters into an agreement that allows the shoreline boundary to shift with rising seas.

The flexibility of rolling easements would allow them to address either sea level rise or cumulative impacts, depending on the scale or style of their implementation.

3.4.3. Accretion/Reliction.

The rules of accretion and reliction generally hold that property lines slowly shift either seaward or inland as sediments gradually add dry land to the shoreline or natural erosion causes the conversion of uplands to marine areas.[244] This rule contrasts with the principle that an avulsive, or sudden, event does not affect a shoreline boundary. For marine waters, Washington does not observe the general rule that accretions add to upland property, instead claiming public ownership of these areas, while maintaining that the boundary of public ownership moves inland with reliction.[245]

The rules of accretion and reliction are not usually associated with cumulative impacts.

Through the doctrine of reliction, the State of Washington likely will gain ownership of lands bordering shorelines as sea level rises to cover those lands. However, this rule does not dictate whether those lands must be of a quality to support habitat that could be squeezed between the rising waters and the upland area if the line between the two is fixed with armoring or other development.

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[242] Titus, at 49-50.
[243] *Id.*
[244] Accretion is "[t]he gradual accumulation of land by natural forces…." Black's Law Dictionary 10 (3rd Pocket ed. 2006); reliction is "[t]he alteration of a boundary line because of the gradual removal of land by a river or stream." *Id.* at 606.
[245] *See* the Seashore Conservation Act, RCW 79A.05.600-.695 (1967); *also Hughes v. State*, 67 Wn.2d 799, 410 P.2d 20 (1966), rev'd 389 U.S. 290 (1967) (decision by Washington Supreme Court that accretions to ocean beaches occurring after Washington statehood belong to state reversed on grounds that owner of upland property in that suit had received land from U.S. prior to statehood, and thus obtained ownership of accreted lands pursuant to federal law).

3.4.4. Common Enemy Doctrine.

The common enemy doctrine does not apply to seawater, and thus would not justify the construction of shoreline armoring along San Juan County's marine shorelines where that armoring causes harm to neighboring property.[246] The common enemy doctrine allows landowners to dispose of unwanted surface waters as they like without incurring liability for the impacts of directing that water onto a neighbor's property.[247] Under the doctrine, a landowner can redirect surface water onto a neighbor's property and then use the doctrine to defend against a neighbor's nuisance or trespass claim for causing those surface waters to invade the neighbor's property.[248] The doctrine states that "'surface water, caused by the falling of rain or the melting of snow, and that escaping from running streams and rivers, is regarded as an outlaw and a common enemy, against which any one may defend himself, even though by doing so injury may result to others.'"[249] However, the doctrine does not apply to marine shorelines because they do not constitute "surface water," which is characterized by "its inability to maintain its identity and existence as a body of water."[250] On the contrary, "[s]torm-driven waves in Puget Sound remain part of a definite and identifiable body of water when splashing onto waterfront property." Consequently, the common enemy doctrine would not support a defense for redirecting shoreline water that harmed a neighboring property.[251]

In addition, the Ninth Circuit Court of Appeals held in *U.S. v. Milner* that the common enemy doctrine did not support shoreline bulkhead construction because the water was not acting as a common enemy but rather as an inherent component of the property. In *U.S. v. Milner*, the court ruled that the common enemy doctrine did not apply to allow the construction of armoring on tidelands held in trust by the U.S. government for the Lummi Tribe.[252] The court noted that the water was not acting as a common enemy in that decision, but that the tide line was an inherent attribute of the property at issue.[253] Any movement of the boundary line either seaward or shoreword would benefit one party and harm the other.[254] Consequently, the upland property owner could not prevent the inland shift of the waters.

Thus, the common enemy doctrine would not obstruct efforts at the local, state, or federal level to protect shorelines from the impacts of shoreline modification.

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[246] *See Grundy v. Thurston County, et al.*, 155 Wn.2d 1, 8-10, 117 P.3d 1089 (2005).
[247] *Id.* at 8-10.
[248] *U.S. v. Milner*, 583 F.3d 1174, 1189 (9th Cir. 2009).
[249] *Id.* (quoting *Cass v. Dicks*, 14 Wash. 75, 44 P.113, 114 (1896)).
[250] *Grundy*, 155 Wn.2d at 10.
[251] *Id.*
[252] *Id.*
[253] *Id.*
[254] *Id.*

3.5. Tribal Treaty Rights.

There may be a variety of rights that western Washington treaty tribes can exercise to protect nearshore resources in the Salish Sea; this paper summarizes two of those rights: (1) the treat/property right in tidelands that migrate landward with sea level rise; and (2) the federal treaty right to harvest one-half of the fish and shellfish in their usual and customary fishing grounds.

Treaty tribes may enjoy property rights that migrate inland as sea levels rise. In *U.S. v. Milner*, cited above, the Ninth Circuit Court of Appeals examined Tribal treaty rights and held that they protected against shoreline armoring that would transfer Tribal tidal property to upland property owners. The court concluded that bulkheads trespassed onto Tribal property when the mean high water mark migrated upland from the bulkheads even though they had originally been built above that mark.[255] In that case, the U.S. government held the tidelands in trust for the Lummi nation. The court recited the common law principle that shoreline boundaries are ambulatory, with gradual loss and gain as the sea rises and falls, and concluded that the landowners could not permanently fix the property boundary through armoring because both the property owner and the Lummi had a vested right to gains as the boundary migrated, either inland or toward the water.[256] Thus, once the shoreline had eroded enough to bring the tidelands up to the armoring, the owners would either have to agree to lease the tidelands from the Lummi or remove the structures.[257] Because Tribal rights in shoreline resources may closely track treaty language, the Lummi right to continued U.S. ownership of the tidelands may not apply across the board to all tribes in the Salish Sea region.

Western Washington treaty tribes also enjoy a right to one-half of the harvestable salmon in Washington, a right that has diminished as salmon populations have declined throughout the Puget Sound. In 1974, in *United States v. Washington*, a federal district court confirmed that treaty tribes in Western Washington had reserved the right to half the harvestable salmon and established those tribes as co-managers of Washington fisheries.[258] In a July 14, 2011 paper titled Treaty Rights At Risk, however, Western Washington treaty tribes state that the right to harvest salmon has been infringed by a federal government unwilling to protect salmon habitat.[259] Moreover, the tribes highlight the federal government's inequitable request that the tribes reduce their harvest to allow salmon recovery while holding habitat degradation to a

[255] 583 F.3d 1174 (9th Cir. 2009).
[256] *Id.* at 1186-87.
[257] *Id.* at 1190.
[258] *U.S. v. Washington*, 384 F. Supp. 312 (1974) (also known as the "Boldt Decision," after the judge who issued the decision).
[259] Western Washington Indian Treaty Tribes, *Treaty Rights at Risk: Ongoing Habitat Loss, the Decline of the Salmon Resource, and Recommendations for Change* (July 14, 2011).

lesser no-net-loss standard, and failing to meet even that objective.[260] The paper identifies three areas where the federal government is alleged to have abrogated its fiduciary responsibility to ensure that tribes receive the benefit of their treaties: (1) federal funding that is not aligned with salmon recovery efforts; (2) federal funding not conditioned to ensure protection of treaty rights; (3) an unlawful 17-year delay of federal approval of coastal protection plans.[261] The paper concludes with an unambiguous request that the federal government comply with its fiduciary duty to safeguard the fish harvest rights that the tribes retained when ceding Western Washington to the federal government, declaring that "[t]his paper is an immediate request for action. Faced with waning salmon populations and declining habitat, the tribes fear for the loss of their cultures and treaty rights. For the tribes, fish and fishing are as essential to life as water and air."[262]

Thus, Western Washington tribes have treaty rights that cannot be exercised in the absence of salmon, which, in turn, requires shoreline habitat. Tribes could file suit against the federal government to protect against the cumulative habitat impacts allowed under current land use schemes, particularly given the federal government's shoreline planning role under the CZMA and its project review authority under the CWA and ESA.

IV. RECOMMENDATIONS FOR EFFECTIVE IMPLEMENTATION OF EXISTING LAWS

Consistent with the interdisciplinary approach of the Healthy Beaches project generally, the recommendations below identify both legal and non-legal approaches to limit future cumulative impacts as nearshore ecosystems migrate landward through sea level rise. Although the statutory analysis above evaluated federal, state, and local laws, these recommendations focus largely on actions at the local and state levels, including: (1) merging WDFW biological expertise with local shoreline permitting; (2) invoking the state's trustee obligation to protect public lands from trespassing development; (3) establishing financial incentives like preferential taxation for natural shorelines or paying for conservation easements; and (4) planning fiscally prudent public infrastructure. Before exploring these options, this report identifies several sample approaches that other states, including Massachusetts, South Carolina, North Carolina, Maine, California, Maryland, and New York, have used to address the cumulative impacts of shoreline development as sea levels rise.[263]

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[260] *Id.* at 8.
[261] *Id.* at 26-27.
[262] *Id.*at 29.
[263] For a greater explanation of the approaches taken by other states, *see* Jessica Grannis, Georgetown Climate Center, *Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use* (Oct. 2011), *available at* http://www.georgetownclimate.org/sites/default/files/Adaptation_Tool_Kit_SLR.pdf (last visited March 11, 2013). The remainder of this section summarizes approaches identified in that work.

4.1 Sample Approaches from Other Jurisdictions.

Regulatory approaches to sea level rise take several different forms, including zoning provisions, comprehensive planning, rebuilding limitations, and hard armoring regulations. In addition, several states have implemented rolling easement schemes intended to limit the construction of new armoring and to prevent development in areas where it would lead to shoreline armoring.

California and Maryland have established comprehensive planning programs to identify and address development that would be at risk with rising sea levels. The California Coastal Act directs local governments to create coastal programs that limit new development in areas of high geological and flood hazard and that guide development so that it does not lead to erosion, require armoring, or substantially alter natural landforms.[264] In Maryland, the Department of Natural Resources is collaborating with several vulnerable counties by recommending that they amend their comprehensive plans to limit shoreline armoring, prevent new subdivisions in vulnerable areas, limit expansion when rebuilding damaged structures, and increase the elevation of new development.[265]

Several jurisdictions have adopted laws that directly prevent structural development in areas where it would likely result in shoreline modification as sea levels rise. The Town of Chatham, on Massachusetts' Cape Code, adopted a zoning ordinance that prohibits residential development in the 100-year floodplain but allows uses such as recreation, agriculture, and commercial fishing.[266] The California Coastal Act requires local programs to establish buffers for new development that protects environmentally sensitive habitats, coastal waters, estuaries, wetlands, and streams.[267] Maine's Sand Dune Rules establish setbacks based on a two-foot sea level rise for structures larger than 2,500 square feet.[268] North Carolina likewise establishes setbacks based on the size of the structure and the erosion rate – structures smaller than 5,000 square feet are to be set back 60 feet or 30 times the annual average erosion rate, whichever is greater, and larger structures require a 60 to 180-foot setback or 60-90 times the erosion rate, whichever is greater, with a 30-foot setback along estuarine shorelines.[269] South

[264] *See* 20 Cal. Pub. Res. Code § 30253.
[265] Wanda Diane Cole, Maryland Eastern Shore Resource Conservation & Development Council, *Sea Level Rise: Technical Guidance for Dorchester County*, 32-33 (March 2008) *available at* http://www.dnr.state.md.us/dnrnews/pdfs/Dorchester.pdf (last visited March 11, 2013).
[266] *See* Wes Shaw, Mass. Stormsmart Coasts, *Fact Sheet 3, Case Study – A Cape Cod Community Prevents New Residences in Floodplains* (Apr. 2008)*, available at* http://www.mass.gov/czm/stormsmart/resources/stormsmart_chatham.pdf (last visited March 11, 2013).
[267] 20 CA Pub. Res. Code § 30231.
[268] 06-096 CMR 355 § 5.D (2010).
[269] 15A NCAC 07H .0306(2) (2010); 7H .0209 (2010)(d)(10).

Carolina's Beach Front Management Act establishes a similar setback scheme based on the annual erosion rate, with new buildings larger than 5,000 square feet and new erosion control structures set back 40 times the annual erosion rate or twenty (20) feet, whichever is greater.[270] Maui, Hawaii, has established setbacks equal to twenty-five (25) feet plus a distance fifty (50) times the annual erosion rate from the shoreline.[271] Regulations adopted under Virginia's Chesapeake Bay Preservation Act limit land development within 100-foot buffers along marine shorelines to water dependent uses, redevelopment, activities in Intensely Developed Areas, or other new uses pursuant to criteria to limit impacts.[272]

Maine and South Carolina offer examples of limitations on rebuilding when structures have been damaged beyond a threshold percentage. In Maine, buildings that suffer storm damage greater than 50% of their assessed value must be rebuilt in compliance with current design and planning requirements.[273] South Carolina takes a more voluntary approach; where buildings are damaged beyond two-thirds of their value, the state requests the relocation of buildings as far landward as possible toward the setback line, and limits their expansion.[274]

Several jurisdictions also directly restrict the construction of shoreline hard armoring. Maine, North Carolina, Rhode Island, and Texas limit armoring in vulnerable coastal areas.[275] South Carolina proscribes new armoring seaward of an established setback and prohibits repairs for existing sea walls based on the amount of damage and the year constructed.[276] The California Coastal Commission conditions permits for some shoreline development on the landowner's agreement not to construct hard armoring.[277]

Lastly, Maine, South Carolina, and Texas offer examples of rolling easement laws. In Maine, a project cannot be permitted where it is likely to be severely damaged due to erosion associated

[270] S.C. Code Ann. § 48-39-280 – 290 (2009).
[271] Shoreline Rules for the Maui Planning Commission, §12-203-6(a); *see also* HA Rev. Stats. Ch. 205A (Hawaii Coastal Zone Management Program).
[272] 4 VAC Ch. 50-90 (2012).
[273] 06-096 CMR 355 §§ 3.GG, 5-6.
[274] S.C. Code Ann. §§ 48-39-270(11), -290(B)(iv).
[275] *See Adaptation Tool Kit*, *supra* note 263, at 75 n.229*: Sea-Level Rise and Coastal Land Use* (Oct. 2011) (noting that Maine's Coastal Sand Dune Rules prohibit new armoring adjacent to sand dunes and limit the repair of existing armoring (06-096 CMR 355 § 5(E) (2010), Rhode Island proscribes armoring in most conservation areas and most beaches (C.R.I.R. 04-000-010, -300.7(D)(1)-(4)), and Texas generally does not allow any construction of bulkheads that would interfere with public beach access (TX Nat. Res. Code Ann. §§ 61.013(a) and 61.001(2)), and North Carolina prohibits the construction of permanent erosion control structures on beaches and frontal dunes (NC Gen. Stat. §§113A-100 et seq.).
[276] S.C. Code Ann. § 48-39-290(B)(2)(a)-(b) (2009) (bulkheads can be replaced where: (1) the existing structure was built before June 30, 1995 and destroyed more than 80% above grade; (2) built between July 1, 1995 and June 30, 2005 and destroyed more than 66 2/3% above grade; and (3) built after June 30, 2005 and destroyed more than 50% above grade.
[277] 20 Cal. Pub. Res. Code § 30235.

with a two-foot sea level rise within 100 years.[278] Moreover, where sea level rises so that coastal wetlands reach any structure other than seawalls for at least six months of the year, the owners must remove that structure.[279] As noted above, the South Carolina Beachfront Management Act establishes setbacks based on the average erosion rate and precludes new shoreline armoring.[280] And the Texas Open Beaches Act mandates public access to the area between state-owned tidelands and the mean vegetation line and prohibits hard armoring that would impede that public access in that area.[281] This area will migrate inland with rising seas.

4.2 Recommended Actions to Limit Impacts to Nearshore Ecosystems From Cumulative Impacts as Sea Levels Rise.

The following sections explore several different methods for improving the effectiveness of protections for nearshore natural resources through both regulatory and non-regulatory approaches.

4.2.1 Regulatory Responses.

To the extent that decisionmakers are willing to protect public resources on publicly-owned lands from harm caused by private actions, cumulatively and in light of sea level rise, existing laws and legal doctrines offer sufficient authority to do so and, in some instances, compel such action.

4.2.1.1 Merge marine hydraulic project approval obligation into regulatory permit process under the Shoreline Management Act.

Marine shoreline protections could be implemented more effectively and efficiently if WDFW's obligation to regulate activities in the nearshore marine environment were removed and WDFW's biological expertise were offered to support local government permitting activities under their SMPs. This solution would address concerns expressed by WDFW officials that the Hydraulic Code does not permit them to deny applications for shoreline development or consider the cumulative impacts of shoreline development.[282] In addition, this solution would allow WDFW officials to avoid the need to determine whether HPA review must include review

[278] 06-096 CMR 355 § 5.C.
[279] 06-096 CMR 355 § 10.A.
[280] S.C. Code Ann. §§ 48-39-280(A), -280(B), -290(B)(2)(a).
[281] TX Nat. Res. Code Ann. §§ 61.013(a), 61.001(5).
[282] *See, e.g.*, Randy Carman, Kathy Taylor, and Peter Skowlund, *Regulating Shoreline Armoring in Puget Sound*, in Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010-5254, 49-54 (H. Shipman, M.N. Dethier, G. Gelfenbaum, K.L. Fresh, and R.S. Dinicola, eds., 2010) (noting the inherent conflict in the Hydraulic Code of providing for the protection of shoreline property while also trying to protect shoreline habitat) (hereafter "Regulating Shoreline Armoring").

of a development's operational impact as well as its construction impact. Moreover, even in those instances where HPAs issue with the hope that impacts will be mitigated, the 5-year limit for an HPA's validity prevents an evaluation of or compensation for the long-term impacts authorized by a permit.

Notwithstanding these limitations in the HPA program, landowners who receive HPAs use those permits to support their requests for permits under a county's broader SMP, sometimes undermining local permit coordinators who may have greater authority under the SMP to deny permits. Consequently, the merger of WDFW biological expertise with local governmental permitting authority under the SMA would offer improved regulatory authority for shoreline development and would significantly bolster scientific expertise for local governments, while streamlining the permit process and decreasing fees for property owners. The rest of this section explores the basis for the WDFW position that the Hydraulic Code prevents it from achieving no-net-loss, at least in the context of bulkheads, and the mechanics by which the HPA program would be relieved of regulatory obligations for marine shorelines.[283]

Since at least 2006, WDFW has recognized its inability to achieve no net loss of fish habitat.[284] In 2006, WDFW conducted a pilot study of 58 HPAs, including 14 for shoreline armoring, and concluded that even though permittees complied with the HPAs at a relatively high rate, "[m]ore than 50 percent of the permits reviewed received less than a medium score for ability to meet no net loss."[285] Scores for the mitigability of the permitted project's impacts likewise fell into the low to medium range.[286] That report concluded that "the ability of the permit process to protect public resources, to meet the no net loss standard, and to a lesser degree, to mitigate the impacts of HPA projects was relatively low."[287]

As part of a 2009 workshop on armoring impacts in Puget Sound, a WDFW official and two other authors stated that several issues limit the Hydraulic Code's effectiveness in protecting against the impacts of shoreline armoring.[288] The authors asserted that WDFW lacks the regulatory authority to: (1) evaluate the need for a bulkhead; (2) require alternatives to hard armoring; or (3) address cumulative impacts or those extending beyond the 5 year term of the project.[289] The authors also note the absence of political will to implement a balanced

[283] This paper does not propose to eliminate WDFW's regulatory authority over freshwater hydraulic projects.
[284] *See* Tim Quinn, *et al.*, *A Pilot Study of Hydraulic Permit Compliance, Implementation, and Effectiveness in Region 6*, WDFW, Olympia, WA (2006).
[285] *Id.* at 9.
[286] *Id.*
[287] *Id.* at 14.
[288] Regulating Shoreline Armoring, *supra* note 282, at 49.
[289] *Id.* at 51.

approach to shoreline management to protect and perpetuate natural shoreline functions.[290] Thus, "[p]rotection of personal property continues to supersede protection of shoreline processes and function along marine shorelines."[291]

Although *Regulating Shoreline Armoring* identifies Hydraulic Code changes as a potential solution to protecting shorelines from armoring, the more efficient solution would be to collapse WDFW's marine shoreline permitting authority into county and city SMP authority. Because stakeholders believe that the SMA authorizes local jurisdictions to protect shorelines more broadly than does the Hydraulic Code, elimination of the WDFW shoreline permitting overlay would not require any supplementation of authority for local jurisdictions. Several provisions could be removed from the Hydraulic Code and Hydraulic Code Rules that would allow them to continue to operate in the freshwater context while deferring marine authority to counties under their SMPs. For example, the definition for "hydraulic project" could be amended to remove the term "salt" so that it read: "'hydraulic project' means the construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the freshwaters of the state."[292] And RCW 77.55.141, which governs marine beach front protective bulkheads or rockwalls, could be eliminated. The WDFW regulations that apply to marine waters, such as the saltwater technical provisions at WAC 220-110-230 through 220-110-330 could also be removed.[293]

To ensure that local jurisdictions effectively protected shoreline resources as sea levels rose, it would be important to ensure that they could draw upon WDFW biological expertise where they lacked that expertise in-house. This element could be incorporated into the SMP process that already includes notification to WDFW of proposed shoreline substantial development permits. Although WDFW resource experts rarely comment on these permit applications, they could easily do.

4.2.1.2 Implement the Shoreline Master Program requirement to apply the best science to address sea level rise and cumulative impacts.

Elimination of the HPA program could succeed in addressing cumulative impacts and sea level rise only if Ecology and local jurisdictions established and implemented their SMPs to rigorously apply ecological protections. Serendipitously, Ecology can ensure that SMPs address cumulative impacts and sea level rise as it shepherds local jurisdictions through scheduled SMP

[290] *Id.*
[291] *Id.*
[292] RCW 77.55.011(11).
[293] It is likely that other language changes would be required; this paper does not identify all of the necessary changes, but rather a representative sampling.

updates that are due from 2011 through 2014.[294] Once those updates have been completed, Ecology can collaborate with local governments to ensure that shoreline development permits protect nearshore ecosystems based on the SMP Guidelines that Ecology adopted in 2003.

4.2.1.2.1 Planning That Addresses Cumulative Impacts and Sea Level Rise.

Most Washington counties are currently undertaking SMP updates that will then be reviewed and updated at eight-year intervals where necessary to guide shoreline development.[295] As explained at Section 3.2.5 above, the 2003 SMP Guidelines require local governments to evaluate and prevent cumulative impacts and to guide shoreline development where it will not cause impacts as sea levels rise. For example, SMPs "shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions…"[296] and must address those cumulative impacts[297] at least in part by assuring that "shoreline modifications individually and cumulatively do not result in a net loss of ecological functions."[298] And SMPs generally must "include policies and regulations designed to achieve no net loss of those ecological functions," and must ensur[e] that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline."[299] Consequently, Ecology must ensure that SMP updates include a comprehensive evaluation of the cumulative impacts of existing development and new development it would authorize, and then offer regulations to avoid and compensate for those impacts, to avoid potential litigation.

Likewise, Ecology officials must direct local governments to incorporate sea level rise considerations in their SMPs and assist in identifying locations that will be particularly vulnerable as seas rise. Sea level rise considerations must be incorporated into SMP updates to comply with the SMP Guidelines' direction to use the "best science"--master program provisions must be based on "an analysis incorporating the most current, accurate, and complete scientific and technical information available."[300] In addition, the SMP's cumulative impacts evaluation must consider "[c]urrent circumstances affecting the shorelines and relevant natural processes," as well as ecosystem-wide processes like "the sediment regime under which aquatic ecosystems evolved."[301] Because the best science can offer an estimated range of sea level rise, and because rising sea levels will affect shorelines and their natural sedimentary processes, Ecology must ensure that SMP updates identify and address sea level

[294] RCW 90.58.080(2).
[295] RCW 90.50.080(4)(a).
[296] WAC 173-26-186(8)(d).
[297] WAC 173-26-201(3)(d)(iii).
[298] WAC 173-26-231(2)(d).
[299] WAC 173-26-186(8)(b)(ii).
[300] WAC 173-26-201(2)(a).
[301] WAC 173-26-186(8)(d); -201(3)(d)(i)(D).

rise. Such measures could include prohibitions against shoreline armoring on fish spawning beaches and feeder bluffs, shoreline buffers that allow vegetative stabilization over the life of new residential structures, and the relocation of structural footprints at the end of the structure's life where a complete rebuild would lead to armoring.

4.2.1.2.2 Permitting to address Cumulative Impacts and Sea Level Rise.

While SMP updates should result in language directing counties to evaluate and address a project's cumulative impacts through the permitting process, Ecology and concerned citizens should take necessary steps in the interim to ensure that such a cumulative impacts analysis occurs under the current rules.[302] As noted above, both of the Washington Supreme Court and the Shorelines Hearings Board have indicated that the SHB may have a duty to evaluate the cumulative impacts of a project, including its precedential value. In *Hayes v. Yount*, the court declared that "[l]ogic and common sense suggest that numerous projects, each having no significant effect individually, may well have very significant effects when taken together," and in *Skagit County v. Ecology*, the court held that "[t]he SMA recognizes the necessity for controlling the cumulative detrimental impact of piecemeal development through coordinated planning of all development."[303] In the more than three decades since those decisions, the SHB has confirmed its ability, and likely directive, to evaluate a project's cumulative impacts. As noted above, the SHB declared in *Fladseth v. Mason County* that "the Supreme Court has held that it is within the Board's statutory duties to be concerned over the ultimate cumulative impacts of piecemeal development on the state's shorelines," and in *Bishop v. San Juan County* that "[i]n considering any shoreline development, particularly a dock or pier, *it is essential to evaluate the cumulative impacts of similar proposals*."[304]

In determining the scope and type of activities that should be evaluated in a cumulative impacts review, reference can be made to the SMP Guidelines and caselaw. For example, local permit coordinators can testify to the precedential value of an approval of a particular shoreline modification.[305] In addition, the SMP Guidelines identify a broad suite of shoreline ecological

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[302] *See*, *e.g.*, *Hayes v. Yount*, 87 Wn.2d at 287-88 (1976); *Fladseth v. Mason County*, SHB No. 05-026, Findings of Fact, Conclusions of Law and order (May 1, 2007); *Bishop v. San Juan County*, SHB No. 99-034, Final Findings of Fact, Conclusions of Law, and Order (2000).

[303] *Hayes v. Yount*, 87 Wn.2d at 287-88; *Skagit County v. Ecology*, 93 Wn.2d 742, 750, 613 P.2d 115 (1980).

[304] *Fladseth*, SHB No. 05-026, at COL. No. 13; *Bishop*, SHB No. 99-034, at COL No. 11 (emphasis added).

[305] Susan Roberts, *The effects of armoring shorelines—The California experience*, *in* Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010-5254, 87 (Shipman, H., Dethier, M.N., Gelfenbaum, G., Fresh, K.L., and Dinicola, R.S., eds., 2010) (noting that activities like bulkheads can lead to cumulative effects through their legal precedential value, as well as their erosion-enhancing effect, which could lead to requests by neighboring property owners for armoring).

functions that could be studied, including hydraulic, vegetative, and habitat functions.[306] With regard to the geographic scope of the study, it could include those shorelines in San Juan County used by species that might be affected by the proposed development.

Individual permit reviews should also identify the threat that sea level rise imposes on state shorelines and protect against adverse impacts of a project over its life. The SHB upheld Ecology's denial of a variance in *Caldwell v. Department of Ecology*, where it recognized that future sea level could lead to both: (1) bulkheading of the applicant's shoreline; and (2) requests for similar construction by nearby beachfront homeowners displaced by that sea level rise.[307] Thus, where sea level rise estimates are reasonably available for a project's vicinity, they need to be applied to ensure compliance with SMP permit procedures.

If Ecology or the local government fail to adopt or implement an SMP that fully characterizes and prevents future cumulative impacts, or ensures that future development can accommodate sea level rise without adverse ecological impacts, interested parties can file an appeal to state administrative tribunals.[308] An SMP that is inconsistent with the SMA and does not incorporate the requirements established by the SMP Guidelines can be appealed to the Washington Growth Management Hearings Board or Shorelines Hearings Board.[309] Shoreline permits that conflict with the SMA or SMP may be appealed to the SHB.[310]

4.2.1.3. Address cumulative and sea level rise impacts through Critical Areas Ordinance updates pursuant to the Growth Management Act.

To the extent that sea level rise would cause new shoreline development to impact shoreline critical areas like forage fish spawning beaches, eelgrass, and salmon habitat, the GMA likely requires local jurisdictions to ensure that their CAOs address that sea level rise. Local jurisdictions could incorporate sea level rise and cumulative impacts analyses in their eight-year CAO updates, which must include the Best Available Science. Although San Juan County declined either to evaluate the cumulative impacts of its recently-adopted CAO or to incorporate provisions that would address sea level rise, the County is due to update its CAO by June 30, 2016.

CAO provisions to address sea level rise and the cumulative impacts of armoring could take the form of any of the following on shorelines with critical areas:

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[306] WAC 173-26-201(3)(d)(i)(C).
[307] SHB No. 11-012, FOF No. 5, COLs No. 23-24 (March 29, 2012) (Findings of Fact, Conclusions of Law, and Order).
[308] RCW 90.58.180(1), .190(2).
[309] RCW 90.58.190(2), (3) (SMPs updated by counties and cities planning under the Growth Management Act must be appealed to the GMHB, whereas appeals of SMPs updated by counties that do not plan under the GMA must be filed with the SHB).
[310] RCW 90.58.180(1).

- A prohibition against armoring beaches with critical areas;[311]
- Structural setbacks that would allow anticipated shoreline erosion with sea level rise over the life of the structure without threatening the structure, coupled with a prohibition against armoring those shorelines;[312]
- Reconstruction grandfathering provisions that directed compliance with current setback provisions when rebuilding/remodeling more than 50% of a structure;[313] and
- Vegetation retention/installation provisions to assist in bank stabilization.

4.2.1.4. Effective Enforcement.

To support the credibility of new measures to address sea level rise and cumulative impacts, local jurisdictions will need to consistently and effectively enforce existing regulations. For example, while San Juan County has made efforts to improve the enforcement of its SMP, several impediments prevent effective enforcement. The County planning department officials do not have the authority to issue an administrative "ticket" that could be resolved in the absence of participation by the County's Prosecuting Attorney. In addition, WDFW can become involved in the enforcement of shoreline violations, adding complexity through differing enforcement protocols, substantive rules, and agency attitudes.[314] Enforcement officials can also suffer significant public backlash for insisting on the enforcement of County rules. San Juan County is currently working to address its administrative authority, and the revision of WFDW authority for shoreline development proposed above could address the issue of dueling enforcement mandates.

4.2.2 Satisfying Fiduciary Obligations.

State and federal governments manage assets like nearshore natural resources for residents of the state and treaty tribes. Legal doctrines like the Public Trust and contract obligations compel those governments to protect those resources from adverse cumulative impacts or impacts as

[311] This provision could be limited to those properties that are undeveloped at the time of ordinance adoption, or on a graduated schedule, such that armoring would be approved for a set time period that would vary based on the age of the structure that would otherwise suffer damage from shoreline erosion. *E.g.*, a structure built within the last 10 years could obtain a 65-year approval for armoring to allow for habitation of the structure over its useful life, after which the armoring would need to be removed. Because armoring impacts to spawning beaches may occur over longer timeframes, this approach could retain sufficient spawning habitat to recover after armoring removal.

[312] The armoring prohibition would increase the incentive to avoid underestimating the erosion rate at the time of construction.

[313] This figure could range from 50% to 75%, as it does in other jurisdictions.

[314] For example, in a 2009 enforcement action against an unpermitted bulkhead that San Juan County and WDFW initiated together, the enforcement resulted in an increase in the size of the bulkhead, though it did lead to the removal of other structures on the beach. The result suggests that the County's Prosecuting Attorney deferred to WDFW officials regarding the impacts of the bulkhead, as well as the applicable regulatory authority. This confusion allowed a larger bulkhead on a feeder bluff, which is not a concern expressed by the Hydraulic Code Rules, but which likely would have been prohibited if evaluated pursuant to San Juan County SMP criteria that strongly discourage unnecessary armoring along feeder bluffs. *See* SJCC 18.50.210.A.4.

sea levels rise. The sections below identify mechanisms for compelling each of those governments to comply with their fiduciary obligations to protect those assets.

4.2.2.1 Protecting Public Trust Interests

As explained at section 3.4.1. above, the state of Washington has sovereign authority over all public trust resources and cannot abdicate its duty to protect those resources.[315] Yet the Puget Sound Partnership's *2012 State of the Sound: A Biennial Report on the Recovery of Puget Sound* indicates that most public resources continue to decline even as the state has established a goal to recover the Puget Sound to health by 2020.[316] That report concluded that of twenty-one (21) indicators established by the Partnership, only two (2) reflected clear progress, shellfish beds and estuaries.[317] Six (6) other vital signs—swimming beaches, Chinook salmon, orcas, herring, eelgrass, marine water quality, and marine sediment quality—all showed declines or unimproved status.[318] In addition, although the report states that it is unknown whether progress is occurring for shoreline armoring, it notes that Puget Sound gained a net of six (6) miles of armoring from 2005 to 2010, for a rate of approximately 1 mile/year. While the report notes that recovery will necessarily require some time, legally simple changes could occur now to prevent locking in new impacts likely to last for decades, such as shoreline modifications that include unnecessary docks or bulkheads. Citizens should urge state agencies like Ecology, WDFW, and DNR to make those changes; however, given the WDFW position that they cannot deny development requests, and the Ecology position that they cannot require counties to address sea level rise in their SMPs, the remainder of this section identifies a litigation approach to compel state agencies to adequately protect the public interest.

A suit could be filed with claims for failure to act under the Administrative Procedures Act ("APA"), a writ of mandamus and for declaratory and injunctive relief to compel governmental authorities to prevent new shoreline development that harmed public resources.[319] Each of

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[315] *See, e.g.*, *Caminiti v. Boyle*, 107 Wn.2d 662, 732 P.2d 989 (1987); Sanne H. Knudsen, *Remedying the Misuse of Nature*, 2012 Utah L. Rev. 141, 189 (noting that the National Association of Attorneys General have confirmed a state's affirmative duty to protect a trust resource, stating, "[t]he states and the Federal Governments [sic] are trustees for the people, and…their trust corpus includes this nation's glorious natural resources. We, as trustees, have an obligation to protect these often irreplaceable resources from harm, and those that harm them have the obligation to restore them for all people.").

[316] Puget Sound Partnership, *2012 State of the Sound: A Biennial Report on the Recovery of Puget Sound*, *available at* http://www.psp.wa.gov/downloads/SOS2012/sos2012_110812pdfs/SOS2012_ALL_110812.pdf (last visited Feb. 26, 2013).

[317] *Id.* at 24 (noting the restoration of 1,394 net acres of shellfish beds from 2007 to 2011 and restoration projects for approximately 2,350 acres of estuaries from 2007 to 2011—the report does not identify the number of acres of estuaries lost between 2007 and 2011).

[318] *Id.*

[319] *See* RCW 34.05 (APA); RCW 7.16 (mandamus action); RCW 7.24 (Uniform Declaratory Judgment Act); RCW 7.40 (injunctive relief).

these claims would seek governmental protections for public resources. An APA claim would seek an order requiring any of the state agencies identified above to protect the public interest in the shoreline natural resources, asserting that the "agency's failure to perform a duty that is required by law to be performed" had caused harm.[320] A writ of mandamus may issue "to compel the performance of an act which the law especially enjoins as a duty resulting from an office, trust, or station, or to compel the admission of a party to the use and enjoyment of a right or office to which the party is entitled, and from which the party is unlawfully precluded by such inferior tribunal, corporation, board or person."[321] Declaratory and injunctive relief would request a determination that the state, by and through its resource agencies, has a duty to protect public resources in the nearshore environment and an order directing the agencies to comply with that duty.[322]

The primary issue to be addressed in a public trust case likely would be the showing that existing laws are not preventing the waste of public resources. Reports from WDFW and the Puget Sound Partnership could be used to demonstrate the historic and continued loss of public resources like whales, fish, eelgrass, kelps, sediment patterns, and water quality. Remedies could include the State's exercise of control over public nearshore lands to ensure the removal of uses that impacts public resources there.

4.2.2.2. Federal government protection of Tribal treaty rights for salmon harvest that require naturally functioning shoreline ecosystems.

In Treaty Rights at Risk, summarized briefly above, Western Washington's treaty tribes set forth their demand that the federal government protect their right to harvest salmon, which requires the preservation of sufficient salmon to fish. As the only non-federal parties to those treaties, only the tribes have the authority to seek their enforcement. The tribes note that habitat protection for salmon is an essential component of the federal government's fiduciary duty to ensure the continued exercise of tribal treat rights and request in pertinent part that the federal government:

- Require federal funding supporting state programs and pass-through grants to be conditioned so that all funded efforts achieve consistency with state water quality standards and salmon recovery plan habitat objectives;

[320] RCW 34.05.570(4)(b).

[321] RCW 7.16.160. *See Bainbridge Citizens United v. Dep't of Natural Res.*, 147 Wn. App. 365, 198 P.3d 1033 (2008); *see also Paxton v. City of Bellingham*, 129 Wn. App. 439, 444, 119 P.3d 373 (2005) (quoting *In re Dyer*, 143 Wn.2d 384, 398, 20 P.3d 907 (2001) ("Mandamus is an appropriate means to compel a state official 'to comply with law when the claim is clear and there is a duty to act.'").

[322] RCW 7.24.120 (declaratory judgments are meant to "settle and to afford relief from uncertainty and insecurity with respect to rights, status, and other legal relations."); RCW 7.40.

- Direct federal agencies to increase enforcement of their obligations to protect habitat, including under the Endangered Species Act and Clean Water Act; and
- Direct the National Oceanic and Atmospheric Administration and Environmental Protection Agency to ensure that state shoreline master program updates comply with all federal obligations, including treaty rights.[323]

If the tribes elevate their request through litigation, any successful results could address the cumulative impacts of armoring on salmon habitat throughout their migratory range, especially as sea levels rise.

4.2.3. Financial and Taxation Incentives.

This section briefly explains several methods to provide financial incentives to local jurisdictions and residents, including the implementation of rolling easements through voluntary conservation easements, preferential taxation for unaltered shorelines, and public infrastructure construction that avoids areas likely to become inundated.

4.2.3.1. Conservation Easements.

Conservation easements can offer an opportunity to ensure the long-term health of nearshore ecosystems.[324] Conservation easements are created when landowners voluntarily donate or sell to another entity an easement over a portion of a property. The conservation easement then prevents activities in that area that would be incompatible with the conservation of certain values, such as habitat, open space, or natural views. In San Juan County, conservation easements could be used to limit development along unstable shorelines or in areas likely to become inundated as sea levels rise and could include limitations like prohibitions against bulkheading or the removal of vegetation. Such conservation easements might be used to decrease a property's tax burden, as well. In San Juan County, the San Juan Preservation Trust engages with landowners to create conservation easements and could play a role in protecting vulnerable shorelines.

4.2.3.2. Preferential Taxation.

A local jurisdiction could adopt a property tax scheme that encourages property owners to retain their shorelines in a natural state.[325] Taxes typically are levied on properties based on a fair market value calculation that includes not only a property's existing development but its development potential.[326] In a shoreline county like San Juan County, where a significant

[323] *Treaty Rights At Risk*, *supra* note 259, at 19-20.
[324] Washington authorizes conservation easements through RCW 64.040130 and 84.34.200-.250.
[325] *See Adaptation Tool Kit*, *supra* note 263, at 54 for a detailed explanation of sample tax programs that can assist local jurisdictions in adapting to sea level rise.
[326] *Id.*

portion of a shoreline parcel's value may be found in that portion adjacent to the water, a tax incentive related to that part of the property could offer landowners significant value. Georgetown's Climate Center has identified three possible tax programs that could incentivize adaptation to sea level rise:

- Preferential assessment programs – taxation schemes that assess a property at a lower value where a landowner agrees to preserve the property;
- Tax abatement programs – tax increases are deferred as long as the property is used for a specific purpose; and
- Tax credit programs – a one-time credit is offered to encourage a specific action.[327]

The Climate Center suggests that those programs could be adapted to the sea level rise context as follows:

- Relocation/retrofit tax incentives – this incentive could provide a one-time tax credit for property owners who moved structures away from unstable or floodprone shorelines;
- Siting incentives – such incentives could include tax incentives or density bonuses for development sited in lower-risk areas of a property; and
- Conservation tax incentives – preferential tax assessments could apply to property owners who agree to conserve their property for open space or flood control.[328]

4.2.3.3. Public Infrastructure.

In shoreline jurisdictions, transportation planning can offer an opportunity to decrease the potential for sea level rise impacts. In San Juan County, roads extend along 20 miles of marine shoreline and are associated with fifty-one (51) stretches of armoring.[329] The GMA requires local jurisdictions to create and regularly update in their Comprehensive Plans a transportation element that identifies land use assumptions, facilities and services needed, and finances.[330] Through that process, the County could estimate the financial impacts associated with replacing and repairing shoreline roads as sea levels rise, and identifying alternate routes that could be less costly over time.

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[327] *Id.* at 54.
[328] *Id.* at 55 (identifying several states with sample tax incentive programs).
[329] Tina Whitman, *et al.*, *Strategic Salmon Recovery Planning for San Juan County Washington: the pulling it all together (PIAT) project*, Final Report RCO #10-1789, 25 (Dec. 2012), *available at* http://www.sanjuans.org/documents/whitmanetal_Final_PIAT_2012.pdf (last visited March 13, 2013); Friends of the San Juans, *Shoreline Modification Inventory for San Juan County, Washington*, 5 (July 2010), *available at* http://www.sanjuans.org/documents/FSJ_shoreline_modification_inventory_2010.pdf (last visited March 13, 2013).
[330] RCW 36.70A.070(6).

V. RECOMMENDATIONS FOR STATUTORY AMENDMENTS

This section of the paper offers two brief recommendations for statutory amendments to Washington laws that could improve authority for protecting nearshore resources from the cumulative impacts of armoring and sea level rise. As noted above, these amendments are not necessary to achieve those protections.

- Shoreline Management Act – the SMA could be amended to expressly direct Ecology to collaborate with local jurisdictions to incorporate project review requirements that would evaluate sea level rise and cumulative impacts and prevent impacts to nearshore resources. The SMA could also incorporate an express prohibition against the approval of Shoreline Master Programs or shoreline substantial development permits where they would allow or lead to cumulative impacts to shoreline ecosystems from armoring as sea levels rise over the life of the structure.
- Hydraulic Code – The Hydraulic Code could be amended to incorporate an express prohibition against bulkheads on shorelines that host saltwater habitats of special concern.

VI. CONCLUSION

Federal, state, and local laws offer sufficient authority and mandates to protect our state's public resources from the cumulative impacts of shoreline modification as sea levels rise toward upland development. Those laws also offer the authority for local jurisdictions and non-profit organizations to design financial incentives to protect natural shorelines through taxation programs and conservation easements. The greatest impediment to implementing those protections likely will be the concern that they interfere with private property rights. Future areas of research that could support shoreline preservation efforts include continued study of the direct impacts between shoreline armoring and nearshore ecosystems[331] and a comparison of the economic costs[332] for attempting to defend against sea level rise and those costs associated with adapting to it.

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[331] *See, e.g.*, Casimir Alexander Rice, *Evaluating the Biological Condition of Puget Sound: A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy*, University of Washington, 189 (2007) (noting that Puget Sound science has: (1) failed to focus on and measure significant biological responses to the full range of human and natural influences; (2) not sufficiently consider the whole ecosystem; and (3) rarely synthesizes and communicates scientific information to the broader scientific community, policy makers, and the public).

[332] Such economic analyses could include:

- Cost, on a per-foot basis, for removing a single-story rock bulkhead;
- Cost, on a per-foot basis, of installation of a single-story rock bulkhead;
- Cost for various forms of soft-shore armoring;

- Cost for preparing a vegetation planting plan to help stabilize a shoreline;
- Cost of lost property value from erosion at a standard background rate for the San Juans (though it could be anywhere in the Puget Sound), on a square footage or decreased property depth basis;
- Public cost of diminished beach habitat due to bulkheading;
- Cost of implementing regulations in a way that prevents unnecessary shoreline modifications.