



DEPARTMENT OF
ECOLOGY
State of Washington

Washington Coastal Zone Management Section 309 Assessment & Strategy, 2016-2020

**July 2015
Publication No. 15-06-013**



This document was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.



This report is available on the Department of Ecology's website at

<http://www.ecy.wa.gov/programs/sea/czm/Grants.html>

<http://www.ecy.wa.gov/programs/sea/czm/309-improv.html>

For more information contact:

Bobbak Talebi
Coastal Program Planner
Shorelands & Environmental Assistance Program
P.O. Box 47600
Olympia, WA 98504-7600
Bobbak.Talebi@ecy.wa.gov
360-407-6529

Washington State Department of Ecology - www.ecy.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

To request ADA accommodation for disabilities, or printed materials in a format for the visually impaired, call Shore lands and Environmental Assistance Program at Ecology, 360-407-6600.

Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

Acknowledgments

In addition to the many people who contributed to and helped shape the 2016-2020 Section 309 Strategy, a special thank you to the following people for providing data, input, and extensive feedback.

Liam Antrim	NOAA Olympic Coast National Marine Sanctuary
Paul Argites	Northwest Straits Marine Conservation Initiative
Nir Barnea	NOAA Marine Debris Program Pacific Northwest Region
Cedar Bouta	Washington Department of Ecology
Lauren Driscoll	Washington Department of Ecology
Melissa Ferris	Washington Department of Natural Resources
Jerry Franklin	Washington Department of Ecology
Tim Gates	Washington Department of Ecology
Kelsey Gianou	Washington Department of Ecology
Jennifer Hennessey	Washington Department of Ecology
Heather Kapust	Washington Department of Ecology
Jim LaSpina	Washington State Energy Facility Site Evaluation Council
Brian Lynn	Washington Department of Ecology
Bridget Mason	Washington Department of Ecology
Chuck Matthews	Washington Department of Ecology
Jessie McGrath	Washington Department of Ecology
Scott McKinney	Washington Department of Ecology
Ian Miller	Washington Sea Grant
Dana Mock	Washington Department of Ecology
Jamie Mooney	Washington Sea Grant
Craig Morton	US Army Corps of Engineers
Rick Mraz	Washington Department of Ecology
Heather Parker	US Thirteenth Coast Guard District
Doug Peters	Washington Department of Commerce
Hugh Shipman	Washington Department of Ecology
Amy Snover	University of Washington Climate Impacts Group
Rebecca Smyth	NOAA Office for Coastal Management
Darby Veeck	Washington Department of Ecology
Kris Wall	NOAA Office for Coastal Management
Lara Whitely Binder	University of Washington Climate Impacts Group

Contents

Acknowledgments.....	3
Glossary.....	8
Common Terms.....	8
Agencies and Organizations.....	8
Introduction	10
History of Section 309 Efforts	13
1992 – 1995 Assessment and Strategy	14
1996 – 2000 Assessment and Strategy	15
2001 – 2005 Assessment and Strategy	17
2006 – 2010 Assessment and Strategy	18
2011 – 2015 Assessment and Strategy	20
2016-2020 Assessment and Strategy Process	22
Stakeholder Engagement.....	23
Public Review Process.....	23
High-Level Assessment	25
Wetlands.....	25
Coastal Hazards.....	32
Public Access.....	41
Marine Debris	47
Cumulative and Secondary Impacts.....	54
Special Area Management Planning	57
Ocean Resources.....	60
Energy and Government Facility Siting.....	69
Aquaculture.....	75
In-Depth Assessment	82
Coastal Hazards.....	82
Cumulative and Secondary Impacts.....	87
Ocean Resources.....	92
Strategy	98
Coastal Hazards.....	98

Cumulative and Secondary Impacts.....	102
Ocean Resources.....	108
5-Year Budget Summary by Strategy	114
References	115
Appendix A: Stakeholder Engagement	120
Appendix B: Public Comments and Response Summary	121

Glossary

Common Terms

CAO	Washington Critical Areas Ordinance
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Guidelines	Washington Shoreline Master Program Guidelines
GMA	Washington Growth Management Act
GHEMP	Grays Harbor Estuary Management Plan
NEPA	National Environmental Policy Act
SAMP	Special Area Management Plan
Section 309	Coastal Zone Management Act Coastal Zone Enhancement Grants
Section 306	Coastal Zone Management Act-Administrative Grants
SEPA	Washington State Environmental Policy Act
SMA	Washington Shoreline Management Act
SMP	Washington Shoreline Master Programs
WCZMP	Washington Coastal Zone Management Program

Agencies and Organizations

AWB	Washington Association of Business
BOEM	Bureau of Ocean Energy Management
COG	Grays Harbor Council of Governments
CELCP	Washington State Coastal and Land Conservation Program
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EFSEC	Washington State Energy Facility Site Evaluation Council
EMD	Washington State Emergency Management Division
EPA	U.S. Environmental Protection Agency
EFSEC	Washington State Energy Facility Site Evaluation Council
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
HCCC	Hood Canal Coordinating Council
NMFS	NOAA National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OCM	NOAA Office for Coastal Management
OCNMS	Olympic Coast National Marine Sanctuary
PNNL	Pacific National Marine Laboratory
PSI	Pacific Shellfish Institute
PSP	Puget Sound Partnership

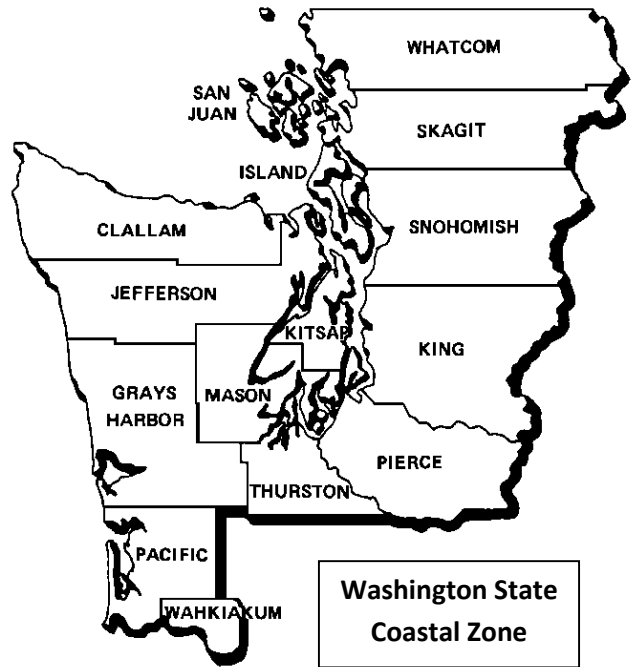
SOC	Washington State Ocean Caucus
USACE	U.S. Army Corps of Engineers
USDA/WSDA	U.S. Department of Agriculture/Washington State Department of Agriculture
USFWS	United State Fish and Wildlife Service
USGS	U.S. Geologic Survey
WCC	Washington State Conservation Corps
WDFW	Washington Department of Fish and Wildlife
WEC	Washington Environmental Council
WRIA	Washington Water Resource Inventory Areas
WSCC	Washington State Conservation Commission
WSDOT	Washington State Department of Transportation

Introduction

Washington is one of thirty-four states that participate in the nation-wide Coastal Zone Management Program (CZMP), established under the Coastal Zone Management Act of 1972 (CZMA). The CZM program is a voluntary state-federal partnership which encourages states to adopt their own management programs in order to meet the federal goals of protection, restoration, and appropriate development of coastal zone resources.

Washington became the first state to achieve a federally-approved state CZM Program in 1976. Washington's CZM Program (WCZMP)¹ is based primarily upon our Shoreline Management Act (SMA) of 1971,² as well as other state land use and resource management laws. The WCZMP applies to the fifteen coastal counties.

The Office of Ocean for Coastal Management (OCM) of the National Oceanic and Atmospheric Administration (NOAA) administers the CZMA. The Coastal Zone Management Section 309 Improvement Grants Program was initiated by Congress in its 1990 reauthorization of the CZMA, and expanded in its 1995 reauthorization. Congress has set aside special funding to encourage the states to make improvements to their federally approved coastal zone management programs in one or more of nine specific improvement areas:



1. Protection, restoration, or enhancement of the existing **coastal wetlands** base, or creation of new coastal wetlands.
2. Preventing or significantly reducing threats to life and destruction of property by eliminating development and redevelopment in **coastal high hazard areas**, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise.
3. Attaining increased opportunities for **public access**, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.
4. Reducing **marine debris** entering the Nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris.

¹ For more information on the Washington Coastal Program: <http://www.ecy.wa.gov/programs/sea/czm/prgm.html>

² Shoreline Management Act of 1972 (RCW 90.58): <http://apps.leg.wa.gov/rcw/default.aspx?cite=90.58>

5. Development and adoption of procedures to assess, consider, and control ***cumulative and secondary impacts of coastal growth and development***, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources.
6. Preparing and implementing ***special area management plans*** for important coastal areas.
7. Planning for the use of ***ocean resources***.
8. Adoption of procedures and enforceable policies to help facilitate the ***siting of energy and government facilities***, which may be of greater than local significance.
9. Adoption of procedures and policies to evaluate and facilitate the siting of public and private ***aquaculture facilities*** in the coastal zone, which will enable States to formulate, administer, and implement strategic plans for marine aquaculture.

Every five years, states and territories are encouraged to conduct self-assessments of their coastal management programs to determine problems and enhancement opportunities within each of the nine enhancement areas—and to assess the effectiveness of existing management efforts to address identified problems. Each coastal management program identifies high priority management issues as well as important needs and information gaps the program must fill to address those issues (NOAA OCM, 2014).

Federal law and regulation strictly define activities that are eligible for Section 309 funding.³ In addition to using the funds to develop the assessment and strategy, or to revise the assessment and strategy as needed during the five-year cycle, Section 309 funds can be used to carry out strategies, development and submission of program changes, and for implementation of program changes.

A program change is a change to a state's or territory's federally-approved coastal management program. As defined by the OCM, program changes include the following:

1. A change to coastal zone boundaries;
2. New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
3. New or revised local coastal programs and implementing ordinances;
4. New or revised coastal land acquisition, management, and restoration programs;
5. New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

³ Coastal Zone Management Act 1972: <http://coast.noaa.gov/czm/act/sections/?redirect=301ocm>

6. New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

Section 309 funds can also be used to implement Section 309 program changes.

Implementation activities include administrative actions to carry out and enforce program change policies, authorities, and other management techniques, including the development, collection, and analysis of measurable management objectives and performance measures. All implementation activities are described in the strategy (NOA OCM, 2014) and must meet the following general requirements:

- Advance the objectives of a high priority 309 enhancement area for the CZMP
- Relate to at least one 309 program change identified in an approved strategy
- Demonstrate cost effectiveness and technical soundness

It is also important to note, Section 309 priorities do not directly determine the overall goals of the WCZMP, but rather supplement them. Federal rules and policies for implementation of the 309 Program require identification of one or more improvement areas in which a state will be eligible to receive grants. Therefore, the strategies contained in this document should not be taken to be the sole priorities of the WCZMP, but rather those priorities identified that fit within the constraints of the Section 309 regulations.

History of Section 309 Efforts

Since the inception of the CZM Section 309 Improvement Grants Program in 1990, Washington has participated in all five enhancement cycles. Each round includes a collaborative self-assessment to determine problems and enhancement opportunities within each of the nine enhancement areas – and to assess the effectiveness of existing management efforts to address identified problems. The WCZMP then works with OCM to identify high priority management issues as well as important needs and information gaps the program must fill to address these issues.

This chapter summarizes Washington’s past 309 Program efforts. The following table includes the prioritization of enhancement areas for the WCZMP from 1992-2015. Due to Legislative mandates and increasing growth and development of our shorelines, the greatest emphasis of these efforts has been updating the implementation of Washington’s SMA, which continues to be a high priority for the WCZMP. Final Section 309 Assessment and Strategy documents for each of these rounds can be found on Ecology’s Coastal Zone Management website.⁴

History of WCZMP Priority Areas

Required Enhancement Areas	1992-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
Public Access	Medium	Medium	Medium	Medium	Medium	Medium
Coastal Hazards	High	High	High	Medium	Medium	High
Ocean Resources	Low	Low	Low	Medium	High	High
Coastal Wetlands	Medium	Medium	High	Medium	High	Medium
Cumulative and Secondary Impacts	High	High	High	High	High	High

⁴ Washington Coastal Program Section 309: <http://www.ecy.wa.gov/programs/sea/czm/309-improv.html>

Marine Debris	Low	Low	Low	Low	Low	Low
Special Area Management Plans	Medium	High	Medium	Low	Low	Medium
Siting Energy and Government Facilities	Low	Low	Low	Low	Medium	Medium
Marine Aquaculture	N/A	Medium	High	Medium	Medium	High

1992 – 1995 Assessment and Strategy

Throughout the first 309 Program phase, Washington State worked in two 309-improvement areas:

1. Cumulative and Secondary Impacts
2. Coastal Hazards

Cumulative and Secondary Impacts of Growth

Under this improvement area, the state addressed the need to better integrate local and state government implementation of the 1971 SMA with the newly adopted Growth Management Act (GMA) of 1990 (and 1991 amendments).

Coastal Hazards

Washington’s second focus was the Coastal Erosion Management Study (CEMS),⁵ which addressed Puget Sound coastal erosion management, the impacts of shoreline armoring, and policy alternatives to minimize the adverse effects. CEMS followed three research threads: Appropriate engineering and geotechnical approaches to erosion management and bluff stabilization; adverse environmental effects of those practices; and public policy alternatives.

We incorporated the results from the work in these two 309-improvement areas into the Shoreline Master Program Guidelines Rule (Guidelines) adopted in December 2003.

⁵ For more information on the CEMS: <http://www.ecy.wa.gov/programs/sea/swces/>

1996 – 2000 Assessment and Strategy

During the second 309 Program phase, Washington State worked in three, 309-improvement areas:

1. Cumulative and Secondary Impacts
2. Coastal Hazards
3. Special Area Management Planning

Cumulative and Secondary Impacts

Ecology's Section 309 Growth Management Project steadily evolved to meet changing legislative mandates and the needs of local government. Initially Ecology designed the project to respond to the overlapping requirements of the 1990 GMA, the 1991 GMA Amendments, and the SMA. By 2000, in response to legislative regulatory reform mandates and Endangered Species Act (ESA) listings, the Growth Management Project emphasis shifted. The goals that addressed the cumulative and secondary impacts resulting from land use practices in sensitive coastal areas remained unchanged, however. They were:

- To foster consistency at the local government level between GMA-mandated comprehensive plans
- To create development regulations
- To develop or update Critical Areas Ordinances (CAOs)
- To comprehensively update SMA-mandated local Shoreline Master Programs (SMPs)

In 1995, the Washington State legislature adopted legislation amending the SMA as a part of a broad regulatory reform effort aimed at achieving better integration of GMA, SMA, and the State Environmental Policy Act (SEPA). While not changing the broad goals of the SMA, this legislation did require changes to all of the SMA implementation rules.

Consequently, the emphasis of the Growth Management Project shifted beginning with the 1995-96 fiscal year. Throughout the 1995-97 period, the Growth Management Project placed emphasis on amending the SMA implementation rules. Accordingly, in September 1996, Ecology adopted the SMP Approval and Amendment Procedures rule (WAC 173-26) and the Shoreline Management Permit and Enforcement rule (WAC 173-27).⁶ Additionally, the wetlands delineation manual rule was adopted in February 1997.

The proposed Guidelines produced significant controversy and, as a result, these regulations were not adopted in 1997 as anticipated. Many raised questions about the proper relationship between the SMA and GMA, the content of the Guidelines and extent of the changes from the existing Guidelines. A subcommittee, the State Land Use Study Commission, first debated these issues. Later, a broad based Shorelines Guidelines Commission did the same.

⁶ WAC 173-26 and WAC 123-27: <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-26>

The potential listing of certain native fish species under the federal ESA surfaced as another controversial issue at the same time. While this provided some momentum towards action on the Guidelines, in the end, this issue only further complicated the task.

The Guidelines Commission recommended adoption of a set of Guidelines, though it was not a consensus decision of the Commission. The proposed Guidelines were submitted for formal public review and comment. Ecology received substantial comments in writing and in the public hearings. Based on these comments, Ecology began a redrafting process. The new draft provided two alternative approaches: A more flexible, policy driven approach (Path A); and a more prescriptive approach (Path B). Endorsed by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), Path B provided the certainty of protecting the listed fish species that require protection.

Ecology released this set of Guidelines for formal public review during 2000 and subsequently adopted them on November 29, 2000. The Association of Washington Business (AWB) (joined by a coalition of business and industry associations and some local governments) promptly appealed the adoption of the new rules to the Shorelines Hearings Board. The Washington Environmental Council led a coalition that intervened on behalf of the Department of Ecology in supporting the adopted rule (continued in 2001-2005).

Coastal Hazards

As a follow-up to the Round 1 CEMS project, Ecology carried out an inventory and characterization of alternatives to traditional shoreline armoring. Over thirty beach nourishment projects in Puget Sound were documented, illustrating a wide variety of techniques. Reporting of the project provided the consulting community, local governments, and resource managers with information on the design and management of beach nourishment projects, and other adaptive management alternatives to armoring. The Shoreline Master Program Guidelines Rule adopted in December 2003 incorporated the results of this work.

Special Area Management Planning

As mandated in the original Grays Harbor Estuary Management Plan (GHEMP)⁷, the Grays Harbor Council of Governments (COG) reconvened the GHEMP Task Force for a five-year plan review and update. While work progressed on basic plan elements, fundamental questions emerged regarding overall plan value and effectiveness.

As the GHEMP Task Force reviewed, streamlined, and updated various sections of the plan, major policy and regulatory shifts were surfacing from state and federal agencies, which presented potentially substantive effects upon the update effort.

The anticipated Endangered Species Act (ESA) listing of one or more anadromous fish species within Grays Harbor and the resulting “4d” rulings, in addition the proposed amendment of the state SMA Guidelines for local SMPs, created a problematic situation for the update. With the status, degree of impact, and timing unclear for the aforementioned efforts, continuing the

⁷ GHEMP: http://www.co.grays-harbor.wa.us/info/pub_svcs/EstuaryPlan.htm

GHEMP update became increasingly futile. The Task Force decided to place the update effort on hold pending clarification of impacts resulting from the ESA listings and the SMA Guideline amendment. The Department of Ecology concurred.

2001 – 2005 Assessment and Strategy

During the third 309-improvement program phase, Washington State worked on one Improvement Area:

1. Cumulative and Secondary Impacts of Growth

Cumulative and Secondary Impacts of Growth

Throughout 2000, adoption of the new rule remained controversial, especially regarding the dual path approach (Path A and Path B). In December 2000, the AWB — representing a coalition of business organizations, cities, and counties — and the Washington Aggregates and Concrete Association appealed the new Guidelines rule to the Shoreline Hearings Board (SHB). The Washington Environmental Council (WEC) led an environmental coalition that intervened in support of the Guidelines.

The SHB, in a split decision on August 27, 2001, ruled that Ecology had failed to properly conduct the rule review process and that certain provisions of Path B exceeded Ecology's statutory authority. The ruling invalidated the new Guidelines, but did not invalidate Ecology's repeal of the previous rule (WAC 173-16). This left the state with no SMP Guidelines rule. Existing local master programs remained in effect.

Quickly, parties to the original SHB appeal moved to appeal the SHB decision to Thurston County Superior Court. However, Ecology director Tom Fitzsimmons believed that mediation would be more beneficial than lengthy litigation. The Governor and the Attorney General convened mediation talks aimed at reaching a negotiated settlement. Mediators were selected and the parties to the lawsuit appointed representatives. These mediated negotiations extended from early 2001 through late 2002.

By autumn 2002, the parties negotiated and completed a new draft SMP Guidelines rule. Shortly after that, all the other necessary agreements (e.g. funding and local adoption schedules) were in place. The parties entered into a formal settlement agreement on December 20, 2002.

In January 2003, in conformance with the settlement agreement, Ecology initiated the public process for formal adoption of the negotiated settlement draft Guidelines rule. In July, Ecology released drafts of the rule, plus the associated environmental and economic assessment documents, for public review and comment. Ecology responded to comments by expanding and/or clarifying the economic and environmental assessment documents, and by making minor clarifications to the rule itself. Ecology formally adopted the rule on December 17, 2003. It took effect on January 17, 2004.

As the Guidelines rule adoption process neared completion, the 2003 State Legislature amended the SMA to extend the local government deadlines for updating their SMPs. The new SMP Guidelines outlined a sliding schedule through 2014 for completion of all SMPs.

Additionally, the Legislature appropriated \$2 million of state general fund monies for the 2003-05 biennium. The Legislature also committed to providing local governments with “reasonable and adequate” future funding through 2014.

Ecology submitted the new SMP guidelines to OCM for inclusion in our WCZMP on October 6, 2004. OCM began reviewing the guidelines and issued preliminary approval on July 29, 2005. OCM determined that it would need to complete a National Environmental Policy Act (NEPA) process for this action and that final approval would follow the completion of this process. OCM subsequently initiated the NEPA process and began preparing an Environmental Impact Statement (EIS).

Following adoption of the Guidelines, Ecology developed and implemented a process for dispersing the funds for comprehensive SMP updates to the statutorily defined “early adopter” local governments. These included Whatcom and Snohomish counties, the cities of Port Townsend and Bellingham. In addition, Ecology solicited grant applications and selected 12 different local governments from across the state (four counties and eight cities, half of which reside in the coastal zone) to receive the remaining funding.

The actions of the State Legislature set in motion a new major effort to update all 263 local SMPs (133 of these in the coastal zone) across the state, with a corresponding workload for Ecology and local governments. This effort to update SMPs will happen over the next five years and beyond - on a seven-year review cycle.

In the process, Ecology is obliged to work in partnership with and support local governments as they complete their individual SMP updates. This has required Ecology to prepare a wide variety of new policy and technical guidance materials. Additionally, Ecology must conduct training and outreach for local government planners and their consultants and provide targeted guidance on acceptable methodologies for completing the shoreline inventories and analyses that form the basis for the local SMP updates.

In addition to maintaining this level of technical assistance to local governments and citizens, Ecology is now in the process of dispersing an additional \$4 million in grant funds for a new round of local government SMP updates. This level of effort is expected to continue for at least the next three biennia.

2006 – 2010 Assessment and Strategy

During the fourth 309-improvement program phase, Washington State again worked on one Improvement Area:

1. Cumulative and Secondary Impacts of Growth

Cumulative and Secondary Impacts of Growth

From 2006 to 2010, Ecology and local governments have worked to implement the new SMP Guidelines. Using Section 309 funds, Ecology has developed guidance, provided technical assistance, and reviewed draft and final SMPs.

In order to assist local governments in developing their SMPs, Ecology staff have produced guidance on a variety of subjects relevant to the planning process including GMA/SMA integration, shoreline armoring, and intertidal shellfish aquaculture. These guidance pieces have been presented to local governments on our website and at quarterly meetings hosted by Ecology where all local governments updating their SMPs gather to learn more about the planning process.

Ecology staff have also been working for the past 3 years on developing a Shoreline Master Program Handbook⁸ for local governments updating their SMPs. Several chapters are now finalized and available on Ecology's website. As of August 1, 2010, completed chapters include:

- Chapter 4 - No Net Loss of Shoreline Ecological Functions
- Chapter 5 – Shoreline Jurisdiction
- Chapter 6 – Public Participation
- Chapter 7 – Shoreline Inventory and Characterization
- Chapter 17 – Cumulative Impacts Analysis
- Nonconforming Uses and Development Guidance section (to be included in the future Administrative Provisions chapter)
- Appendix A: Addressing Sea Level Rise in Shoreline Master Programs

Staff in Ecology's regional offices have provided technical assistance to all local governments working on SMPs in the coastal zone. Typically this assistance involves consulting with local planners on interpreting the guidelines, sharing lessons learned from other jurisdictions farther along in the update process, and pointing out data and other resources that can inform the SMP. Regional staff also review draft SMP products as they are developed, and work with headquarters staff to conduct the final SMP review and approval process.

As of August 1, 2010, Ecology has approved 17 SMPs in the coastal zone: Anacortes, Auburn, Coupeville, Darrington, Everett, Ferndale, Kent, Kirkland, Marysville, Monroe, Orting, Port Townsend, Redmond, Sultan, Sumner, Whatcom County, and Woodinville. Five more SMPs (Des Moines, Jefferson County, Sammamish, SeaTac, and Tukwila) have been formally submitted to Ecology for review and approval. An additional 100 local governments are actively working on their SMP updates, and 16 more will begin work on their SMPs during the 2011-2013 biennium.

⁸ Shoreline Master Program Handbook: <http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/index.html>

Ecology intends to submit all approved SMPs in the coastal zone to OCM for approval and inclusion in the WCZMP. However, these submissions have not yet been sent to OCM as we must wait until OCM has granted final approval of our SMP Guidelines as part of the WCZMP. This approval has been delayed pending completion of the NEPA process initiated and described in the previous round. Upon approval of the Guidelines, we will begin to submit all SMPs approved since 2004 to OCM.

2011 – 2015 Assessment and Strategy

During the third 309-improvement program phase, Washington State worked on two Improvement Areas:

1. Cumulative and Secondary Impacts of Growth
2. Ocean Resources

Cumulative and Secondary Impacts of Growth

From 2011 to 2015, Ecology and local governments have continually worked to implement the new SMP Guidelines. Using Section 309 funds, Ecology has maintained resources to develop guidance, provide technical assistance, and review draft and final SMPs.

In order to assist local governments in developing their SMPs, Ecology staff produce and continue to maintain existing guidance on a variety of subjects relevant to the planning process. These guidance pieces have been presented to local governments on our website and at quarterly meetings hosted by Ecology where all local governments updating their SMPs gather to learn more about the planning process.

Staff in Ecology's regional offices have provided technical assistance to all local governments working on SMPs in the coastal zone. Typically this assistance involves consulting with local planners on interpreting the guidelines, sharing lessons learned from other jurisdictions farther along in the update process, and pointing out data and other resources that can inform the SMP. Regional staff then also review draft SMP products as they are developed, and work with headquarters staff to conduct the final SMP review and approval process.

As of December 31, 2014, Ecology has approved 81 SMPs in the coastal zone - 13 more SMPs have been formally submitted to Ecology for review and approval. An additional 39 local governments are actively working on their SMP updates which will be submitted to Ecology during the next enhancement cycle.

Ocean Resources

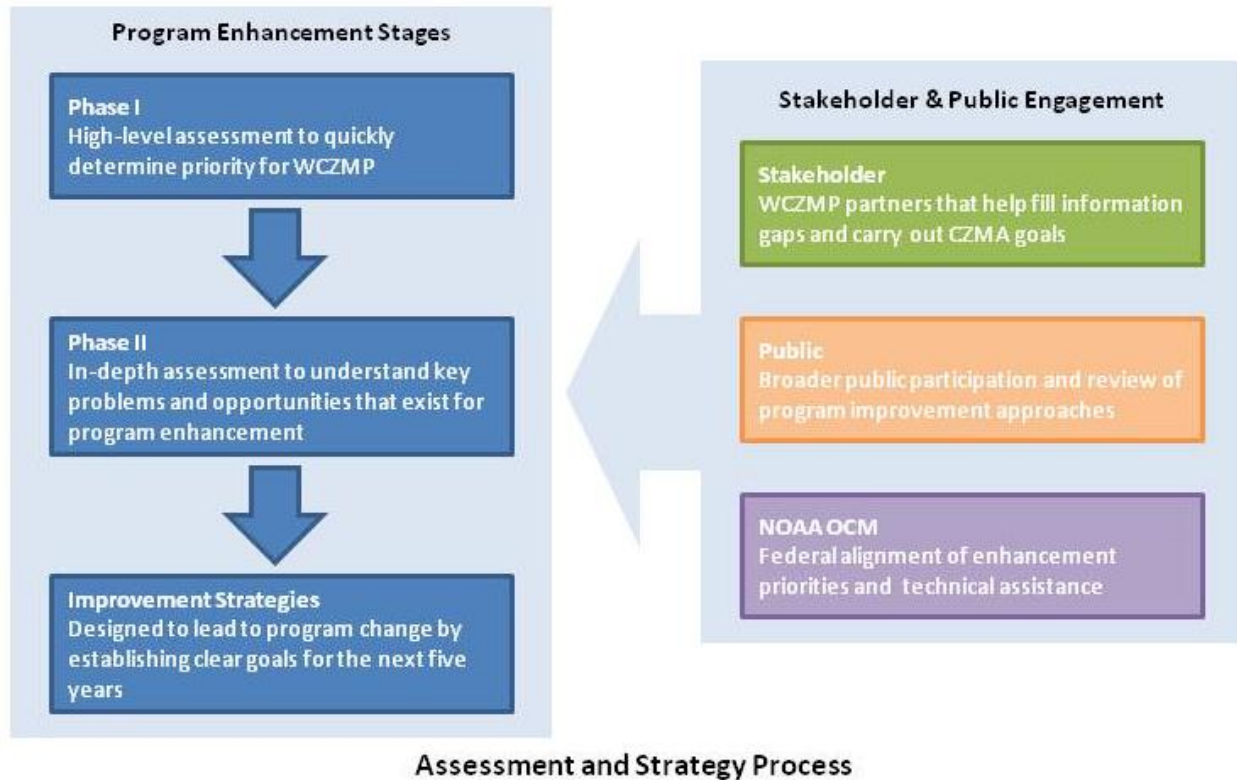
Beginning in 2012, the legislature has funded development of a Marine Spatial Plan (MSP) for Washington's Pacific Coast under a recent law for comprehensive marine waters management (RCW 43.372).⁹ This funding has supported a variety of projects to develop data on coastal resources and uses, create online tools, conduct analyses, and assist with stakeholder engagement. WCZMP staff has led and coordinated the overall development of this plan with

⁹ Washington State Marine Spatial Planning: <http://www.msp.wa.gov/>

309 resources. This work includes coordinating an interagency team of state agencies responsible for plan development; consulting and communicating with tribes, local governments and federal agencies; managing a gubernatorial Advisory Council; and overseeing projects, research and analyses to support plan development.

The MSP for Washington's Pacific Coast presents a continued major area of priority improvement for Washington's CZM. The final plan will provide information, analyses and recommendations for local government plans to use in their SMPs as well as for use by the WCZMP in applying its approved enforceable policies to federal actions.

2016-2020 Assessment and Strategy Process



To better understand what program improvements are needed in 2016-2020, the WCZMP conducted an assessment for each of the nine enhancement areas. The assessment was broken down into two stages:

Phase I (high-level) was intended to measure the extent to which problems and opportunities for program enhancement exist within each of the enhancement area objectives, and determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment.

Phase II (in-depth) determined the effectiveness of existing management efforts to address identified problems, and identified high priority needs for program enhancement.

For this assessment, OCM provided a variety of tools to help CZMPs more easily respond to the guidance questions required by NOAA (NOAA OCM, 2014). While this national data offered informative baseline information, it was also coarse and in many areas did not reflect the most current or helpful information to accurately characterize existing conditions and trends in Washington State. Therefore, the WCZMP used more regionally appropriate data and information, when available, and where gaps existed, stakeholder outreach was used to connect with local partners to help acquire relevant data.

After completing the Phase II assessment questions, WCZMP staff identified, in consultation with OCM, which enhancement areas it will develop a strategy for. Strategies are designed to lead to a program change (as described in “Eligible Activities” above), and must address high priority needs for program enhancement within one or more enhancement areas that were identified through the WCZMP’s self-assessment. Strategies establish clear goals and a pathway and method to reach those goals during the next five years. It is important to recognize that there is no requirement to develop a strategy for every enhancement area that was designated as a high priority, unless specifically designated by OCM as an “area of national importance”; rather states are encouraged to focus their strategies on the greatest opportunity for improvement and likely resources available to achieve the strategy goals. Furthermore, CZMPs only develop strategies for activities the state intends to fund and work on given their anticipated level of Section 309 funding.

OCM can choose to designate one or more enhancement areas as “areas of national importance.” Designating areas of national importance helps to further focus Section 309 funding and demonstrate a national impact for the National CZMP by aligning resources to address one or more critical coastal management issues across the county. While not required to do so, CZMPs are strongly encouraged to develop one or more strategies to improve the effectiveness of their program in designated areas of national importance. For the FY 2016-2020 assessment and strategy cycle, “coastal hazards” is designated as the enhancement area of national importance.

Stakeholder Engagement

The CZMA encourages the participation, coordination, and cooperation with and among appropriate local, state, federal, and regional groups to help carry out the goals of the CZMA. In keeping with the intent of the CZMA, a number of Ecology staff and representatives of other state agencies participated in the development of the draft assessment and strategy.

Washington has a rich level of existing partnerships for coastal management. This strong network allowed staff to reach out to a number of internal and external representatives from state and federal agencies to gather data, information, and expertise. The level of involvement and input varied based on the enhancement area, however, this work included individual and group meetings, review and feedback on draft documents, and coordinated efforts to align strategies with key partnering agencies. For a full list of agencies and stakeholder groups that WCZMP staff consulted in the 2016-2020 Assessment and Strategy process, please see Appendix A.

Public Review Process

The CZMA also places a strong emphasis on public participation. The draft document was described and posted on our CZMP website,¹⁰ and the agency Public Involvement Calendar.¹¹ These are the main tools used by the program for public input on other efforts (e.g., Shoreline

¹⁰ CZMP 309 Assessment and Strategy websites: <http://www.ecy.wa.gov/programs/sea/czm/Grants.html>; <http://www.ecy.wa.gov/programs/sea/czm/309-improv.html>

¹¹ Washington Department of Ecology Public Involvement Calendar: <https://fortress.wa.gov/ecy/publiccalendar/>

Master Programs). The public comment period was open for 36 days, June 11 through July 17, 2015. More information and a summary of public comments and CZMP response is provided in Appendix B.

High-Level Assessment

Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are “those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” [33 CFR 328.3(b)].

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

Coastal Wetlands Status and Trends*		
Current state of wetlands in 2011 (acres)	568591.9 (3.9% of state)	
Net change in total wetlands (in acres)	from 1996-2011	from 2006-2011
	-3337.7	-1822.7
Net change in freshwater (palustrine wetlands) (gained or lost)*	from 1996-2011	from 2006-2011
	-1142.7	-1477.1
Net change in saltwater (estuarine) wetlands (gained or lost)*	from 1996-2011	from 2006-2011
	-34.5	-19.6
Net change in Unconsolidated Shore wetlands (% gained or lost)	from 1996-2011	from 2006-2011
	-2160.6	457.7

How Wetlands Are Changing*		
Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Acres)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Acres)
Development	-1188.7	-1170.9
Agriculture	-7.6	-2.4
Barren Land	-159.9	-152.8
Water	-3515.0	-496.6

**The data used in these tables was provided by NOAA. Ecology cannot update with derived products because we currently can't separate CZM from non-CZM counties. We hope to analyze the data in 2015 and provide trend information.*

The combined total for wetland area lost from 1996 to 2011 is 4871 acres, as seen in the second table above. The difference between this combine total and the first table highlights changes that have occurred in wetland condition, or type compared to those land covers most likely to be associated with actual losses. Some of those changes may include changes of wetland to natural upland categories, or visa-versa. Many of these additional changes are associated with timber, or silviculture activities which, depending on the management practices in your area, may result in additional losses (not noted in table 2 above). It should also be noted that some of the above changes may not reflect permanent wetland losses and that changes to water may reflect a loss of vegetative wetlands, but could also be associated with gains in unvegetated wetland types (such as unconsolidated bottom), which NOAA's Coastal Change Analysis Program (C-CAP) does not map.

1. Summary of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national data sets.

In general, Ecology is the primary source of wetland data and management for the state. Therefore, most of the information below is associated with work the agency conducts, which provides a good high level assessment that can determine if this priority area is a high priority for the WCZMP.

In 2010 Ecology received an U.S. Environmental Protection Agency (U.S. EPA) grant to use existing data sources to improve wetland mapping conducted through C-CAP. In 2013 Ecology received the final products from NOAA OCM, which included the following:

- C-CAP's standard land cover mapping of Washington west of the Cascade crest with improved wetland mapping for 1992, 1996, 2001, 2006, and 2011
- A derived product for Ecology that categorizes pixels with a high probability of being wetland as "potentially disturbed wetland" even though the observed land cover was identified as "agriculture/cultivated," "pasture/hay," or "grassland." The derived product also covers the years 1992, 1996, 2001, 2006, and 2011.

Ecology used the derived product to create modeled Wetlands Inventories for 1992-2011. These raster layers include only the pixels with land covers identified as estuarine, palustrine, and potentially disturbed wetlands, water, and unconsolidated shore. Ecology created modeled Wetlands Inventory raster layers for individual Water Resource Inventory Areas (WRIAs) based on the 2011 layer.¹²

¹² All layers are publicly available for download at: <http://www.ecy.wa.gov/services/gis/data/biota/wetlands.htm>

In addition, Ecology used the 2011 modeled Wetland Inventory to create an online map viewer. Ecology has not yet analyzed the derived product raster layers to determine net gains or losses in wetland acreage. Ecology anticipates analyzing this data in 2015 to determine status and trends.¹³

Management Characterization:

- 1. Significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.**

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Y

- 2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:**
 - a. Describe the significance of the changes;**
 - b. Specify if they were 309 or other CZM-driven changes; and**
 - c. Characterize the outcomes or likely future outcomes of the changes.**

Statutes, regulations, policies, or case law interpreting these

Two state laws, the State Water Pollution Control Act and the SMA, give Ecology the authority to regulate wetlands. Ecology also uses the State Environmental Policy Act (SEPA) process to identify potential wetland-related concerns early in the permitting process. Wetland specialists in the regions review applications for projects that have the potential to impact wetlands and other "waters of the state."

The 133 jurisdictions in the coastal zone are either in the process of updating their SMPs or will begin the process soon. All of these jurisdictions receive technical assistance from Ecology regional planners funded in part with 309 dollars. 309 funding has helped staff to devote more time to technical assistance for these jurisdictions, ensuring their SMP updates are completed according to the Guidelines. These updated SMPs will ensure "no net loss" of ecological function, helping to protect and restore wetlands throughout the coastal zone. Ecology's wetlands staff also provide technical review for the wetland portions of the SMPs to ensure that the language is consistent with best available science and Ecology's wetland mitigation guidance.

¹³ Ecology Wetland Change Analysis and Inventory online viewer: <http://www.ecy.wa.gov/programs/sea/wetlands/StatusAndTrends.html>

Ecology also provides technical assistance to local governments under the GMA. This includes assistance in developing comprehensive plan policies and development regulations, and in implementing local wetland regulations. Many CAOs were updated to include language on mitigation alternatives and wetland mitigation requirements to better align with Ecology's mitigation guidance.

The updated SMPs represent a 309 change. Other wetlands work is funded in part with Section 306 grant funds.

Changes to the state wetland delineation manual

Changes to the state wetland delineation manual became effective on March 14, 2011. Changes were made since the U.S. Army Corps of Engineers (USACE) had updated and expanded their delineation manual with regional supplements. To maintain consistency between the state and federal delineations of wetlands, Ecology repealed WAC 173-22-080 (the state delineation manual) and replaced it with a revision of WAC 173-22-035 that states delineations should be done according to the currently approved federal manual and supplements. This is not a 309-driven change.

Guidance on Clean Water Act Jurisdiction, Waters of the U.S. Rule

Wetland staff worked with Water Quality staff and participated in several national forums to develop comments and receive information from the U.S. EPA on the basis for specific rule language. National groups that Ecology participated on during the review of the proposed rule were: Association of State Wetland Managers, Association of Clean Water Administrators, Western States Water Council. Wetland staff wrote and coordinated state comments with Washington State Department of Fish and Wildlife (WDFW), Department of Transportation (WSDOT), Department of Agriculture (WSDA), Washington State Conservation Commission (WSCC) and the association of counties. A joint agency state comment letter was submitted. Wetland and water quality staff developed a comment letter expressing concerns with the agricultural interpretive rule that the standards in the rule were insufficient to ensure protection of wetlands and water quality. This is not a 309-driven change, but was funded in part with Section 306 funding.

Wetland programs (e.g., regulatory, mitigation, restoration, acquisition)

Voluntary Stewardship Program

In the 2010 legislative session the Voluntary Stewardship Program (VSP) was approved as a way to protect natural resources in agricultural areas in a voluntary rather than regulatory approach under local codes. The legislation was developed by agricultural interests, tribes, and the environmental community. Under that law, two advisory committees were established. VSP is a non-regulatory option for addressing wetland and critical areas protection on agricultural lands. The program relies on voluntary participation in water quality improvement projects and wetland protection. Under the VSP, critical areas ordinances are not applicable on agricultural lands.

A state technical advisory workgroup and local VSP development groups were convened. Ecology staff participated on the state technical advisory workgroup that developed guidance for counties implementing VSP. Only limited funding was available and only one coastal county – Thurston – was funded to develop a voluntary stewardship program. An advisory committee of agricultural and aquaculture interests, tribes, conservation districts and environmental representatives, is working to develop the program. The plan must be completed by June 30, 2015 and then submitted for approval.

Wetland staff are attending the county VSP meetings and coordinating with Water Quality staff on Ecology's recommendations. Since we don't have a statutory role until the local plans are developed and submitted for approval, our participation on the Thurston VSP workgroup has been as an observer providing input when requested by the workgroup. After the plan is developed, Ecology must decide whether the plan will be at least as protective as the critical areas ordinance after 5 and 10 years. Ecology works with WDFW on that determination and then advises the WSCC who makes the final decision on adequacy. State regulations such as the state Water Pollution Control Act and Hydraulic Project Approval (HPA) statute still apply to agricultural lands. These laws will provide a regulatory backstop for the voluntary program to ensure that wetlands and water quality are protected. Ecology was not funded to participate in the VSP program so we will continue to exercise our regulatory role to ensure that wetland resources are protected in agricultural lands and losses are adequately compensated. This is not a 309-driven change, but was funded in part with Section 306 funding.

Updates to the Wetland Rating Systems

The wetland rating systems for western and eastern Washington were updated in 2014 to better reflect the scientific accuracy of the tools. The previous rating system had a scale of 1-100 and the new system uses a scale of 3-27 for the three major function categories, water quality, water flow/quantity, and habitat. These scores are used to determine the relative level of functions provided and assigns wetlands to categories for levels of protection. Ecology staff work with local governments to address changes needed to local critical areas ordinances (CAO) because of changes in the rating system scoring. This is not a 309-driven change, but was funded in part with Section 306 funding.

Wetland Program Plan

Ecology's wetland staff are in the process of developing a six-year strategic wetland program plan and conducted extensive coordination with tribes having U&A areas in the state. The wetland program plan is a strategic planning document that outlines activities that the state would like to develop or improve to support an effective wetland program. As part of this work, wetland staff worked with the U.S. EPA on an inventory and assessment of Ecology's wetland program. Staff provide informational webinars to local governments and conservation districts on the plan and solicit feedback. This is not a 309-driven change, but was funded in part with Section 306 funding.

Wetland Mitigation Banking

Since 2010, Ecology's mitigation banking program has certified three banks for use as project mitigation in the coastal zone and three are under review. Work is ongoing for one wetland/ESA conservation bank in Snohomish County, the Blue Heron Slough wetland/conservation bank. The Bank provides an excellent opportunity to restore approximately 350 acres of intertidal estuarine habitat, to reconnect this acreage to other habitat in the Snohomish River watershed and Puget Sound, and to preserve open space adjacent to the City of Everett's Urban Growth Area.

Templates and checklists were developed to assist wetland mitigation bankers in submitting adequate proposals and ensure some consistency in expectations for banks and submittals. Ecology actively works with the USACE and U.S. EPA on review and approval of wetland banks. We are coordinating with NOAA on the proposed conservation bank. Work is ongoing in oversight of approved banks.

This is not a 309-driven change, but was funded in part with Section 306 funding. As banks are certified by Ecology, they will be monitored for effectiveness and compliance with the mitigation banking rule.

In Lieu Fee (ILF) Mitigation

ILF mitigation programs provide a readily accessible option for compensatory mitigation for applicants with unavoidable impacts to wetlands. ILF programs are established to collect fees for mitigation and then complete mitigation projects. ILF programs are similar to banks where an applicant pays a third party to assume their mitigation responsibility. Unlike banks, ILF projects are generally not on the ground prior to impacts occurring.

Staff are currently working with the USACE and the U.S. EPA on ILF programs in the Puget Sound region, including one in Thurston County and one in Pierce County.

Ecology worked with King County and the Hood Canal Coordinating Council (HCCC) on development of their ILF programs. The King County and HCCC ILF programs were approved by Ecology in 2012.

Ecology and the Interagency Review Team used the experience working with Pierce, Thurston, and King Counties and the HCCC, on their ILF programs, to develop a framework and protocols for use by other entities in development of their ILF programs in the Puget Sound Basin and beyond. Ecology also developed state policy guidance on ILF program requirements. The guidance includes criteria for establishing a state approved ILF program at the local level, and conditions for using ILF mitigation. The guidance was completed in December 2012. Ecology staff will continue to review ILF proposals. This is not a 309-driven change, but was funded in part with Section 306 funding.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	<input type="checkbox"/>
Medium	<input checked="" type="checkbox"/>
Low	<input type="checkbox"/>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Wetlands management continues to be a high priority for Ecology at the agency level. Because of this, the work has received support from state general fund revenues and external grants, largely from the U.S. EPA. While we will continue to support the provision of scientific, technical, and planning assistance to local governments under our 306 funding, wetlands are considered a medium priority for the WCZMP program enhancement assessment.

Coastal Hazards

Section 309 Enhancement Objective: Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Overview:

Type of Hazard	General Level of Risk ¹⁴ (H, M, L)
Flooding	H
Shoreline erosion	H
Landslides	M
Land subsidence	L
Saltwater intrusion	M
Geological hazards	M

* Sea level rise is a driver that exacerbates existing stressors (i.e., erosion, flooding, saltwater intrusion, etc.). Therefore, it was not included as a separate category in this assessment. However, a section has been dedicated to climate change, which describes impacts resulting in changing shore and climate conditions.

Resource Characterization:

Flooding

Floods are a significant hazard in Washington State. From 1980 through 2011, the State had 22 Presidentially-declared flood disasters – 1997 had the highest number of declared flood disasters in the country. The State experienced 34 percent growth in the number of flood insurance policies between October 2009 and September 2010, the second fastest growing state in the country. This is indicative of the still-growing western United States and the relatively high area of land in the Special Flood Hazard Area, especially in western Washington.

¹⁴ Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

For the entire state, ten of the fourteen coastal counties were listed as the jurisdictions at greatest risk (EMD, 2013).

Population in the Coastal Floodplain			
	2000	2010	Percent Change from 2000-2010
No. of people in coastal floodplain ¹⁵	209,477	251,243	20%
No. of people in coastal counties ¹⁶	4,070,515	4,615,192	13%
Percentage of people in coastal counties in coastal floodplain	5.1%	5.4%	—

While historic rates of flooding have been prominent in river systems connected to heavy rainfall and snow conditions in the Cascades and Olympic mountain ranges, the WCZMP has increased attention along marine shorelines in recent years as a result of coastal storm surge and overbank flooding. Coastal flooding occurs when winter storms coincide with high tides and is often accompanied by severe wind and wave damage. Coastal flooding can also occur in conjunction with high stream flows. Flood-prone areas on the ocean coast include portions of the large barrier spits of the southwest coast, low-lying communities located within estuaries, and isolated small communities located along stream mouths along the Olympic Coast. Areas most at risk within Puget Sound include sand spits and other barrier beaches, and low-lying areas near river mouths.

In addition, storm water drainage flooding is also common among coastal communities. This occurs when inflows of storm water exceed the conveyance capacity of a local storm water drainage system. In addition, high tides and rising seas also make coastal communities more susceptible to current and future flooding due to outfall back up. Drainage systems overflow, resulting in water ponding in low lying areas.

Shoreline Erosion

Washington’s outer coast is divided into two sections when analyzing shoreline change, the Columbia River littoral cell (CRLC) which extends north from the mouth of the Columbia River to Point Granville, and the Olympic Peninsula region which reaches from Point Granville to La Push. While areas north of Port Granville are experiencing some erosion, much of the research within the last twenty years has been focused on southwest Washington due to the influence of the Columbia River and large scale changes to the natural system, which has resulted in limited data for areas north of Point Granville. Though most of the CRLC has featured an accretional trend, increased awareness has been placed on localized erosion events due to corresponding impacts on coastal communities.

Our understanding of coastal processes has been enhanced with the Coastal Erosion Management Study (CEMS). The seasonal exchange of beach sediment on the southwest

¹⁵ Information provided by NOAA Office for Coastal Management

¹⁶ NOAA Decadal Demographic Trends for Coastal Zone Boundaries. NOAA Coastal Services Center: <http://coast.noaa.gov/digitalcoast/dataregistry/#/demographictrends>

Washington coast is large. These beaches lower approximately 0.5 m during the winter season and retreat horizontally between 20 and 30 m. This seasonal change is primarily due to the large winter wave climate and seasonal variability of wave direction and water levels in the Pacific Northwest. During the high wave conditions of the winter season, sediment is transported northward and offshore while the low wave conditions of the summer season, sediment is transported back onshore and southward. As a result, the net change over the full annual cycle is small relative to the seasonal variability (Ruggiero & Voigt, 2000).

Beach erosion is tied to Columbia River sediment supply in the CRLC. Washington's southwest coast continues to respond to large scale engineered structures by experiencing dramatic beach progradation during the past century (Ruggiero et al., 2013). In general, the beaches closest to the Columbia River have eroded most rapidly, while accretion continues northward at lower rates in the south and higher rates in the north. Changes along the southwest Washington coast can be attributed to a shoreline response to decreasing sediment supply. As the system approaches equilibrium based on a new sediment supply, it is expected that shoreline reorientation will occur throughout the region. As a result, localized chronic and episodic erosion continues to have significant impacts on coastal communities such as Westport, Willapa Bay and Cape Shoalwater, Point Brown Ocean Shores, Cape Disappointment State Park, and Wahkiakum County. Recent storms have exposed and increased attention to these long-term issues, however, management decisions to sufficiently address areas of concern remain largely unchanged.

Puget Sound has approximately 2,500 miles of marine shoreline, subject to a variety of coastal hazards. These include widespread bluff erosion, landsliding, flooding, and severe storms. Anticipated sea level rise is expected to aggravate erosion and flooding during coming decades. Earthquakes, to which this region is highly susceptible, may trigger tsunamis, landslides, liquefaction, and subsidence, and would have devastating effects on coastal areas.

Erosion affects most of Puget Sound's shoreline and includes bluff retreat and landsliding, erosion of spits and barrier beaches, and erosion of historically filled lands (Shipman, 2010). While erosion of bluffs is also a natural process that is the basis for many natural land forms, it poses significant concerns where development lies close to the water's edge and can threaten residences, parks, industrial facilities, hazardous waste sites, and urban waterfronts. Managing erosion on Puget Sound is challenging because of the adverse impacts of erosion structures (armoring) on beaches and nearshore habitats (Shipman, 2010). Bluff erosion is a significant source of sediment to beaches and stabilization can negatively impact this process. In addition, shoreline armoring can affect beach ecology by reducing spawning habitat for some fish species, by eliminating the deposition and accumulation of organic material along the upper beach, and by altering riparian habitats.

Land Slides

Landslides commonly occur on slopes and in areas where they have taken place before. Historically, most areas of Washington State have experienced landslides. Much of the landslide threats on the outer coast of Washington are located adjacent to the U.S. 101

Highway corridor along the Pacific Coast from Astoria, Oregon to Olympia. Dormant and relict deep-seated landslides in the Willapa Hills are a concern because of their large size and impact on commerce and utility corridors for the rural coastal communities in this part of the State (EMD, 2013).

Landslides are a major hazard on Puget Sound, where much of the shoreline consists of high bluffs composed of weak geologic materials (Shipman, 2004; Johannessen and MacLennan, 2007). Landsliding of Puget Sound bluffs is largely associated with heavy winter rainfall and elevated groundwater levels and can be aggravated by poor development practices associated with land clearing and drainage. Landslides pose the greatest risk to sites where development has occurred near the top edge of coastal bluffs, within historically active landslide complexes, and at the toe of unstable slopes (Shipman, 2004). New geologic mapping, aided by the widespread availability of LIDAR data, has greatly improved geological understanding of the distribution of landslide-prone areas in the region, but to date there has been little work to translate this into useful products for identifying and addressing coastal hazards.

Landslides were a significant element of federal disaster declarations in early 1997. Seattle reported damages of greater than \$30 million, a family of four was killed in their waterfront home on Bainbridge Island, and a major landslide temporarily closed the mainline of the Burlington Northern Santa Fe Railroad on the shoreline north of Seattle. Record precipitation levels in the winter of 1998-99 led to reactivation of many very large, deep-seated landslides throughout the region, including one on the Thurston County shoreline that resulted in more than thirty condemned homes. Landslides have been a significant issue in many subsequent years (EMD, 2013). In March 2013, a very large landslide in the Ledgewood neighborhood on Whidbey Island gained national media coverage. Continuing coastal landslides along the railroad grade north of Seattle (a passenger corridor) recently led to the development of a Landslide Mitigation Action Plan (WSDOT, 2014). The devastating March 2014 Oso landslide (which killed more than 40 people) did not occur on the coast, but occurred in a geological setting similar to the Puget Sound shoreline and underscores the need to better understand landslide hazards (GEER, 2014).

Geological Hazards

Tsunami and seismic risk are equally great on Washington's ocean coast and in Puget Sound. However, the nature, source, and frequency of the risk varies. The chances that an earthquake as large as magnitude 9.0 will occur along the Cascade zone within the next 50 years are about one in ten, which would be comparable to the event that devastated the east coast of Japan in 2011. Much of the damage in earthquakes occurs from ground shaking that affects buildings and infrastructure. However, there are several other consequences of earthquakes that can result in substantially increased levels of damage in some locations. These consequences include: surface rupture, subsidence or elevation, liquefaction, settlement, lateral spreading, landslides, dam, reservoir or levee failures, tsunamis and seiches. Any of these consequences can result in very severe damage to buildings, up to and including complete destruction, and also a high likelihood of casualties.

Washington's ocean coast shoreline is subject to tsunamis generated by both local and distant seismic events or by large coastal or submarine landslides. According to the Washington State Hazard Mitigation Plan (EMD 2013) the tsunami inundation zone along the coast of Washington State contains more than 42,000 residents that could potentially be affected were a tsunami to occur. A study by U.S. Geologic Services (USGS 2008) on the vulnerability of Washington communities found that 18,397 households are in the tsunami-inundation zone along the coast of Washington. Property damage to these homes could be between \$100 and \$500 million dollars depending on the severity of the tsunami.

Land Subsidence

The west coast of the United States is undergoing active vertical deformation due to a combination of tectonics, sediment compaction, fluid withdrawal and recharge, and glacial isostatic adjustment (National Research Council, 2012). Washington State's unique characteristics of the Cascadia subduction zone and by isostatic response to the advance and retreat of the Cordilleran ice sheet, has resulted in areas around Neah Bay and Astoria rising, and central coast and Puget Sound subsiding very slowly, but the northern Puget Lowland and southern Fraser Lowlands are relatively stable (Shipman, 1990). However, a shortage of data and by the wide spatial and temporal variability of the various processes has limited recent understanding of vertical land movement rates specific to each stretch of Washington's shoreline.

Saltwater Intrusion

High population growth and changing climate conditions have placed increased stress on groundwater supplies in Washington's coastal communities. Aquifers and aquitards vary spatially in both thickness and elevation around the state and even within a single aquifer. Development impacts change the unique hydrologic characteristics of each aquifer and the potential widespread effects of changing conditions on these systems make it an area of interest for the WCZMP to include in resilience work (Ecology, 2002).

Climate Change

Our understanding of climate change has increased over the last five years (Puget Sound Nearshore Ecosystem Restoration Project, Appendices; Shipman, 2009; UW Climate Impacts Group, 2009 and 2013; National Research Council, 2012). The implications of these rapidly changing conditions are not only diverse, but will vary geographically, exacerbating impacts on built and natural systems already facing existing stressors. As summarized in the Washington State Climate Change Integrated Response Strategy (2012), climate change will affect coastal and marine environments in distinct ways:

- Sea level rise and storm surge will increase the frequency and severity of flooding, erosion, and seawater intrusion-thus increasing risk to vulnerable communities, infrastructure, and coastal ecosystems.
- Increased ocean acidity will affect marine ecosystems and Washington's commercial shellfish industry.

- Warmer marine temperatures could alter the magnitude, frequency, and duration of harmful algal blooms and cause harmful effects to humans and animals.

Together, these impacts will have profound effects on Washington’s coastal and marine areas and the resources they provide to our communities, wildlife, economy, and our way of life.

Management Characterization:

- 1. Significant state- or territory-level changes (positive or negative) have occurred that could impact the CZMP’s ability to prevent or significantly reduce coastal hazards risk since the last assessment.**

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these that address:			
<i>elimination of development/redevelopment in high-hazard areas¹⁷</i>	Y	Y	N
<i>management of development/redevelopment in other hazard areas</i>	Y	Y	N
<i>climate change impacts, including sea level rise or Great Lake level change</i>	N	Y	N
Hazards planning programs or initiatives that address:			
<i>hazard mitigation</i>	Y	Y	Y
<i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	Y
Hazards mapping or modeling programs or initiatives for:			
<i>sea level rise or Great Lake level change</i>	N	Y	Y
<i>other hazards</i>	Y	Y	Y

- 2. “High-hazard areas” are defined in Washington’s Coastal Zone:**

The WCZMP addresses high-hazard areas through SMA policies and state guidelines requiring that the impact of natural hazards be considered during the preparation, review, and approval of SMPs. The programs require consideration of erosion, flooding, geological hazards, and natural protective features including beaches, dunes, and wetlands.

- 3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the**

¹⁷ Use state’s definition of high-hazard areas.

document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the changes;**
- b. Specify if they were 309 or other CZM-driven changes; and**
- c. Characterize the outcomes or likely future outcomes of the changes.**

Ecology Floodplains by Design

Floodplains by Design (FbD) is a growing public-private partnership working for better coordination of investments in flood risk management and ecosystem recovery in Washington. This framework approaches floodplain management holistically – moving beyond disjointed, single-focus approaches, and towards projects that both reduce flood risk to people and improve ecological functions of our floodplains. The management and core policy work for this program has been driven by WCZMP staff. The results of this work include \$50 million in grant funds for multi-benefit floodplain management grant projects. \$38.75 million of that fund was provided to eleven specified multi-benefit floodplain projects in the Puget Sound basin.

Department of Fish and Wildlife Marine Shoreline Design Guidelines

These guidelines were developed to provide a comprehensive framework for site assessment and alternatives analysis to determine the need for shore protection and identify the technique that best suits the conditions at a given site. Design guidance was developed from the results of an in depth case study assessment in which design details, project performance, benefits and impacts, as well as site and local conditions were documented from 25 on-the-ground projects in the Puget Sound region. This was not a WCZMP-driven change.

Ecology Softshore Stabilization Guidance

WCZMP staff with a NOAA Coastal Management Fellow developed this SMP guidance to assist local government planners and permit staff in planning and implementing shoreline stabilization provisions within SMPs. This guidance provides an introduction to common shoreline stabilization impacts and applicable regulations. In addition, it describes the underlying intent of soft stabilization management policies and identifies key considerations for soft shoreline planning and permitting. It also describes some anticipated challenges related to soft shoreline stabilization projects.

Washington State Climate Change Integrated Response Strategy

The response strategy was a collaborative state agency effort to develop a framework that decision-makers can use to help protect Washington’s communities, natural resources and economy from the impacts of climate change. The development of this document was not a WCZMP-driven project, but included staff time. However, the WCZMP is currently providing leadership on a state agency adaptation working group to work toward prioritizing strategies and coordinated implementation.

Coastal Hazards Resilience Network

Through a two-year NOAA Coastal Resilience Grant, the WCZMP has partnered with Washington Sea Grant in the development of a network dedicated to improving regional coordination and collaboration through effective partnerships among hazard and climate change practitioners to make Washington’s coastal communities more resilient to natural hazards. A key goal of this effort is to strengthen local capacity to improve resilience to coastal hazards. To achieve this goal, the agencies have worked with coastal communities through the Federal Emergency Management Agency (FEMA) Risk MAP (Mapping, Assessment, and Planning) process to identify vulnerabilities or high priority areas where further coordinated assistance is needed to support more informed planning decisions. As such, Ecology and Sea Grant are facilitating coordinated agency research and potential management alternatives to solve short-and long-term erosion issues in Pacific County and Ocean Shores.

FEMA Risk MAP

Through collaboration with State, Tribal, and local entities, Risk MAP delivers quality data that increases public awareness and leads to action that reduces risk to life and property. Risk MAP focuses on products and services beyond the traditional Flood Insurance Rate Map (FIRM) and works with officials to help put flood risk data and assessment tools to use, effectively communicating risk to citizens and enabling communities to enhance their mitigation plans and actions. This is not a WCZMP-driven change, but supported by WCZMP staff.

Flood Insurance Rate Map Updates

FEMA is in the process of updating the state FIRMs which outline flood hazards in a community. A FIRM may include flood insurance risk zones, 1 percent and 0.2 percent annual chance floodplains, floodways, base flood elevations or depths, roads, streams, and more. This is not a WCZMP-driven change.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High X
Medium
Low

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Coastal communities in Washington State and around the country are already experiencing the impacts of natural and human-made stressors that will be exacerbated under a changing climate. By taking steps to become more resilient, communities can proactively mitigate the risk and exploit the opportunities associated with hazard events. Many of

Washington's coastal communities have a heightened awareness of these risks and have expressed interest in taking action.

Since the inception of state coastal and shoreline management, our program has worked in partnership with local governments on shoreline management. We have also conducted policy analyses on coastal erosion and armoring issues, and have been engaged in coastal monitoring and mapping since the mid 1990s. The topic of resilience and coastal hazards has emerged as a national priority following recent storm events, and is a strategic focus for the WCZMP in the upcoming years.

Public Access

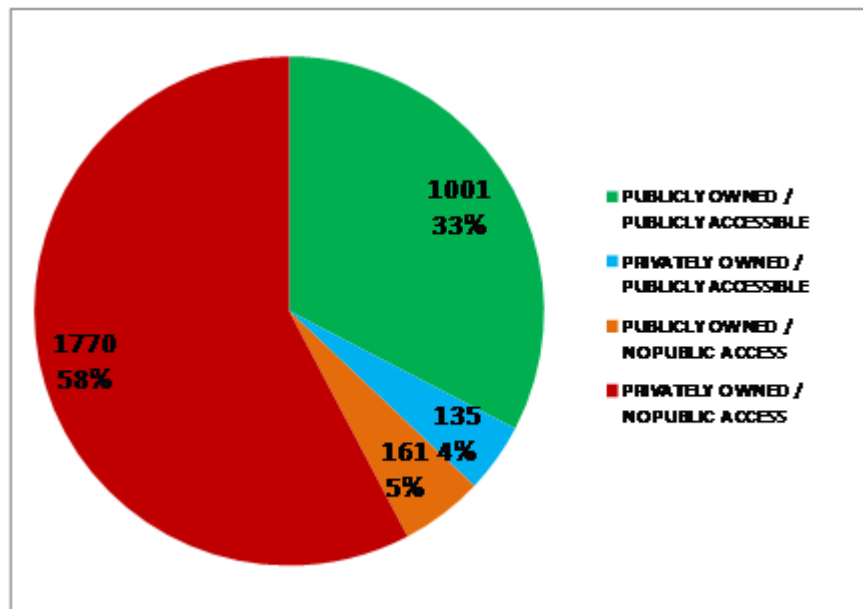
Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP, warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Data on public access availability within the coastal zone.

A combination of sources were used to generate the information provided in the following table. Unfortunately, the datasets were not designed to deliver easy answers for some of these seemingly simple questions. Furthermore, since this has not been an area of high priority for the WCZMP, there has not been a true champion of this data and understanding of its limitations is limited. An example of one of the larger issues with public access data is the diversity of beach types.



Washington State Department of Ecology Marine Shoreline Public Access Project 2009.

Public access for each of these beach types requires a diverse method of collection and stakeholder groups. The data we use in the following table is from the green and blue categories presented above. Therefore, this information can be used to gain a general understanding of public access, but our confidence in the dataset is low.

Public Access Status and Trends			
Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, -, unknown)	Cite data source
Beach access sites	595 (beaches accessible without a boat)	Unknown (we added 35 sites in the past 2 years, most were locations missed previously, not new public access sites)	Marine Shoreline Public Access Project – WA Department of Ecology (2009).
Shoreline (other than beach) access sites	468 (110 are only “Visual” while another 358 are “Personal Watercraft” only)	Unknown (we added sites in the past 2 years, most were locations missed previously, not new public access sites)	Marine Shoreline Public Access Project – WA Department of Ecology (2009).
Recreational boat (power or nonmotorized) access sites	260 (two sources of information with different numbers)	↑	WDFW Water Access Sites: http://wdfw.wa.gov/lands/water_access/county_map.html Marine Shoreline Public Access Project – WA Department of Ecology (2009).
Number of designated scenic vistas or overlook points	192	Unknown	Washington Public Shore Guide to Marine Waters - Department of Ecology (1986); Marine Shoreline Public Access Project – WA Department of Ecology (2009).
Number of fishing access points (i.e. piers, jetties)	89	Unknown	Marine Shoreline Public Access Project – WA Department of Ecology (2009).
Coastal trails/boardwalks	No. of Trails/boardwalks: ~200 access sites have trails of some sort	Unknown	Washington Public Shore Guide to Marine Waters - Department of Ecology (1986); Marine Shoreline

Public Access Status and Trends			
Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, -, unknown)	Cite data source
	Miles of Trails/boardwalks	Unknown	Public Access Project – WA Department of Ecology (2009).
Number of acres parkland/open space	Total sites: 1063 public access sites With ~ 980 miles of public shoreline	Unknown	Marine Shoreline Public Access Project – WA Department of Ecology (2009).
	Sites per miles of shoreline: 1.08 sites per mile	Unknown	

2. A brief characterization of the demand for coastal public access and the process for periodically assessing demand, which includes a statement on the projected population increase for your coastal counties.

As Washington’s population continues to grow (estimated at 15% between 2010 and 2020¹⁸), the demand for access to outdoor recreation follows the same trend. Many Washington residents who have interest in activities have not been able to pursue these activities. Much of Washington’s shoreline is private property, and there is an increasing demand for public access (Ecology 2009). The Washington State Recreation and Conservation Plan (2013) notes that current facilities satisfy only 30 percent to 40 percent of demand for recreation across the state. As of 2013, beach access was ranked 13 out of 45 for importance of an activity in Washington State. 75 percent of residents in WA participate in water-related activities (Swimming at beach: 39%, boating: 36%, beachcombing 33%), and 34 percent in fishing or shellfishing (Washington State Recreation and Conservation Office 2013).

Management Characterization:

1. Significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

¹⁸ NOAA’s State of the Coast - National Coastal Population Report, Population Trends from 1970 to 2020: <http://stateofthecoast.noaa.gov/coastal-population-report.pdf>

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
Operation/maintenance of existing facilities	Y	N	N
Acquisition/enhancement programs	Y	N	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
- Describe the significance of the changes;
 - Specify if they were 309 or other CZM-driven changes; and
 - Characterize the outcomes or likely future outcomes of the changes.

Shoreline Master Program Updates

SMP Guidelines require local governments to “identify public access needs and opportunities within the jurisdiction and explore actions to enhance shoreline recreation facilities” (WAC 173-26-201(3)(d)(v)). During the shoreline inventory phase, local governments identify current physical and visual public access sites. Then additional public access opportunities are identified during the inventory or through public scoping. Existing and potential public access sites are identified in the shoreline inventory and characterization report, preferably for each shoreline reach.

To date, 81 of the 133 local governments in Coastal Zone have Ecology-approved SMPs, all containing a public access component. This is included as a part of our current 309 change, which will continue in 2016-2020.

Coastal Atlas

A comprehensive inventory and Geographic Information Systems (GIS) maps have been developed for marine shoreline public access and added to the Washington Coastal Atlas.¹⁹ This project represents a significant update to the last comprehensive public access inventory which was in 1986. Products include downloadable GIS map layers indicating both the lengths of public shoreline and the point where the shoreline can be accessed. Each access point feature is associated with around 50 descriptive attributes, allowing for both quantitative and qualitative analysis related to public access using the downloadable GIS data. The Coastal Atlas also features a public access search tool allowing users to search for access sites by county, by name, by location or by specific amenities and activities. As mentioned above, however, these datasets were not designed to deliver easy answers for

¹⁹ Washington State Coastal Atlas: <https://fortress.wa.gov/ecy/coastalatlas/>

some of these seemingly simple questions this assessment presents. This is not a 309 change, but is supported with 306 funds.

Acquisition Programs or Policies

While Washington’s CZM program does not directly acquire or protect public access, we do fund a staff member who works with state, local, and tribal governments, as well as land trusts and other nonprofit organizations, to connect interested groups with federal grants for acquisition and restoration. Many of the sites acquired have a public access component.

The Washington Coastal and Estuarine Land Conservation Program (CELCP)²⁰ requires grant recipients to provide public access to the sites acquired with CELCP funds, unless there are reasons to limit access for resource protection, public safety, or for other reasonable cause. Washington’s CELCP Plan was approved by NOAA in 2007. Since that time, Ecology staff have worked to prepare multiple CELCP applications and have received four CELCP grants. Two awards were for Kiket Island in Skagit County, and more recently Ecology has had two CELCP grants funding acquisitions at Dabob Bay in Jefferson County. The Dabob Bay projects areco-managed by Washington State Department of Natural Resources (DRN), and will provide public access to almost 900 acres of property as part of the state’s Dabob Bay Natural Area.

This is not a 309 change, but has been supported in part with 306 and 310 funding.

3. Publicly available public access guide. How current is the publication and how frequently it is updated?

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	Y	Go2Beach Washington Water Cruiser
Web address (if applicable)		https://fortress.wa.gov/ecy/coastalatlus/tools/PublicAccess.aspx	http://www.rco.wa.gov/recreation/index.shtml http://watercruiser.smartmine.com/#HomeScreen
Date of last update		2014	2010 2014
Frequency of update		As needed	Unknown

²⁰ Washington State Coastal and Estuarine Land Conservation Program: <http://www.ecy.wa.gov/programs/sea/wetlands/stewardship/celcp.html>

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	<u> X </u>
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Public Access remains a medium priority in this assessment. It is one of the goals of the SMA, the cornerstone of WCZMP. While the WCZMP does not currently acquire or protect public access sites with CZM funds, it encourages public access through development of SMPs and provides access to information on the Coastal Atlas website.

Marine Debris

Section 309 Enhancement Objective: Reducing marine debris entering the nation’s coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Characterization of existing status and trends of marine debris in the state’s coastal zone based on the best available data.

Source of Marine Debris	Existing Status and Trends of Marine Debris in Coastal Zone		
	Significance of Source (H, M, L, unknown)	Type of Impact (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, -, unknown)
<i>Land-based</i>			
Beach/shore litter	M	Aesthetic, Resource Damage	-
Dumping	unknown	Aesthetic, Resource Damage	unknown
Storm drains and runoff	H	Aesthetic, Resource Damage, Human Health, Water Quality	-
Fishing (e.g., fishing line, gear, aquaculture)	M	Aesthetic, Resource Damage, Human Health, Water Quality	-
Other (Creosote Logs)	M	Aesthetic, Resource Damage, Water Quality	-
<i>Ocean-based</i>			
Fishing (e.g., derelict fishing gear)	M	Aesthetic, Resource Damage, Water Quality	-
Derelict vessels	M	Aesthetic, Resource Damage, Human Health, Water Quality, Navigational Hazard	-
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	unknown	Aesthetic, Resource Damage, Water Quality	unknown
Storm	unknown	Aesthetic, Resource Damage, Navigational Hazard	unknown

Tsunami	M	Aesthetic, Resource Damage, Navigational Hazard, Human Health, Water Quality	↑
---------	---	--	---

2. For information not available to fill in the above table, provide a qualitative description of information requested, based on the best available information.

Source of Marine Debris	Description
Land-based Dumping	Observations by stakeholders identify considerable debris that appears to have been deliberately dumped from vessels both fishing and cargo based. However, the Coastal Program is unaware of any formal Washington State effort to engage in talks to reduce these sources. One particular challenge in marine debris monitoring work is determining the source of illegal dumping and therefore difficult to understand if this is a priority for our Coastal Program.
Ocean-based Vessel-based (e.g., cruise ship, cargo ship, general vessel)	It is difficult to attribute debris to this category, other than fishing vessels, because with long range debris the origin is unknown. Ecology engaged the US Coast Guard, ports, and other stakeholders, but no data was found on this topic.
Storm	There is periodic loss of structures due to erosion from episodic storm events and chronic rates of erosion along Washington’s coast, but this data is not formally tracked. More recent attention has been areas of Pacific County that are losing around 100 ft. per year. Erosion is considered a high priority hazard in Washington State and the Coastal Program.

3. Additional state- or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.²¹

The WCZMP does not track marine debris data and there has not been a systematic assessment of the sources of marine debris in Washington State. However, there are numerous organizations within the Puget Sound and outer coast that work effectively in this area and track different types of marine debris activity. In addition to the sources provided in the NOAA Guidance, data from the following stakeholders were used to complete this section of the Assessment:

Washington Conservation USACE (WCC)

In 2013 the state legislature provided funding to support the hiring of recently returning military veterans for marine debris cleanup work. Three Dept of Ecology Washington Conservation USACE crews were created to accomplish this cleanup work. These crews work with a variety of sponsor organizations who coordinate shoreline site cleanup logistics for the crews (many of which are listed in this section). Information was gathered through WCC grant reporting for this Assessment.

²¹ Data for this section was collected through interviews and comments from stakeholders. Much of this information is not published, but can be accessed by contacting the programs listed.

Funding for the cleanup crews is secured through June 2015. However, the WCC put in a budget request to continue funding through the 2015-2017 biennium and they are waiting to hear if those funds have been granted.

Northwest Straits Initiative

To date, the Program has accomplished the following in sub-tidal waters to 105 feet: 4,994 nets removed; 715 acres of net removed from marine habitat; 3,542 derelict crab pots removed; and 53 derelict shrimp pots removed. In addition, more than 200 derelict nets in waters deeper than 105 feet have been located from which the program is seeking funding to remove. The Northwest Straits Commission has completed 10 week-long marine debris cleanup projects with the WCC crews between March 2014 and December 2014. These cleanup projects have afforded the removal of 15.9 tons of marine debris from Puget Sound shoreline. The variety and quantity of debris removed during our spring and summer 2014 projects were provided for this Assessment.

Washington Department of Natural Resources (DNR)

DNR is responsible for two programs dedicated to marine debris cleanup: the Creosote marine debris removal program; and the derelict vessel removal program. Both sources provide valuable resources for debris removal activities.

Directed by the legislature in 2002, DNR established the program to manage funding and provide expertise and assistance to public entities (such as cities, counties, ports, state agencies) in removing and disposing derelict and abandoned vessels. Since then, the program has proven to be extremely successful and has won awards. As of January 15, 2014, 513 derelict vessels were removed from with funds from this program, and 153 are on the removal list.

DNR partners with local groups, governments, and private property owners to remove treated wood located on public and private property throughout Puget Sound. In 2004, DNR created the Creosote Removal Program to help fund public and private community restoration projects that remove creosote-treated debris and pilings on or adjacent to state-owned aquatic lands. From 2004 to February 2013, the program has removed more than 14,000 tons of piles (= nearly 12,000 piles); more than 255,000 sq. ft. of overwater structures; and more than 2,800 tons of beach debris. The goal is to removed an additional 1,000 treated piles by 2017.

Japan Tsunami Response

In response to the Japan Tsunami in 2011, a Marine Debris Response Plan for Washington State was developed in September of 2012. Among other assistance, the Governor of Washington allocated \$500,000 and NOAA provided an additional \$50,000 grant to support these marine debris related expenses. In addition, the Government of Japan provided \$5,000,000 to the United States to support the five impacted Pacific states in their efforts to mitigate coastal impacts from tsunami debris. The Washington Emergency Management

Division of the Washington Military Department (EMD) was designated a State Lead on this effort. Funding was distributed to support existing cleanup efforts (e.g., CoastSavers and Grass Roots Garbage Gang cleanup events), and outreach and waste facilities along Washington's coast. This effort was not set up to track the amount of material collected, but a general observation has determined the ongoing response to be successful. However, during initial debris removal, Ecology sent three WCC emergency response crews (eighteen people total) to the coastal beaches. These efforts resulted in 140 cubic yards of marine debris collected.

It is also important to note that in spite of perception, tsunami debris is not really any more of a risk than other debris. We have seen seasonal increases in debris deposition in certain areas of the coast but such increases are expected in winter over summer due to prevailing currents. Whereas distinct pulses of tsunami debris and increases in numbers of specific items were noted, in general, an increase in shoreline debris deposition has not been attributed to tsunami debris. Public interest has waned as media interest has waned. Ongoing efforts by the Department of Ecology include response to reports of hazardous materials that wash in (regardless of origin) and support for community efforts to remove debris from the coast. Other than available sources of funding (NOAA grant and gift from the Govt. of Japan) there really is no specific effort to distinguish long-range versus more domestic sources of marine debris.

Olympic Coast National Marine Sanctuary Program

Olympic Coast National Marine Sanctuary (OCNMS) is a founding partner of the Washington Clean Coast Alliance that sponsors the Washington CoastSavers program. OCNMS has coordinated citizen science volunteers in monthly surveys of shoreline debris at selected sites since 2000. Between 2000 and 2008, a simple debris categorization developed by the U.S. EPA was used. In 2012, NOAA's Marine Debris Program published a standardized protocol for shoreline debris monitoring, and OCNMS implemented a more rigorous shoreline debris monitoring program with monthly surveys following NOAA's new protocols.

In addition, OCNMS coordinated WCC efforts to remove debris from remote areas on the outer coast between October 2013 and September 2014, with 4,000 pounds of debris removed in 10 weeks of effort.

Washington CoastSavers

The Washington Clean Coast Alliance formed in 2007 with support from NOAA and launched the CoastSavers program to coordinate the efforts of volunteer groups and individuals that had been cleaning up Washington's Pacific Coast since as far back as 1971. CoastSavers organizes volunteers for beach cleanups in April and September (linked with the International Coastal Cleanup) and smaller scale events throughout the year along shores between the Columbia River and the Strait of Juan de Fuca. CoastSavers volunteers clean shore locations that are easily accessible and do not address remote locations. For the years 2000-2012 the organization has had a total of 10,729 volunteers collect about 320

tons of marine trash. CoastSavers volunteers have collected data since 2002 to characterize shoreline debris consistent with the Ocean Conservancy/International Coastal Cleanup data categories. While not appropriate for quantitative analyses, these data can be used to define the types and numbers of various debris items.

US Army Corps of Engineers (USACE)

Under congressional authority, the USACE has a debris recovery vessel (M/V Puget) which operates for removal of wrecks and obstructions, snagging and clearing navigation, and drift and debris removal. The program routinely removes between 900 - 1200 tons of debris yearly, and tries to re-purpose woody debris as much as we can back into state/federal habitat restoration projects.

US Coast Guard

The Coast Guard's focus is centered on notification and reporting of navigational and maritime transportation disruptions. They receive voluntary reports from commercial and other vessels who want to report damage to vessels and disruption to navigation caused by marine debris. However, as an agency they do not collect or store data on any reports of debris that have caused or had the potential to cause a disruption in marine transportation. We use any information we receive to determine whether or not we need to take an action consistent with our authorities, but we don't store the specifics of the information.

The Ocean Conservancy

In partnership with International Coastal Cleanup, the Ocean Conservancy has published two reports on marine debris within the last five years: *Working for Clean Beaches and Clean Water*, 2013; and *Turning the Tide on Trash*, 2014.

Management Characterization:

- 1. **Significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.**

Management Category	Employed by State/Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Marine debris statutes, regulations, policies, or case law interpreting these	Y	N	Y
Marine debris removal programs	Y	N	Y

- 3. **For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:**

- a. Describe the significance of the changes;
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

The following two changes in marine debris management occurred over the last five years. Again, marine debris is not a priority area for our Program and we do not track data, so there may have been more changes.

Washington Conservation USACE (WCC)

As mentioned above, in 2013 the state legislature provided funding to support the hiring of recently returning military veterans for marine debris cleanup work. Two Dept of Ecology Washington Conservation USACE crews were created to accomplish this cleanup work. Funding for the cleanup crews is secured through June 2015. However, the WCC put in a budget request to continue funding through the 2015-2017 biennium and they are waiting to hear if those funds have been granted. The WCC crews have been a key part of marine debris cleanup efforts in partnership with other organizations. On remote areas of Washington’s outer coast, WCC crews have been the primary mechanism for shoreline cleanup since October 2013.

Japan Tsunami Response

In response to the Japan Tsunami in 2011, a Marine Debris Response Plan for Washington State was developed in September of 2012. Among other assistance, the Governor of Washington allocated \$500,000 and NOAA provided an additional \$50,000 grant to support these marine debris related expenses. In addition, the Government of Japan provided \$5,000,000 to the United States to support the five impacted Pacific states in their efforts to mitigate coastal impacts from tsunami debris. The Washington EMD was designated a State Lead on this effort. There are funds still remaining for this work, which may extend into this Enhancement Cycle, but a sustained funding program has not been created.

These changes resulted in an increase in capacity for marine debris cleanup for Washington. However, without a sustained source of funding beyond what was offered for these two efforts, a corresponding reduction is likely. Changes were not CZM-driven.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	_____
Low	_____X_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Other organizations have taken the lead on this Enhancement Area in Washington and are effectively addressing the causes and cleanup of land and ocean-based debris. The Program is developing stronger relationships with these organizations and will continue to find additional sources of funding and areas to better support their efforts where possible. Therefore, marine debris is considered a low priority for the WCZMP for this enhancement cycle.

Cumulative and Secondary Impacts

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

Trends in Coastal Population and Housing Units ²²				
Year	Population		Housing	
	Total (# of people)	% Change (compared to 2002)	Total (# of housing units)	% Change (compared to 2002)
2007	4,443,491	6.74%	1,920,690	5.85%
2012	4,742,774		2,033,007	

Distribution of Land Cover Types in Coastal Counties ²³		
Land Cover Type	Land Area Coverage in 2011 (Acres)	Gain/Loss Since 2006 (Acres)
Developed, High Intensity	277412.5	8392.3
Developed, Low Intensity	463396.9	10839.7
Developed, Open Space	160583.8	4872.4
Grassland	615888.8	199973.0
Scrub/Shrub	1650086.2	65942.3
Barren Land	545892.3	10034.7
Open Water	2402736.1	1325.3
Agriculture	482118.5	-4502.2
Forested	7529795.4	-295376.0
Wetlands	381585.8	-1039.0

*Note: area within the state mapped by C-CAP is 14509496.3 acres.

Development Status and Trends for Coastal Counties ²⁴			
	2006	2011	Percent Net Change
Percent land area developed	877288.7 (6.0%)	901393.2 (6.2%)	24104.5 (2.7%)
Percent impervious surface area	322675.6 (2.2%)	331756.7 (2.3%)	9081.1 (2.8%)

How Land Use is Changing in Coastal Counties	
Land Cover Type	Areas Lost to Development Between 2006-2011 (Acres)
Barren Land	3534.3
Wetland	1181.6
Open Water	40.3
Agriculture	6685.2

²²Information provided by National Ocean Economics Program: www.oceaneconomics.org/

²³Information provided by NOAA Office for Coastal Management

²⁴Information Provided by NOAA Office for Coastal Management

Scrub/Shrub	2940.5
Grassland	4207.5
Forested	6415.2

Shoreline Types ²⁵	
Surveyed Shoreline Type	Percent of Shoreline
Armored	6%
Beaches	37%
Flats	26%
Rocky	12%
Vegetated	20%

Management Characterization:

- 1. Significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.**

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes	Yes	Yes
Guidance documents	Yes	Yes	Yes
Management plans (including SAMPs)	Yes	Yes	Yes

- 2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:**
 - a. Describe the significance of the changes;**
 - b. Specify if they were 309 or other CZM-driven changes; and**
 - c. Characterize the outcomes or likely future outcomes of the changes.**

As described in previous Assessments, Ecology adopted amended SMP Guidelines in 2003. These Guidelines direct the updating of every local SMP in the Coastal Zone. Since 2003, 81 out of 133 coastal zone communities have had their SMPs approved by Ecology. 16 additional jurisdictions are underway, notably the outer coast communities of Grays Harbor, Pacific, and Wahkiakum Counties. There are 37 coastal zone jurisdictions that are behind their statutory deadlines but making progress.

²⁵ Information provided by NOAA's State of the Coast: <http://stateofthecoast.noaa.gov/shoreline/welcome.html>

As these local jurisdictions have worked to update SMPs, Ecology has supported these efforts. Regional staff provides day to day assistance on interpreting the guidelines, locating data and information, and producing required SMP components in a timely and consistent manner. Technical staff with expertise in the areas of wetlands, marine ecology, coastal geology, and hydrology review and provide input to local SMPs. Headquarters staff provide regular policy guidance and have developed handbook chapters to assist local governments in updating their SMPs. Outreach and education staff at headquarters and in the regions have communicated information about SMP updates and SMP grants to local governments and citizens through focus sheets, FAQ documents, and the website.

All of these changes were funded in part with CZM 309 and 306 dollars. The 81 approved master programs in the coastal zone represent a significant step forward in protecting Washington’s shorelines from cumulative and secondary impacts of growth.

Since the last Assessment, there have been a number of statutory amendments to the SMA, most of which provide clarifications or additional tools local governments may deploy to address coastal issues. In addition, Ecology revised SMP guidelines in 2011 to address a legislative requirement to provide standards specific to geoduck aquaculture, an emerging practice in the intertidal zone of some coastal counties.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	<u> X </u>
Medium	<u> </u>
Low	<u> </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Completing the comprehensive update of local SMPs continues to be one of the highest priorities of the WCZMP. The importance of this effort is emphasized in Puget Sound Partnership (Partnership) work programs, which are developed with extensive stakeholder involvement. Over the next five years, as the comprehensive updates conclude, Ecology’s emphasis will shift to strengthening our role in implementing the new programs, and maintaining and improving them over time. Between 2019 and 2022 the SMA requires that SMPs be reviewed and revised if necessary. By 2017 Ecology will adopt new rules to implement the review requirement.

Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a Special Area Management Plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a special area management plan (SAMP).

Geographic Area	Major conflicts	Is this an emerging or a long-standing conflict?
Willapa Bay	Aquaculture/eelgrass protection	emerging
Willapa Bay	Residential development/shoreline erosion	Long-standing at Wash-away Beach.
Pacific Ocean	Fishing/energy projects	emerging
Grays Harbor	Shellfish/navigation	emerging

Aquaculture and eelgrass issues exist primarily in the context of management of invasive Japanese eelgrass (*Zostera japonica*) on commercial shellfish beds, while attempting to protect native eelgrass during management. This issue is being addressed through Ecology’s Water Quality Program via and Environmental Impact Statement and its issuance of an NPDES permit for *Z. japonica* treatment.

Commercial fishing and ocean energy issues exist in theory, but Washington’s outer coast has had no viable proposals and the economics of such development may not favor this industry in the Pacific Northwest.

Commercial shellfish farming and navigation conflicts may exist related to the USACE deepening and realignment of the Grays Harbor Navigation Channel. Shellfish growers have alleged increased wave energies, erosion and sediment transport related to the navigation project. Should these concerns be verified, Ecology would address them through our Section 401 authority.

Management Characterization:

1. Significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	Y	Y	N
SAMP plans	Y	Y	N

Washington currently has one SAMP approved by the OCM – the Grays Harbor Estuary Management Plan (GHEMP).²⁶ The GHEMP was first adopted in 1986 by the Grays Harbor area local governments and by the state and federal agencies with pertinent regulatory authorities. OCM formally certified the GHEMP in 1993. The GHEMP may or may not continue as a special area management plan, depending on the individual and collective desires of local governments and the state, in the context of ongoing SMP updates.

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the changes;
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

There have been no significant changes to this management category since the last assessment.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High _____
 Medium X
 Low _____

²⁶ GHEMP: http://www.co.grays-harbor.wa.us/info/pub_svcs/EstuaryPlan.htm

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The SAMP enhancement area is assigned a moderate priority because there is current interest in updating or amending the local SMPs, which include GHEMP as an amendment. Since those jurisdictions are in the early phases of their updates, it is unclear what role the GHEMP will play in the future.

Ocean Resources

Section 309 Enhancement Objective: Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

Status of Ocean and Great Lakes Economy for Coastal Counties (2010) ²⁷				
	Establishments (# of Establishments)	Employment (# of Jobs)	Wages (Millions of Dollars)	GDP (Millions of Dollars)
Living Resources	581	9,579	524.7	1,200
Marine Construction	156	1,859	157.8	302.8
Marine Transportation	393	18,473	1,200	2,500
Ship and Boat Building	142	15,814	1,100	2,000
Offshore Mineral Extraction	73	850	45.2	193
Tourism & Recreation	5,017	66,097	1,300	3,100
All Ocean Sectors	6,362	112,674	4,300	9,200

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2010) ²⁸				
	Establishments (% change)	Employment (% change)	Wages (% change)	GDP (% change)
Living Resources	-14.05	-0.6	+2.23	+6.34
Marine Construction	-1.27	-21.3	+8	+5.88
Marine Transportation	-0.51	+1.28	+14.06	+16.58
Ship and Boat Building	-6.58	-3.58	+17.76	+16.92
Offshore Mineral Extraction	-1.35	-14.83	-8.86	+62.5
Tourism & Recreation	+7.36	+1.76	+16.67	+18.92
All Ocean Sectors	3.82	0.07	13.61	16.32

Washington-specific NOAA Economics: National Ocean Watch (ENOW)

²⁷Information provided by NOAA: www.csc.noaa.gov/enow/explorer/

²⁸Information provided by NOAA: www.csc.noaa.gov/enow/explorer/

In February 2014, NOAA Coastal Services Center (now Office for Coastal Management) published a report titled “Washington State’s Ocean Economy: A Profile using NOAA’s ENOW”.²⁹ Some key excerpts from this report note:

Between 2005 and 2011, a time period which included the 2007 economic recession, Washington State’s economy and its ocean economy was more resilient than the national economy. Washington’s ocean and total economies saw small increases in employment, while total employment in the U.S. as a whole fell by 2 percent. Real GDP in Washington’s ocean economy increased by 31 percent in the ocean economy, more than the 27 percent increase in Washington’s total state economy and much more than the 5 percent increase in real GDP experienced at the national level.

The ocean economy was also more resilient than the total national economy during this period. Between 2005 and 2011, the total employment of the U.S. ocean economy increased by 4 percent and GDP increased by 22 percent (again, compared with employment declines of 2 percent and GDP growth of only 5 percent at the national level).

This report also analyzed economic data for 5 Pacific Coast Counties that are more directly related to ocean resources on the Pacific Coast rather than resources in Puget Sound (the more populated coastal areas of the state are located adjacent to Puget Sound). In this Pacific Coast area, they found over one thousand people are self-employed in ocean sectors - accounting for nearly one-fifth of the state’s total self employed workers in ocean sectors. In 2011, this area had 679 ocean establishments that employed 7,120 workers, and accounted for 3.9 percent of the state’s overall GDP in the ocean economy. The report also noted the challenges presented by data suppression in some rural counties (e.g. Pacific and Wahkiakum) where there were too few establishments to release data at the local level.

Sector Analyses produce to support Washington’s Marine Spatial Plan (MSP)

As part of the state’s MSP projects, state agencies hired consultants to produce several reports in 2014 that summarized economic and use information on a handful of specific maritime sectors operating in the Pacific Coast area. Below are some key statistics provided on each of these sectors:

Non-tribal fisheries (Marine Sector Analysis Report: Non-Tribal Fishing, 2014) –

- Washington ranked fourth in landed pounds (420.1 million) in 2012, and fifth in value of landings (\$302.0 million) representing 4 percent of the total landings and six percent of the total value of all U.S. commercial fisheries (NMFS, 2013).
- Statewide, fishing and seafood processing (including aquaculture and tribal fisheries), employed approximately 11,000 people in 2011 (Community Attributes, Inc. 2013). An

²⁹ Using data for Washington supplied from NOAA Economics: National Ocean Watch (ENOW) available at: <http://www.coast.noaa.gov/enowexplorer/>.

additional 4,500 individuals statewide identified themselves as self-employed in the sector that same year.

- Washington's most valuable harvested species included Dungeness crab (\$59,485,000), albacore tuna (\$28,440,000), and salmon (multiple species) (\$28,398,000) (NMFS 2013). On the Washington coast, over the last five years, the Dungeness crab fishery has harvested an average of 12.1 million pounds, at an average ex-vessel value of \$27 million.
- Commercial fishing ports on the coast account for 83 percent of statewide landings by weight and 63 percent by value (DFW, 2008).
- Westport was ranked 13th by landed weight in 2012 (133 million pounds) and 16th by landed value (\$59 million). Ilwaco/Chinook was ranked 30th by landed weight (29 million pounds) and 50th by landed value (\$22 million) (NMFS, 2013).
- The value of landings at ports in Grays Harbor County (including Aberdeen, Bay City, and Westport) is the highest in the state (\$19,262,100 in 2006), accounting for approximately 30 percent of ex-vessel revenues statewide (DFW, 2008).

Recreation/Tourism (Marine Sector Analysis Report: Recreation and Tourism, 2014) –

- In 2013, visitation to coastal state parks was over 9.2 million and state parks employed over 40 people (WSPRC, 2014).
- In 2013, the coastal strip of the Olympic National Park received an estimated 780,000 visitors (NPS, 2014).
- A study of visits to Willapa Bay National Wildlife Refuge, found that spending associated with this refuge is estimated at \$1.8 million per year, accounting for 21 additional jobs, \$720,000 in labor income and \$2.6 million in final demand to the region's economy.
- A 2001 study of Olympic National Park found that visitors spend a total of \$394 (2000\$) per group in expenditures in and out of the park.

Shipping (Marine Spatial Planning Assessment of Shipping Sector, 2014) –

- The Pacific Northwest ports (Washington and Oregon) are a major trade partner/gateway to markets in Asia, with China and Japan being among the top trade partners. In 2013, this gateway handled \$204 billion dollars of goods and accounted for 4 % of total US exports and 2.7% of US imports.
- The value of waterborne trade moving through ports in the Pacific Northwest grew from \$81 billion in 2000 to more than \$152 billion in 2012.

- Vessel calls have decreased about 1.9 percent per year since 1996 to 3,947 in 2013. However, the increase in vessel sizes has accounted for much of this decline.
- Grain exports through the Pacific Northwest doubled between 2002 and 2010.
- In 2013, over 10,000 vessels transited through the Pacific Coast region of Washington State.

Aquaculture (Marine Sector Analysis Report: Aquaculture, 2014) –

- Washington ranks first among all states in sales of aquaculture products with a total value of \$187 million (USDA, 2014).
- Washington-grown shellfish accounts for 31 percent of the value of U.S. farmed shellfish.
- On Washington’s Pacific Coast, Pacific oysters account for the majority of shellfish grown (82 percent – DFW).
- In 2012, Pacific County had the second highest sales in the state for mollusk production, accounting for 23 percent of state-farmed mollusk sales and over \$21 million. Grays Harbor County ranked fourth among Washington counties with sales of over \$5.5 million.

1. Characterization of how the threats to and use conflicts over ocean resources in the state’s or territory’s coastal zone have changed since the last assessment.

Significant Changes to Ocean and Great Lakes Resources and Uses	
Resource/Use	Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, –, unknown)
Resource	
<i>Benthic habitat (including coral reefs)</i>	↑ invasive aquatic plant species, particularly eelgrass. ↑ potential threats from climate impacts, including corrosive waters and changes to water temperature.
<i>Living marine resources (fish, shellfish, marine mammals, birds, etc.)</i>	↑ potential threats from climate impacts, including corrosive waters, changes to water temperature, and shifts in prey/predator. ↑ potential threats from shipping/spills
<i>Sand/gravel</i>	Unknown
<i>Cultural/historic</i>	Unknown
<i>Other (please specify)</i> <i>Water Quality</i>	↑ ocean acidification occurrences of corrosive water impacting uses such as aquaculture, - low-oxygen to hypoxic waters still impacting some coastal areas, seasonally (particularly Hood Canal, South Puget Sound, and Pacific Coast).
Use	

<i>Transportation/navigation</i>	↑ in proposals to ship products from Washington waters, such as crude oil and coal. Could increase volumes of ship traffic as well as risks to coastal resources and other uses that rely on those resources.
<i>Offshore development</i> ³⁰	– new research/cabled observatory constructed in federal waters
<i>Energy production</i>	– remaining potential conflict between existing uses and future energy proposals
<i>Fishing (commercial and recreational)</i>	– remaining conflict with dredge disposal and potential conflicts with new uses (e.g. energy production).
<i>Recreation/tourism</i>	– remaining potential conflicts with new uses, such as energy production
<i>Sand/gravel extraction</i>	Unknown
<i>Dredge disposal</i>	– remaining conflicts with navigation and fisheries for new beneficial use disposal sites
<i>Aquaculture</i>	↑ in use conflicts (aesthetic/environmental), and experiencing resource impacts from climate change and invasive species (see above).
<i>Other (please specify)</i>	

2. For the ocean resources and uses in Table 2 (above) that had an increase in threat to the resource or increased use conflict in the state’s or territory’s coastal zone since the last assessment, characterize the major contributors to that increase.

Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources												
Resource	Major Reasons Contributing to Increased Resource Threat or Use Conflict											Other (Specify)
	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm & Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	
Benthic Habitat				X							X	Other climate impacts
Living Marine Resources							X				X	Other climate impacts
Water Quality			X								X	Other climate impacts
Transportation												Potential increase in oil/coal traffic
Aquaculture	X			X							X	Environmental/Aesthetic concerns

3. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

Washington State Blue Ribbon Panel on Ocean Acidification (Adelsman and Whitely Binder, 2012)

This report found that increasing occurrences of corrosive waters in Washington and that Washington is particularly vulnerable to effects of ocean acidification. Impacts have already affected the shellfish aquaculture industry in the state. Ocean acidification poses risks to

³⁰ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the “energy production” category.

other many other marine species and the marine food web as well. Given the importance of marine resources in Washington State, ocean acidification also poses a risk to the state's economy and to tribes. The Blue Ribbon Panel's report provided a range of recommendations to increase the ability of the state to understand, reduce, remediate, and adapt to effects of ocean acidification.

Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy (Ecology, 2012)

This report summarizes the impacts of climate change on Washington's ocean and coasts, including sea level rise, increased flooding, ocean acidification, saltwater intrusion in coastal aquifers, increased occurrence of Harmful Algal Blooms and low oxygen events/dead zones, and warmer water temperatures. Therefore, climate change effects on ocean and coasts can alter habitats, species and food webs in Washington. This will also impact humans, including shoreline areas that are developed and coastal uses that rely on access to marine resources such as fishing, ports, and aquaculture. The report identified a number of strategies to reduce risks and increase capacity to respond.

Sector Analyses – these white papers produced by consultants to inform the development of the Marine Spatial Plan for Washington's Pacific Coast.

The white papers cover: Non-tribal fisheries, Recreation/Tourism, Shipping, Aquaculture, and Marine Renewable Energy. Available at: www.msp.wa.gov (Under MSP Projects page). These reports describe the status and trends of these coastal uses, current/future conflicts with other uses and other perceived challenges/opportunities including environmental/resource issues or threats, where applicable (e.g. invasive species for aquaculture). Some data from these reports are included in the economic section above.

Shipping (Marine Spatial Planning Assessment of Shipping Sector, 2014) – forecasts in cargo type:

- Dry bulks (i.e. wood chips, sand and gravel, cement, scrap metals, fertilizers, minerals, coal) are projected to grow at 1.3 percent per year from 2013 to 2035 under baseline conditions. However, a number of coal export terminals projects are being proposed by ports in Puget Sound and on the Columbia River that could substantially increase the volume of dry bulk shipments.
- Several projects in the region are being planned that could substantially increase the volume of crude oil and refined products being shipped, including crude oil rail-to-vessel facilities in Portland, Vancouver and Grays Harbor.
- Grains and container shipping forecasts are both expected to grow annually at around 2.2 percent growth rate (2013-2035). While breakbulks and neobulks (forest products, cares, etc.) are expected to grow more slowly (average annual growth of 0.7 percent).

- On Washington’s Pacific Coast, once out of the estuaries, deep-draft vessels typically transit well offshore (25 miles), while tugs and barges tend to stay closer to shore.

Several environmental impact assessments for multiple oil terminals proposed in Grays Harbor are underway as well as for the proposed coal terminals. A study on marine and rail oil transportation is also currently under development, which was specifically requested by the Governor.

Management Characterization:

1. Significant state- or territory-level changes (positive or negative) in the management of ocean resources have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Regional comprehensive ocean/Great Lakes management plans	Y, under development	Y	Y
State comprehensive ocean/Great Lakes management plans	Y, under development	Y	Y
Single-sector management plans	Y	N	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- Describe the significance of the changes;**
- Specify if they were 309 or other CZM-driven changes; and**
- Characterize the outcomes or likely future outcomes of the changes.**

Marine Spatial Plan for Washington’s Pacific Coast

Beginning in 2012, the legislature has funded development of a MSP for Washington’s Pacific Coast under a recent law for comprehensive marine waters management (RCW 43.372). This funding has supported a variety of projects to develop data on coastal resources and uses, create online tools, conduct analyses, and assist with stakeholder engagement. CZM staff leads and coordinates the overall development of this plan with 309 resources. This work includes coordinating an interagency team of state agencies responsible for plan development; consulting and communicating with tribes, local

governments and federal agencies; managing a gubernatorial Advisory Council; and overseeing projects, research and analyses to support plan development.

The result of this non-regulatory plan will be an improved information base to support decision-making; a coordinated interagency framework for applying existing policies; and recommendations to guide future uses of the ocean. This will increase the efficiency of decision-making, improve predictability for existing and future ocean users, and create a better baseline of information for evaluating impacts to and monitoring changes of ocean resources and uses. The plan will also provide information, analyses and recommendations for local government plans to use in their SMPs. Once the plan is complete (target completion is December 2016), it will require implementation, monitoring and adaptation. This includes working with NOAA to integrate changes into the state’s approved Coastal Zone Management Program such as through a Geographic Locator Description.

Regional ocean policy and regional planning

Efforts in the region are underway to revamp work on regional ocean priorities through an upcoming West Coast Ocean Summit involving tribes, states, and federal agencies (January 2015). This effort will most likely result in changes to ocean health priorities and membership of the regional ocean partnership (currently the West Coast Governors Alliance on Ocean Health).

In addition, NOAA is leading conversations about regional ocean planning with states, tribes and federal agencies on the West Coast. As these groups coalesce around ways they want to work together and at what scales, there may be additional opportunities to apply state planning work in the regional context.

3. Indicate if your state or territory has a comprehensive ocean management plan.

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	N	N
Under development (Y/N)	Y	Y
Web address (if available)	www.msp.wa.gov	See left.
Area covered by plan	State & federal waters off Washington’s Pacific Coast (7,700 square miles)	See left.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High X
 Medium _____
 Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The MSP for Washington's Pacific Coast presents a continued major area of priority improvement for the WCZMP. The final plan will provide information, analyses and recommendations for local government plans to use in their SMPs as well as for use by WCZMP in applying its approved enforceable policies to federal actions. Once the plan is complete (target completion is December 2016), the plan will require implementation, monitoring and adaptation. This includes working with NOAA to integrate changes into the state's federally-approved CZMP.

Additional outcomes of the MSP process are the identification of other ocean management issues and research needs, some directly related to MSP and others not. This presents the opportunity to build on the identification of gaps and needs and refresh the broader state plan for addressing ocean management issues and information needs not met by the MSP.

Other regional ocean policy and planning issues remain on the forefront as well. These provide an important opportunity for Washington to collaborate with partners in the region, leverage common interests and resources, and make progress on understanding and managing ocean resources.

Key state agencies involved in MSP and ocean policy coordination work were consulted during the first phase, including WDFW and DNR.

Energy and Government Facility Siting

Section 309 Enhancement Objective: Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)³¹

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Characterization of the status and trends of different types of energy facilities and activities in the state’s or territory’s coastal zone based on best available data.

Coastal Staff explored resources provided by NOAAs OCM and interviewed numerous stakeholders to complete this assessment, but found limited information. There is no one source of high confidence data on siting of energy and government facilities. Information pertaining to marine renewable energy, however, is more detailed in this assessment based on the work our WCZMP has completed in ocean resources (see Ocean Resource Assessment).

Information provided in the table below was collected from the following sources: the Department of Commerce and Washington State Energy Office within the Department of Commerce; Washington Energy Facility Site Evaluation Council; and the Washington State Department of Ecology.

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (Y/N/unknown)	(# or Y/N)	Change Since Last Assessment (Y/N/unknown)
<i>Energy Transport</i>				
Pipelines ³²	Y	unknown	Y	Y
Electrical grid (transmission cables)	Y	unknown	Y	unknown

³¹ CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

“The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program.”

NOAA regulations at 15 C.F.R. § 923.52 further describe what states need to do regarding national interest and consideration of interests that are greater than local interests.

³² For approved pipelines (1997-present): www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (Y/N/unknown)	(# or Y/N)	Change Since Last Assessment (Y/N/unknown)
Ports	Y	unknown	N	unknown
Liquid natural gas (LNG) ³³	N	unknown	Y	unknown
Imperium (transportation of biofuels/biodeisel)	Y	unknown	N	unknown
<i>Energy Facilities</i>				
Thermal plant using gas	Y	unknown	Y	Refinery modifications
Coal	N	unknown	N	unknown
Nuclear ³⁴	N	unknown	N	unknown
Wind	N	N	N	N
Wave ³⁵	N	N	N	Y
Tidal ³⁶	N	N	Y	Snohomish county but put on hold
Current (ocean, lake, river) ³⁶	N	unknown	Y	Snohomish county but put on hold
Hydropower	Y	unknown	Y	unknown
Ocean thermal energy conversion	N	unknown	N	unknown
Solar	N	unknown	N	unknown
Biomass/biofuel	Y	unknown	N	unknown
Refinery/oil	Y	unknown	N	unknown

2. Results of additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

The Washington State Energy Facility Site Evaluation Council (EFSEC or the Council):

Provides a “one-stop” siting process for major energy facilities in the State of Washington. The council coordinates all of the evaluation and licensing steps for siting major energy facilities in Washington. If EFSEC approves a project, it then specifies the conditions of construction and operation; issues permits in lieu of any other individual state or local agency authority; and manages an environmental and safety oversight program of facility and site operations. EFSEC’s authorizing statute and regulations are an approved enforceable policy of the WCZMP.

EFSEC is a state agency comprised of a Governor-appointed Chair, permanent representatives of five state agencies, and occasional representatives from other state agencies. The Council’s responsibilities include siting large natural gas and oil pipelines,

³³ For approved FERC jurisdictional LNG import/export terminals: www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp
³⁴ The Nuclear Regulatory Commission provides a coarse national map of where nuclear power reactors are located as well as a list that reflects these general locations: www.nrc.gov/reactors/operating/map-power-reactors.html
³⁵ For FERC hydrokinetic projects: www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp

thermal electric power plants over 350 megawatts and their dedicated transmission lines, new oil refineries or major expansions of existing facilities, certain oil/petroleum terminals, and underground natural gas storage fields. In addition, energy facilities of any size which exclusively use alternative energy resources (wind, solar, geothermal, landfill gas, wave or tidal action, or biomass energy) can opt in to the EFSEC review and certification process.

EFSEC's authority does not extend to hydro-based power plants, thermal electric plants less than 350 megawatts, or general transmission lines. However, EFSEC has not received any of the proposed wave or tidal energy projects in state waters. These have, instead, turned to the Federal Energy Regulatory Commission (FERC) process for preliminary permits and licenses.

The Northwest Power and Conservation Council

Routinely updates a regional power plan for the Pacific Northwest that also captures data on energy demand projections and electric generation capacity in the region as well as providing a planning framework for the region's power needs for major utilities. The latest power plan was released in February 2010, which is currently being updated (estimated to be finished in 2015)³⁶. According to this plan, electricity load (without new conservation) in the region is expected to grow about 335 average megawatts, or 1.4 percent, per year between 2009 and 2030. The plan notes, however, that 85 percent of the new demand for electricity over the next 20 years in the Northwest can be met by using energy more efficiently. The plan also recommends that in addition to energy efficiency, future demand for power be met with renewable energy — mainly wind — plus new natural gas-fired turbines in areas where demand grows rapidly and utilities need new generating plants in addition to renewable power and efficiency improvements.

Marine Spatial Planning

CZM staff coordinates and facilitates a Washington interagency team, called the State Ocean Caucus (SOC). The SOC is the planning body for the Washington MSP. The MSP is addressing marine renewable energy by collecting available information and identifying data gaps. The plan will develop recommendations for Marine Renewable Energy siting criteria based on general suitability and conflicts with other existing uses. The MSP has also been directed to include a framework for coordinating state agency and local government review of proposed renewable energy development uses. The planning process is currently underway.

Marine Renewable Energy Resources Studies

Resource potential for energy generation from offshore wind, wave, and tidal technologies has been estimated for Washington's Pacific coast. Significant energy resources were estimated for wind and wave power. A study by the National Renewable Energy Laboratory (2012) estimated the technical potential for power in Washington from offshore wind resources at up to 121 gigawatts which could generate an estimated 488,025 gigawatt-

³⁶ Northwest Power and Conservation Council: <http://www.nwcouncil.org/energy/powerplan/7/home>

hours (Lopez et al. 2012). A report from the Electric Power Research Institute (2011) estimated wave energy resources in Washington to be 72 terawatt-hours per year along the inner shelf and 116 terawatt-hours per year along the outer shelf (Electric Power Research Institute 2011). Limited tidal energy resources exist along Washington's Pacific coast (Industrial Economics, Inc. 2014).

PNNL Energy Suitability Study

Pacific National Marine Laboratories (PNNL) and Parametrix (2013) were contracted through the MSP process to create suitability maps for wind, wave, and tidal devices. They used basic siting factors including fundamental technological and economic factors to estimate where these devices may be suitable. Other factors such as socioeconomic, legal, and regulatory were not included in this analysis. This process generated eight suitability maps for tidal, wave, and offshore wind devices. In general, the results indicated that there is a wider range of sites with higher suitability scores off the southern half of the Washington coast than the northern coast, although results differed based on device type. Most areas with high suitability occurred within 25 miles or less of the coast. Results also suggested that the Washington Pacific coast has limited areas suitable for tidal energy development (Van Clever et al. 2013).

Sector Analysis

Industrial Economics, Inc and BST Associates (2013) were contracted as a part of the MSP process to produce a Sector Analysis for Marine Renewable Energy along Washington's Pacific coast. This sector analysis synthesized information to provide an overview of current economic activity, major trends in activity, and potential future resource uses and needs by drawing on publically available information and perspectives from experts. The sector analysis reported that there are no current or proposed marine renewable energy projects on Washington's Pacific coast. Suitability, economic and technological factors, and expert interviews indicated that offshore wind has the best development opportunity for the Washington coast, but that the likelihood of development within the next 20 years is limited. The main challenges and barriers to marine renewable energy were cost, regulatory uncertainty, and required infrastructure adaptations (see footnote 3).

3. Existing status and trends for federal government facilities and activities of greater than local significance in the state's coastal zone since the last assessment.

Trends in Marine Renewable Energy Development

Oregon has one established wave technology test site, and there are proposals to add another wave test site³⁷ as well as an offshore floating wind farm (Principle Power 2014). Washington has only one pending marine renewable energy project within the Coastal Zone. Snohomish Public Utilities District #1 obtained a FERC license for a tidal energy facility near Whidbey Island, but the project is suspended due to funding requirements (Snohomish County Public Utility District 1, 2014). A buoy project in Makah Bay Buoy was abandoned in

³⁷ Northwest National Marine Renewable Energy Center PMEC Facilities: <http://nmrec.oregonstate.edu/pmec-facilities>

2009. No other projects are proposed in Washington’s Pacific Ocean. There is a general interest within Washington waters for marine renewable energy, but as the Marine Renewable Energy Sector analysis indicates (2013), the likelihood of development is limited within the next 20 years (see footnote 3).

Management Characterization:

- 1. Approaches employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.**

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
State comprehensive siting plans or procedures	Y	Y	N

*Note: Significant changes since the last assessment for State comprehensive siting plans or procedures is marked as a “N” because the MSP process is still not complete. MSP includes siting criteria for Marine Renewable energy and recommendations for where these projects are preferred/not preferred (see Ocean Resources Assessment and Strategy)

- 2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:**
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

No significant changes since the last Assessment

Enhancement Area Prioritization:

- 1. What level of priority is the enhancement area for the coastal management program?**

High _____
 Medium X
 Low _____

- 2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.**

Though energy facility siting is classified as a medium priority in this assessment because of the trends in marine renewable energy, we will address it through our strategy developed to address the ocean resources enhancement area. Through tools such as MSP, regional collaborations on ocean issues, and state interagency workgroups, we will address energy facility siting on Washington's outer coast.

Aquaculture

Section 309 Enhancement Objective: Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the WCZMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the WCZMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Characterization of the existing status and trends of aquaculture facilities in the state's coastal zone based on the best available data.

Type of Facility/Activity	Status and Trends of Aquaculture Facilities and Activities		
	# of Facilities	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unkwn)
Bag and Bottom Shellfish Culture (oyster, clams)	171 shellfish farms (USDA, 2012 data)	\$63 million (USDA, 2005 census)	Unknown
Floating Shellfish Culture (mussels, oysters)	See below*	See below*	See below*
Intertidal Geoduck Culture	See below*	See below*	See below*
Net Pen Culture (Atlantic salmon, Pacific salmon)	9 – Eight private sector and 1 tribal regulated under state NPDES permits (over 20,000 lbs) Unknown # under 20,000 lbs (non-NPDES permitted pens used for restoration/enhancement purposes)	Unknown Unknown	Unchanged for NPDES-permitted facilities. Unknown for restoration/enhancement purposes. These facilities are within tribal, WA Dept. of Fish and Wildlife's and NOAA's purview and are related to dynamic fisheries management plans. Local salmon enhancement groups and non-profit groups also strongly affect the numbers of net pens within the state.

* The information provided below is from various sources. WA State data for the aquaculture sector has gaps, making trend data unreliable. Also, state data is collected by species (e.g. Pacific oysters v. clams), vs. methods (bag and bottom v. floating). Critical data gaps are known and efforts are underway to address them. According to the 2012 US Census of Agriculture, Washington ranked first among all states in sales of aquaculture products, with a total value of over \$187 million. A recent shellfish aquaculture sector analysis by Industrial Economics, Inc. (Marine

Sector Analysis Report: Aquaculture, 2014) has the most up to date summary of data for shellfish, but does not parse data by the shellfish types used here.

Type of existing aquaculture facility	Describe recent trends	Describe associated impacts or use conflicts
<p>Bag and Bottom Shellfish Culture (oysters, clams)</p>	<p>This industry remains important to Washington’s economy, particularly in the coastal communities surrounding Willapa Bay and Gray’s Harbor.</p>	<p>Threats to these major industries in Washington include water quality, ocean acidification, harmful algal blooms, introduced pests and predators, disease, and non-native vegetative species.</p> <p>Potential for conflict between upland property owners and intertidal activities around aesthetics, noise, lights, litter/debris, and public access.</p> <p>Potential for habitat disruption through mechanical harvesting and operations.</p> <p>Use conflicts include dredging by the Port of Grays Harbor and the USACE, and the application of pesticides to control burrowing shrimp which may harm other organisms.</p>
<p>Floating Shellfish Culture (mussels, oysters)</p>	<p>Level of activity has remained unchanged in recent years.</p>	<p>Many of the threats above also affect floating shellfish aquaculture. Additional conflicts include seabird predation; navigation conflicts; and potential harm from shading. The aquaculture industry is also experimenting with raising geoduck seed in floating rafts.</p>
<p>Intertidal Geoduck Culture</p>	<p>This relatively new type of aquaculture is expanding, particularly throughout southern Puget Sound.</p>	<p>Many of the threats mentioned above also affect geoduck aquaculture.</p> <p>No established statewide regulatory scheme for siting and harvest (Department of Health licensing and certification is required for producers and growing areas).</p> <p>Inconsistent regulatory treatment through local SMPs creates</p>

		<p>challenges for industry and the state.</p> <p>Significant conflict between upland property owners and intertidal activities has resulted in several legal challenges and appeals.</p> <p>Science that identifies interactions between aquaculture and migratory salmon is needed.</p>
Net Pen Culture (Atlantic salmon, Pacific salmon)	<p>Level of commercial activity has remained unchanged in recent years.</p> <p>Non-commercial activity related to restoration and enhancement of Pacific salmon fluctuates in scope and location.</p>	<p>Public perception of net pen operations is based on dated studies and information. There is a need to share current science.</p> <p>Impacts from nutrients and debris, migratory bird and marine mammal interactions, navigation conflicts, and disease are threats.</p> <p>NPDES permits are being renewed in 2015.</p>

2. Additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

There have been several studies and reports that have been published since the last assessment that affect aquaculture activities in the coastal zone. However, the WZCMP has been the lead on only a few products. Staff has engaged in non-Ecology efforts through participation on technical committees or by providing other in-kind resources.

Marine Spatial Planning:

The Marine Sector Analysis Report (2014) summarizes the ocean coast aquaculture sector and challenges to grow in the industry.

WA Shellfish Initiative

This initiative originated with the Office of the Governor in 2011 and is being updated by the Governor’s new shellfish policy lead and a stakeholder committee. Depending on funding availability, the WCZMP is responsible for two actions listed in the initiative: the Shellfish Interagency Permitting team and a Shellfish Shoreline Permitting Manual. Other Ecology programs are responsible for certain actions related to ocean acidification and non-source pollution control. The updated initiative is scheduled for a public launch in spring 2015. Ecology will assist with outreach and communications.

WA Sea Grant

Sea Grant’s geoduck research program³⁸ was initiated in 2007 by the WA State Legislature as part of House Bill 2220. The research continues with supplemental funding from Ecology and other stakeholders. Annual reports to the legislature summarize their research accomplishments and results. In addition, literature review and individual research project reports are published, and conferences and other public workshops are held that share results. Non-geoduck research is also conducted that informs Ecology’s management and permitting. WCZMP staff participates in these efforts through participation on technical and planning committees.

Pacific Shellfish Institute (PSI)

The PSI works closely with the shellfish aquaculture industry and other stakeholders to identify and conduct priority research that broadens our understanding of shellfish aquaculture impacts. Staff participates on three different research project committees at this time. Recent studies/reports include: Ecosystem Services subheading in particular for 2009-2010 reports; and Research and Information Needs and Priorities (PSI, 2010).

Management Characterization:

1. State - or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	Y	Y	Y
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y	Y	Y

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the changes;
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

Regulations and policies:

Ecology completed rulemaking with adoption of new SMP Guidelines (Ch. 173-26 WAC, Part III) in March 2011. The guidelines now include provisions for new commercial geoduck

³⁸ Sea Grant Shellfish Research Program: <http://wsg.washington.edu/research/aquaculture/state-shellfish-research-program/>

aquaculture including a conditional use permit. Updated SMPs must contain policies, regulations and permitting consistent with the new provisions. Ecology will review shoreline permits issued by local governments for new geoduck and other shellfish aquaculture.

Ecology is co-regulator of aquaculture with our sister state agencies, WSDA, WDFW, Health, and DNR. We also work closely with the federal agencies the USACE and NMFS, and federally recognized tribes. What these partners decide affect our work. Summarized below are significant changes in policies or regulations that have affected our relationship or role in WSDA.

- The USDA listed *Zostera japonica* (non-native eelgrass) as a noxious weed in 2012. Growers may now voluntarily remove it and it cannot be protected as critical saltwater habitat through SMPs.
- Washington Shellfish Initiative (adopted 12/2011) is being implemented and updated. Ecology has two main tasks under the current initiative: Co-facilitate the Shellfish Interagency Permitting Team and write a shellfish aquaculture permit writers handbook (if funded).
- The USACE issued the shellfish aquaculture Nationwide Permit 48 in 2012. Ecology issues 401 Water Quality Certifications for new commercial geoduck aquaculture in compliance with Section 404 permits. Ecology has made policy decisions regarding 401 WQC limits and conditions (e.g. water quality monitoring, eelgrass buffers, marking of equipment). Most 401s have been appealed.

Ecology and NOAA met with Canada's Department of Fisheries and Oceans, British Columbia, in August 2014 to gain a better understanding of our commercial finfish net pen regulatory and research programs. We also attended a NOAA-sponsored meeting on December 8, 2014 to discuss US and Canadian regulatory approaches. These meetings will inform administration of National Pollutant Discharge Elimination System (NPDES) permits by Ecology's Water Quality Program, and our SMP guidance to local governments.

Program guidance:

Ecology published interim Aquaculture guidance (Ecology, 2012) for local governments to assist them in updating their local aquaculture policies and regulations. The guidance addresses eelgrass, geoduck aquaculture, net pens, and other timely topics.

Ecology will publish updated aquaculture guidance in 2015. New or greatly revised sections will be provided on salmon net pens, eelgrass, and legal findings.

The Pacific Coast Shellfish Growers Association updated their Environmental Code of Practice in June 2011. This code for shellfish growers is often referenced in SMPs and shoreline permits.

Research, assessment and monitoring:

Shellfish aquaculture science continues to evolve and affect policies and regulations. Ecology has provided funding and/or letters of support for research projects, and participates on technical advisory teams for several Pacific Shellfish Institute and Washington Sea Grant research projects. Ecology co-sponsored a December 8, 2014 shellfish and the environment symposium which showcased results and studies underway. Ecology reviews and modifies our regulations and policies as needed based on the most relevant and current science.

Ecology co-sponsored a *Zostera japonica* symposium in June 2013 that shared the most current science on non-native eelgrass, and discussed potential future management options. Based on the science presented at this event, Ecology concluded that we could no longer require protection of *Zostera japonica* as a critical saltwater habitat and shared that decision with local governments.

Ecology intends to publish a net pen report in January 2015 summarizing Ecology's policy position and the science regarding environmental risks of concern. The report relies heavily on NMFS documents, and has been vetted by NOAA and the state WDFW and DNR.

Ecology co-sponsored two science forums on commercial marine finfish net pens in 2013. The science forums were designed to provide a baseline understanding of the federal and state regulatory framework, and address citizen and local government concerns regarding escapement of Atlantic salmon, pathogens, and water and sediment quality. These forums and advice from NOAA, USGS and the WDFW continues to influence our review of SMPs and content in the draft Aquaculture SMP guidance document (scheduled for publication January 2015).

Mapping:

Because of the USACE Nationwide Permit 48 authorizes existing aquaculture operations, Ecology has mapped new commercial geoduck aquaculture activities.

The DNR has also expanded its mapping of native eelgrass (*Zostera marina*). The maps are used by local governments in developing their SMPs and permit review of proposed projects.

Education & outreach:

WCZMP has provided several opportunities for public education about aquaculture. In addition to those mentioned above (science forums, technical guidance, general reports), Ecology has an aquaculture website, developed talking points for the Governor's office and Ecology staff, and published a net pen focus sheet (Ecology, 2014). Staff have also provided experts at public meetings to discuss specific community issues with elected officials and local government staff.

Ecology continues to use the Aquaculture listserv that was built for rulemaking to notify interested parties of scientific reports, science forums, and other resources for learning more or engaging in aquaculture issues.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	<u> X </u>
Medium	<u> </u>
Low	<u> </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Aquaculture was classified as a medium priority in the last assessment and strategy, which has increased to a high priority for the program in the next five years. Shellfish aquaculture remains a challenging policy issue due to its location in the intertidal area where native eelgrass, forage fish and migratory Pacific salmon co-occur, and continues to be a high priority for the State and the WCZMP through the Washington Shellfish Initiative.

WCZMP will work on aquaculture policy issues in the coming years through participation in the Washington Shellfish Initiative, review and implementation of SMPs, and working with the State Ocean Caucus and other interests on aquaculture in offshore areas. Because we will address aquaculture issues through SMP updates categorized under the high-priority Cumulative and Secondary Impacts of Growth enhancement area, we are not developing specific aquaculture strategies in this 309 Enhancement Cycle.

In-Depth Assessment

Coastal Hazards

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to improve the WCZMP’s ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1. The most significant coastal hazards within the coastal zone.

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Flooding	Coastal Zone
Hazard 2	Shoreline Erosion	Coastal Zone
Hazard 3	Landslides	Landslides occur in focused areas along the outer coast, but are more prominent in the Puget Sound due to poor development practices near the top edge of coastal bluffs, within historically active landslide complexes, and at the toe of unstable slopes.
Hazard 4	Geological Hazards	Tsunami and seismic risk are equally great on Washington’s ocean coast and in Puget Sound, however, the nature, source, and frequency of the risk varies.

* See High-level characterization for why these hazards are the most significant in the coastal zone.

2. Emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat.

As *Washington State’s Integrated Climate Response Strategy (2012)* underlines, climate change imposes pressures on coastal environments already experiencing environmental stressors from human activities and population growth. Sea level change, flooding, erosion, loss of coastal habitats, saltwater intrusion into coastal aquifers and rivers, and ocean acidification will pose serious risks for communities and ecosystem processes. However, communities need more refined data and information that can fully characterize vulnerabilities and impacts of coastal hazards at the local scale, and further assistance to integrate information into consistent and effective planning and implementation.

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. Approaches employed by the state or territory and if there has been a significant change since the last assessment.

Management Category	Employed by State/Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Statutes, Regulations, and Policies:			
<i>Shorefront setbacks/no build areas</i>	Y	Y	N
<i>Rolling easements</i>	N	Y	N
<i>Repair/rebuilding restrictions</i>	Y	Y	N
<i>Hard shoreline protection structure restrictions</i>	Y	Y	N
<i>Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)</i>	Y	Y	N
<i>Repair/replacement of shore protection structure restrictions</i>	Y	Y	N
<i>Inlet management</i>	Y	Y	N
<i>Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)</i>	Y	Y	N
<i>Repetitive flood loss policies (e.g., relocation, buyouts)</i>	Y	Y	N
<i>Freeboard requirements</i>	N	Y	N
<i>Real estate sales disclosure requirements</i>	N	N	N
<i>Restrictions on publicly funded infrastructure</i>	Y	Y	N
<i>Infrastructure protection (e.g., considering hazards in siting and design)</i>	Y	Y	N
<i>Other (please specify)</i>			
Management Planning Programs or Initiatives:			
<i>Hazard mitigation plans</i>	Y	Y	N
<i>Sea level rise/Great Lake level change or climate change adaptation plans</i>	N	Y	N
<i>Statewide requirement for local post-disaster recovery planning</i>	N	Y	N
<i>Sediment management plans</i>	Y	Y	Y
<i>Beach nourishment plans</i>	N	Y	N
<i>Special Area Management Plans (that address hazards issues)</i>	N	N	N
<i>Managed retreat plans</i>	N	N	N
<i>Other (please specify)</i>			
Research, Mapping, and Education Programs or Initiatives:			
<i>General hazards mapping or modeling</i>	Y	Y	N
<i>Sea level rise mapping or modeling</i>	N	Y	N
<i>Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)</i>	Y	Y	N
<i>Hazards education and outreach</i>	Y	Y	Y
<i>Other (please specify)</i>			

2. Conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment. If

none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

None. Coastal hazards are managed in Washington State under several authorities. Metrics to evaluate the effectiveness of the state's management efforts to address coastal hazards have not been developed.

Identification of Priorities:

- 1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, the top management priorities where there is the greatest opportunity for the CZMP to improve its ability to more effectively address the most significant hazard risks are as follows.**

Management Priority 1: Understanding the role of the WCZMP in reducing hazards and coordination among management authorities.

Description: The challenges posed by coastal hazards and climate change cross traditional boundaries of government agencies, politics, and geography. Based on the characterization, there are four significant hazards within the coastal zone, however, not all of the hazards are a high priority for the WCZMP. It is important for the WCZMP to first understand its role in reducing hazards and coordinate and collaborate with other agencies to align policies, practices, and resources to improve the efficiency and effectiveness of coastal hazards resilience planning.

Management Priority 2: SMP Guideline improvements to better address coastal hazards.

Description: The primary approach to addressing coastal hazard threats in the WCZMP is through local SMPs. However, guidelines can be improved to better assist communities in preventing or minimize threats to existing populations and property from episodic and chronic coastal hazards, and direct future public and private development and redevelopment away from hazardous areas.

Management Priority 3: Consider additional impacts of climate change.

Description: Coastal communities are facing existing coastal hazard stressors that will be exacerbated under changing climate conditions. Sea level rise in particular will have a significant impact in areas along of Washington's coast. However, further understanding is needed to determine what information is needed for actionable decision making/planning.

- 2. Priority needs and information gaps the CZMP has for addressing the management priorities identified above.**

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Developing consistent yet regionally-and locally-appropriate coastal hazards information. FEMA's Risk MAP process is providing data and information to communities, however, this does not include erosion and the impacts of future conditions from climate change. One specific need currently is sea level rise. One challenge communities face is the variability of vertical land movement so regional projections of sea level rise listed in the National Research Council report are not local enough to assess and analyze. Another need is for more robust erosion and shore change monitoring with the incorporation projected climate conditions. Staff currently have limited capacity to even monitor shoreline profiles and changes.
Mapping/GIS/modeling	Y	Once research is conducted to gather locally specific information, then communication of that information will be needed.
Data and information management	Y	Multiple agencies conduct research and assessments on coastal hazards in the state, however, there is no central source for cross-hazards information, data, and mapping.
Training/Capacity building	Y	The Padilla Bay NERR is beginning to provide more training to planners and coastal managers on hazards and climate impacts. However, training opportunities are needed (i.e., vulnerability assessment, incorporating hazard mitigation and adaptation into planning tools) for other important audiences to improve preparedness and resilience.
Decision-support tools	N	Technology is improving which is providing better estimates of natural hazard impacts. However, these new tools are expensive and local governments, lack the capacity to understand and decide which tools are most helpful to support their planning decisions. It is still unclear what information is needed at the local for actionable decision making/planning.
Communication and outreach	Y	Through the WCZMPs existing efforts on coastal hazards, communication and outreach are important parts of public awareness and informed decision making. We continue to explore new ways to connect with communities, but additional resources are needed to support communication strategies. More specifically, a program website on coastal hazards, understanding and providing guidance to homeowners on awareness and responsibility to reduce risk.
Capacity	Y	Coastal Hazards are a new priority for our program in addition to the Program Improvements our program has already committed to fund through 309 efforts. As a designated area of national importance, this emphasis is likely to remain a high priority for our program and additional resources could greatly benefit our work on our strategy.

Enhancement Area Strategy Development:

1. Will the CZMP develop one or more strategies for this enhancement area?

Yes X
 No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

Ecology has been invested in assisting with technical needs and management support to local governments to address coastal hazards since the inception of the WCZMP. Communities continue to experience the impacts of coastal hazards which will be exacerbated by changing climate conditions. Ecology is dedicated to improving the WCZMP to reduce risks through coordinated and collaborative management.

In addition, there is an opportunity to further enhance our WCZMP with the current energy and support for these issues at the Federal level. While the Section 309 Enhancement Program establishes nine enhancement areas, OCM can choose to designate one or more enhancement areas as “areas of national importance.” Designating areas of national importance helps to further focus Section 309 funding and demonstrate a national impact for the National Coastal Zone Management Program by aligning resources to address one or more critical coastal management issues across the county. For the FY 2016-2020 assessment and strategy cycle, “coastal hazards” is designated as the enhancement area of national importance.

Cumulative and Secondary Impacts

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to improve the WCZMP’s ability to address cumulative and secondary impacts of coastal growth and development.

1. The three most significant existing or emerging cumulative and secondary stressors or threats within the coastal zone.

	Stressor/Threat	Coastal Resource(s)/Use(s) Most Threatened	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Development	Habitat, water quality	Coastal Zone
Stressor 2	Shoreline armoring	Habitat, water quality	Coastal Zone
Stressor 3	Pollution	Shellfish	Coastal Zone

2. Why these are currently the most significant cumulative and secondary stressors or threats from coastal growth and development within the coastal zone.

Puget Sound has been and will continue to be the fastest growing area in the Coastal Zone, and is subsequently subject to the most significant cumulative and secondary stressors.

Development: Washington State’s population increases by about one million people every decade. Although Washington’s GMA has had some success in stemming sprawling development through concentration of development in urban growth areas, there are inevitable environmental consequences of both rural and urban growth. Key threats include habitat loss due to clearing and proliferation of private docks and other shoreline modifications. Although environmental regulations, including the SMA, have slowed these losses considerably, development and creation of new impervious surfaces continue to threaten sustainability of habitat, including habitat for threatened anadromous fish species.

Armoring: Bulkheads and other “hard” armoring disrupt the natural process of erosion that supplies much of the sand and gravel that forms and maintains our beaches. Erosion also creates habitat for herring, surf smelt, salmon, and many other species in Puget Sound. Over time, shoreline armoring may cause once sandy beaches to become rocky and sediment starved.

Ecology has prepared numerous studies including a 7-volume Coastal Erosion Management Series as the basis for our regulatory approach.

Shellfish: Around Puget Sound, there are an estimated 190,000 acres of classified commercial and recreational shellfish beds. However, about 36,000 acres of shellfish beds—approximately 19%—are closed due to pollution, most of which comes from fecal bacteria from humans, livestock, and pets. When fecal bacteria and other contaminants get into the water, they threaten the areas where oysters, clams, and other bivalve shellfish grow. In addition to threats to shellfish, there are ongoing questions about adverse impacts to ecological functions caused by shellfish operations that should be addressed through the review of permits for new operations.

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the cumulative and secondary impacts enhancement objective.

1. Significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Methodologies for determining CSI impacts	Y	Y	Y
CSI research, assessment, monitoring	Y	Y	Y
CSI GIS mapping/database	Y	Y	Y
CSI technical assistance, education and outreach	Y	Y	Y

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.

- a. Describe significant changes since the last assessment;
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

The basic approach to addressing cumulative and secondary impact threats in the WCZMP is through local SMPs that meet Ecology’s standard of “no net loss of ecological functions necessary to sustain shoreline natural resources.” Ecology will have approved approximately 107 of 133 SMPs in the Coastal Zone by July 1, 2016. Ecology’s review of these reports was funded in part with CZM 309 and 306 dollars. To ensure “no net loss of ecological functions” and protection of other shoreline functions and/or uses, master programs must contain policies, programs, and regulations that address adverse cumulative impacts. Ecology’s guidelines require local government to evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions.

Each local government has prepared a cumulative impact analysis report that describes anticipated shoreline development within their jurisdiction and assesses the cumulative impacts of such development on shoreline ecological functions over the long term. The cumulative impacts analysis is used to determine how regulations most effectively protect shoreline ecological functions. The analysis is a key step in forecasting the future and proactively addressing anticipated impacts.

3. Conclusions of any studies that have been done that illustrate the effectiveness of the state’s or territory’s management efforts in addressing cumulative and secondary impacts of development since the last assessment.

Every comprehensively updated SMP was based on a Cumulative Impact Analysis study that addresses anticipated impacts of regulations. These Analysis reports illustrate the anticipated effectiveness of regulation and conclude that when implemented, the SMP will achieve Ecology’s standard of no net loss of ecological functions.

Each local government is also required to monitor actions taken to implement the master program (e.g., through the permit system) to facilitate appropriate updates of SMP provisions to improve shoreline management over time. Historically, permits have often been issued without consistent follow-up on compliance. Due to resource constraints, enforcement is typically based on complaints.

Ecology has oversight of locally issued shoreline permit. Each permit potentially provides an opportunity to ensure authorized development is achieving “no net loss.” For certain kinds of permits (conditional use and variance permits) Ecology takes the final approval action and has the ability to condition permits to ensure effectiveness. However, the Coastal Program lacks a systematic approach to assess compliance and effectiveness of permits to inform future SMP updates.

In addition to regular ongoing review of individual permits, the SMA includes a requirement that each local government periodically review their SMP on a staggered 8-year cycle starting in 2019. That review will include an evaluation of the cumulative effects of authorized development on shoreline conditions, to make sure the program is achieving its intended results. Ecology is required to review these evaluations and approve the results of the local government review. However, Ecology’s rules do not provide explicit procedures for conducting the review, to ensure the required self-evaluation is transparent, effective and efficient. Defining a clear process for local governments to evaluate the effectiveness of SMPs will provide the means to assess the effectiveness of the state’s management efforts.

Identification of Priorities:

- 1. Considering changes in cumulative and secondary impact threats and management since the last assessment and stakeholder input, the top three management priorities where there is the greatest opportunity for the CZMP to improve the effectiveness of its**

management effort to better assess, consider, and control the most significant threats from cumulative and secondary impacts of coastal growth and development are as follows:

Management Priority 1: Ensuring no net loss of ecological functions caused by land development.

Description: As described above, local governments are required to periodically evaluate the cumulative effects of authorized development on shoreline conditions. Ecology has approved a wide range of approaches to Cumulative Impact Analysis – from detailed quantitative projections to more qualitative approaches. A great opportunity to improve effectiveness of WCZMP management efforts will be to develop coherent approaches for the mandatory periodic reviews described above. The approach needs to be flexible enough to accommodate the various approaches taken during the comprehensive update process and scaled to development activity and local conditions.

Management Priority 2: Avoiding and minimizing adverse effects of shoreline armoring.

Description: Each comprehensively updated SMP includes state-mandated requirements to avoid installation of new shoreline armoring where it is not needed, and minimize adverse effects of those that are authorized through use of soft armoring unless infeasible for the site. Ecology has an opportunity to ensure these regulations are effective through ongoing oversight of local permits issues to determine if they follow the complete mitigation sequence that begins with avoidance, and through development of guidance and Best Management Practice (BMP) manuals.

Management Priority 3: Protecting shellfish beds and ensuring aquaculture operations ensure no net loss of ecological functions

Description: Each comprehensively updated SMP includes state-mandated requirements to protect existing critical habitats, including shellfish growing areas. In addition, the SMPs include new requirements for evaluating impacts of proposed operations. Ecology has an opportunity to ensure these regulations are effective through ongoing oversight of local permits issues to determine if they follow the complete mitigation sequence that begins with avoidance, and through development of guidance and BMP manuals.

2. Priority needs and information gaps.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	N	
Mapping/GIS	Y	Ecology must update aerial oblique photos as a key tool for local governments to evaluate cumulative effects of growth on marine shorelines.

Data and information management	Y	Ecology needs to continue to maintain and improve its ability to ensure adequate follow-through with permit conditions placed on authorized development. There is a need for increased staff time directed at compliance. Ecology needs to either modify its existing tracking system or build a new system to ensure projects are being tracked adequately over time. There is also a need to develop partnerships with other state agencies that may have data and information sources that can be used to enhance compliance work. For example, Ecology could work with the state Department of Fish and Wildlife to demonstrate how state and local agencies can use high resolution change detection data to inform compliance evaluations.
Training/Capacity building	Y	Ecology needs to continue to provide technical support and build capacity among our local partners for effective administration of permits. There is a need to share best practices and develop training programs so state and local shoreline administrators have the skills and expertise to use their time effectively.
Decision-support tools	Y	Ecology must continue to expand guidance documents and rules that provide local governments direction on efficiently administering SMPs and conducting periodic reviews to ensure effectiveness. There is a need to develop guidance and rules in close partnership with local governments to ensure it reflects local needs and circumstances.
Communication and outreach	Y	Ecology must continue to maintain an updated web site so local partners and the public know what is expected.

Enhancement Area Strategy Development:

1. Will the CZMP develop one or more strategies for this enhancement area?

Yes X
 No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

This has been a priority for a number of years and remains a high priority – especially while many jurisdictions are still developing their updated SMPs. Once these programs are in place, there is a need to evaluate both compliance and performance in effectiveness. Ecology will develop strategies for this enhancement area to ensure our ongoing investment and efforts are effective.

Ocean Resources

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to enhance the state WCZMP to better address cumulative and secondary impacts of coastal growth and development.

1. The three most significant existing or emerging stressors or threats to ocean resources within the coastal zone.

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Ocean Acidification & other water quality parameters (seasonal hypoxia & water temperatures)	Coastal Zone: Hypoxia generally in certain nearshore zones (especially from Ocean Shores-La Push) where upwelled water comes to the surface.
Stressor 2	Coastal hazards (flooding, earthquakes, erosion, landslides, etc.)	Specific hazards/vulnerability varies by geography, but hazards are present throughout the Washington Coast.
Stressor 3	Offshore development and uses (energy production, dredge disposal, sand or mineral extraction)	Coastal Zone: However, commercial-scale developments more likely south of the Olympic Coast National Marine Sanctuary.

2. Why these are currently the most significant stressors or threats to ocean resources within the coastal zone.

Ocean Acidification & other water quality parameters

Ocean acidification is a climate change-related stressor. In addition, water temperature changes and seasonal hypoxia may be exacerbated by climate change (as changes in physical oceanography due to climate change may make these events more severe or more frequent). These water quality changes are significant threats due to their ability to have wide-ranging impacts across the marine food web – including potential for major disruptions to the base of the food web up to dominant species that occur along Washington’s Coast. Many species that are commercially and culturally important may be affected either directly or indirectly leading to instability for coastal communities. A wide range of stakeholders and managers have expressed concerns about these issues. See reports from Phase I Assessment, which highlight the importance of this issue to a range of stakeholders.

Coastal Hazards

A variety of coastal hazards are present throughout Washington’s Coast, which threatens both coastal communities and habitats. Climate change will exacerbate many of these hazards by increasing storm frequency/intensity, increasing base sea level and increasing

wave intensity/height. See other Phase II assessment for more specifics on coastal hazards' report & studies.

Offshore development and other ocean uses

A significant amount of work continues regarding sediment management and potential to establish new locations for dredge disposal around the Mouth of the Columbia River. While no current proposals exist for offshore development (e.g. energy or aquaculture), many coastal communities are concerned about impacts and poorly sited projects due to previous proposals for renewable energy. Displacement of existing uses and impacts to marine resources are significant concerns of coastal stakeholders. Agencies are concerned about having a proactive framework for addressing these potential uses in an integrated fashion. Stakeholder concerns have been documented throughout the MSP process including Coastal Voices report (June 2013). See Phase I Assessment for additional details and studies.

Effects of climate change may influence the likelihood of particular proposed ocean uses. For example, increased erosion and more inundation of coastal communities may translate to increased desire for additional beneficial dredge disposal sites or sand mining for beach nourishment or enhancement/restoration of other coastal habitats. In addition, increasing demands to lower greenhouse gas emissions to combat climate change may translate to increased demand for offshore renewable energy projects and lower demand for fossil fuel extraction. Finally, as climate change influences marine food webs and potentially lowers or shifts productivity, there could be an increased demand for aquaculture-derived seafood.

3. Emerging issues of concern which lack sufficient information to evaluate the level of the potential threat.

Emerging Issue	Information Needed
Marine transportation – esp. potential increase of crude oil and coal	Information on projects, evaluation of risks and alternatives, including prevention & mitigation measures (underway as part of EISs and other studies).
Large-scale species decline events (e.g. sea-star wasting disease, Cassian auklet event)	Research on causes and impacts of declines on species' populations/distribution and their communities/habitats.

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.

1. Significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CZMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Ocean and Great Lakes research, assessment, monitoring	Y	N	Y
Ocean and Great Lakes GIS mapping/database	Y	Y	Y
Ocean and Great Lakes technical assistance, education, and outreach	Y	Y	Y
Other (please specify)			

- 2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.**
- a. Describe significant changes since the last assessment;**
 - b. Specify if they were 309 or other CZM-driven changes; and**
 - c. Characterize the outcomes or likely future outcomes of the changes.**

As part of MSP efforts, Washington State has funded significant new research and assessment of ocean resources and uses including forage fish spawning sites, marine mammal surveys, and assessment of status and trends of ecological, economic and social aspects of ocean resources on Washington’s Coast. In addition, much of this data has been compiled into GIS mapping and is available in an online data viewer. The majority of this work was not funded by the CZM program but is directly tied to the current 309 strategy of completing a MSP for Washington’s coast.

CZM staff is updating the Washington Coastal Atlas (a platform designed to support local shoreline planners) with ocean data, and providing outreach to local governments on the information available through the MSP process. CZM staff is also providing technical assistance to local governments on meeting ocean management requirements in local shoreline updates and the nexus with the MSP process. Technical assistance and outreach to local governments were CZM-driven changes.

The outcomes of these efforts include improving information on the status of ocean resources and uses on Washington’s Coast as well as improving integration of and application of policies designed to manage and protect resources and uses at the local and state level. Additional outcomes include more informed and engaged stakeholders and members of the public and improved coordination with tribes and federal agencies.

3. Conclusions of any studies that have been done that illustrate the effectiveness of the state’s or territory’s management efforts in planning for the use of ocean resources since the last assessment.

Students at University of Washington produced report (UW, 2014) that evaluated potential agency coordination around Offshore Wind Projects in Washington State (of which none currently exist). They recommended improved state interagency coordination on the overall permitting process, establishing a taskforce with Bureau of Ocean Energy Management (BOEM), and working with agencies, scientists and experts to prioritize and coordinate environmental impacts research.

No other reports on effectiveness of the state’s management efforts in planning for use of ocean resources were found. To further assess effectiveness of management efforts in planning for ocean resource uses, the state would need to develop other sources of information such as surveys, performance metrics, etc.

Identification of Priorities:

1. Considering changes in threats to ocean resources and management since the last assessment and stakeholder input, the top three management priorities where there is the greatest opportunity for the CZMP to improve its ability to effectively plan for the use of ocean resources are as follows:

Management Priority 1: Complete and Implement MSP

Description: Washington anticipates the MSP for Washington’s Coast will be through its state adoption process by December 2016. After state adoption, Washington plans to submit this plan to be incorporated in its federally-approved CZMP. In addition, monitoring and additional data collection will assist in plan implementation and adaptation. This plan will provide the greatest opportunity for guiding siting of future ocean uses on Washington’s Coast.

Management Priority 2: Update Ocean Action Plan

Description: In 2016, Washington’s current Ocean Action Plan will be 10 years old. Updating this document will allow Washington to assess issues, threats and opportunities; identify management priorities; and create goals, actions and metrics for comprehensively improving management of Washington’s ocean and coastal resources.

Management Priority 3: Develop A Monitoring and Research Plan

Description: Managing ocean resources effectively requires collecting and synthesizing information on the status of resources on a regular basis and the ability to further investigate specific issues through additional scientific research. However, monitoring and

research is performed by multiple entities. Based on management priorities and gaps identified from the previous management priorities, a monitoring and research plan can identify existing institutions and capacity, establish priority information needs, and create opportunities for gathering and sustaining scientific information needed for implementation of these management plans and policies.

2. Priority needs and information gaps.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	<p>Additional research is needed to better understand climate impacts (ocean acidification, sea level rise, etc.), habitat-species correlations, impacts from ocean uses and pilot projects, the status of marine resources and processes (e.g. upwelling) and stressors (e.g. water temperature, hypoxia).</p> <p>Research is not coordinated, not always tied to management issues or priorities, and often lacks consistent funding. Need to identify research priorities, improve connection of research to management needs, as well as identify mechanisms for consistent funding. (See Management Priority 3)</p>
Mapping/GIS	Y	<p>Specific mapping needs to include seafloor mapping (e.g. geology, benthic habitat data, and high resolution bathymetry) and mapping of additional marine resources (e.g. paleo-shorelines, cultural resources).</p> <p>GIS mapping tools exist to assist with current ocean planning efforts. However, there is an ongoing need to update the information make the most accurate information is available.</p>
Data and information management	Y	<p>Data and information requires ongoing data management and updating. Additional synthesis and interpretation of data is needed for some audiences to improve accessibility of the information (e.g. Story Maps, Theme Maps).</p>
Training/Capacity building	Y	<p>Training and capacity building are essential to build WCZMP staff skills, but also for partner organizations and stakeholders to enable them to make the most of their participation. Common gaps across these groups include active listening, collaboration/negotiation, facilitation, communication, and project planning.</p>
Decision-support tools	Y	<p>Decision-support tools are available for ocean resources, but require updates to improve usability for their audience as well as training and outreach to enable users to make the most of them. Lack of resources for ongoing improvements and outreach about tools is a current gap.</p>
Communication and outreach	Y	<p>Addressing the management priorities above requires communication and outreach. While the WCZMP currently employs these, evaluating of effectiveness of outreach and creating additional pathways are current gaps.</p>
Other (Specify)		

Enhancement Area Strategy Development:

1. Will the CZMP develop one or more strategies for this enhancement area?

Yes X
No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

The WCZMP will develop a strategy for the ocean resource enhancement area given that it is a current priority for improving Washington’s CZM that will carry into this next strategy period. In addition, this area presents new priority opportunities for further improvement to Washington’s CZM. (See Phase I Assessment).

Strategy

Coastal Hazards

Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas:

- | | |
|--|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input checked="" type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

Strategy Description

The proposed strategy will lead to, or implement, the following types of program changes:

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

STRATEGY

Strategy 1:

Goal

Clarify the needs of local governments, collect data and information, and enhance State Shoreline Master Program Guidelines (Guidelines) to minimize existing impacts of coastal hazards and improve planning for future conditions (i.e., sea level rise, storm surge, erosion, landslides, flooding).

Description

For more than ten years, the WCZMP has been working to comprehensively update local SMPs. The SMA includes a requirement that each local government periodically review their SMP on a

staggered 8-year cycle starting in 2019. This process allows for local governments to catch up with statutory amendments since the comprehensive amendments, evaluate the cumulative effects of authorized development on shoreline conditions, and to ensure the program is achieving its intended results. It also offers an opportunity for Ecology to provide more guidance and clarity around the SMP guidelines requirements. Planning for changing climate conditions and additional attention to coastal hazards has emerged as a federal priority and an expressed interest from local governments. Therefore, Ecology will use Section 309 to understand and identify opportunities to enhance shoreline management in these areas. The following process will be used to scope revisions to or new additions to SMP guidelines.

Phase I: Understanding Management Concerns

- Gather existing information that provides a foundation for assessing the range of management concerns that are implicated by existing stressors and changing climate conditions, and for analyzing the various types of policies that may be applied in response.
- Through this process, identify data and information gaps and prioritize needs. Work with partners to explore opportunities to address high priorities.

Phase II: Review of Management Systems and Institutional Structures

- Analytically review state and federal coastal management systems, which includes existing institutional structures and current management practices for Washington's coastal land and water resources. Understanding this system of governance involves the cooperation and coordination of many local, state, tribal, and federal agencies and programs.
- Identify key management problems that provide the focus for a study of alternative policy responses in the management of shorelands.

Phase III: Scoping Improvements to master program guidelines

- Scope improvements to Ecology guidelines to better address existing stressors and future threats.
- Work with local governments to evaluate policy implications and implementation challenges.

Phase IV: Develop Policy and Implementation Guidance

- Use existing information and work with local governments in developing meaningful state guidance to achieve compliance with new guidelines and provide practical resources to support this work.

Phase V: Working with Communities to Incorporate Changes

- The WCZMP will work with communities to establish successful models and develop a community of practice to disseminate lessons learned. This could include planning process support, training through the Washington Coastal Training Program, and other forums for supporting and building capacity within

local governments.

Needs and Gaps Addressed

In the coastal world, there is increasing interest in developing planning approaches that incorporate future climate conditions, but often resources and capacity are limited. Additionally, there are multiple overlapping authorities with different purposes involving different management agencies. Efforts to improve management programs often do not assess systematic policy alternatives which could be improved through enhanced coordination. This strategy will help the WCZMP understand shoreline management needs and alternatives by coordinating with many local, state, tribal, and federal agencies.

Benefits to Coastal Management

Washington's coastal areas and marine waters are not only an important economic engine for the state but also are central to the quality of life and important sense of place for residents. Coastal hazards threaten the health, safety, and welfare of Washington communities and the natural resources and systems that we depend on. By taking steps to better understand and plan for existing and future threats, communities will be better prepared to mitigate, adapt, respond, and recover from chronic and episodic events.

Likelihood of Success

With adequate 309 resources and legislative appropriations, the state is highly likely to have the experience to complete changes to shoreline master program guidelines by the 2017 target date. Staff have been working on coastal hazards management since the inception of the WCZMP which provides the knowledge and skills needed to complete this work. However, the extent and ability for the program to comprehensively complete the outlined phases in this strategy will likely depend on the support of additional resources (e.g., fellowships and funding) and collaboration with key state and federal agencies. Existing partnerships and networks (e.g., Washington Coastal Hazards Resilience Network) provide critical support for coordinated research and management efforts.

STRATEGY WORK PLAN

Total Years: 2016-2020

Total Budget: \$387,750

Major Milestones:

Year 1-2 (2016-17)

- Assessment of the range of management concerns that are implicated by existing stressors and changing climate conditions.
- Identify data and information gaps and prioritize needs.
- Analytically review state and federal coastal management systems.
- Identify key management problems that provide the focus for a study of alternative policy responses in the management of shorelands.

- Scope improvements to Implementation Rules to better address existing stressors and future threats.
- Work with local governments to evaluate policy implications and implementation challenges.

Year 2 (2017)

- Adopt Shoreline Master Program guidelines change (these guidelines are adopted as state rules under the Washington Administrative Code).

Year 3-5 (2018 -20)

- Use existing information and work with local governments in developing meaningful state guidance to achieve compliance with new guidelines and provide practical resources to support this work.
- The WCZMP will work with communities to establish successful models and develop a community of practice to disseminate lessons learned

Fiscal Needs

CZMP staff are involved with and dedicated to continued investment in tasks related to Ocean Resources and Cumulative and Secondary Impacts and Ocean Resources. Therefore, capacity to take on a program change in a third category will be limited, especially for a topic as challenging as policy changes around future conditions. We anticipate funding support to address key data and information gaps, policy and management research assistance, technical expertise, and material development may be needed.

Projects of Special Merit Ideas

- Management problems and policy alternatives review and analysis for existing and future coastal risks and hazards (i.e., sea level rise, storm surge, erosion, landslides, flooding).
- The work in phases I and II will identify data and information gaps and prioritize needs. Research to address these priorities may be essential to inform effective policy decision-making.
- A pilot program to work with communities to establish successful models and develop a community of practice to disseminate lessons learned. This may include assistance/transfer of knowledge from other successful projects (e.g., San Francisco Bay Conservation and Development Commission’s Adapting to Rising Tides Program).

Cumulative and Secondary Impacts

Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Aquaculture | <input checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input checked="" type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input checked="" type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

Strategy Description

The proposed strategy will lead to, or implement, the following types of program changes:

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

STRATEGIES

Strategy 1:

Goal

Complete the review and approval of comprehensive SMPs in Washington's Coastal Zone and provide guidance on updates for local partners.

Description

Ecology will conclude a decade-long endeavor to review and approve every SMP in Washington's Coastal Zone. As part of this effort Ecology will continue to develop SMP Handbook guidance documents that inform these SMP updates.

Needs and Gaps Addressed

The fundamental approach to addressing Cumulative and Secondary Impacts of Growth assessment is through local government SMPs. Ecology has been deploying 309 resources for many years to ensure all local programs are consistent with state guidelines. Completing this work will fill that final gap. Of the 133 local jurisdictions in Washington's Coastal Zone, approximately 107 SMPs will have been comprehensive updated by July 1, 2016. The remaining 26 will complete their updates during the 2016-2020 period.

Benefits to Coastal Management

Washington's SMA shares the goals of the CZMA, namely the balancing of environmental protection, provision of public access, and prioritization of water-dependent uses where development is allowed in the shoreline. Under the SMA, all local governments in Washington State with "shorelines of the state" in their jurisdiction must develop SMPs to regulate development within these areas. While allowing for appropriate development of our shorelines, SMPs help protect water quality; protect lives and property from flood and landslide damage; protect fish and wildlife habitat; promote recreational opportunities; and foster water-dependent uses.

Ecology adopted new SMP Guidelines in 2003. The legislature subsequently amended the SMA to provide funding for local governments to update their SMPs and to lay out a schedule for these updates. Under the new SMP Guidelines, all local governments in Washington State with "shorelines of the state" in their jurisdiction must develop updated SMPs. These new SMPs will result in a number of environmental benefits, including: ensuring the overall health of shorelines and public waters by requiring "no net loss" of ecological functions; protecting water quality; reducing impacts of hazards such as floods and landslides; and protecting critical habitat for fish and wildlife.

Updated SMPs also provide economic benefits to local governments, including: protecting lives and property by keeping development from occurring in unstable or unsafe areas; helping cities and counties to realize their vision for future waterfront development and uses; providing public access and recreational opportunities; and avoiding costly future restoration of degraded shorelines.

Likelihood of Success

The process of comprehensively updating SMPs is well underway - an estimated 75% of jurisdictions will be completed by June 2016. Ecology has previously been able to secure grant funds from the state Legislature to pass through to local governments engaged in SMP updates. We will need to secure additional state funds in future biennia in order to be able to update SMPs in the remainder of the coastal zone, but this funding is likely. When a local government does not comply with the requirements to update their SMPs, Washington's SMA includes a backstop that grants Ecology authority to adopt an SMP by rule.

Strategy 2:

Goal

Develop and implement a systematic approach to assess compliance and effectiveness of permits.

Description

Ecology will develop methods to assess compliance and effectiveness of shoreline permits. We anticipate building a cooperative program with our local partners and other state and possibly federal regulatory agencies. This will provide an empirical basis for evaluating SMPs, which is a key component to ensuring meaningful updates to SMPs during the periodic reviews (see Strategy 3). Ecology will provide technical assistance to local governments in support of SMP compliance with approved comprehensively amended SMPs.

Needs and Gaps Addressed

Historically, Washington has not had a consistent means to ensure compliance with local permits. Enforcement has been largely on a complaint basis. Each local government that has comprehensively amended its SMP is required to monitor actions taken to implement the master program through the permit system to facilitate appropriate updates of SMP provisions (see Strategy 3.) The approaches local governments take will likely vary widely (e.g., based on staff capacity, resources, volume of permits issued, etc.).

Ecology oversees locally issued shoreline permits and has the opportunity to ensure authorized development is achieving program goals, including ensuring “no net loss.” For certain kinds of permits (conditional use and variance permits) Ecology takes the final approval action and has a greater ability to condition permits and ensure effectiveness. Ecology does not yet have a systematic approach to assess compliance and effectiveness of these permits. The agency will develop and test a collaborative compliance program that makes most efficient use of resources from local governments, Ecology, and our sister state agencies that have overlapping authorities. Ecology will focus on key areas including land development, armoring and shellfish projects.

Benefits to Coastal Management

A compliance program will allow Ecology to answer basic questions about whether or not projects authorized under SMPs actually comply with the terms of permits.

The process of developing a compliance program will foster a “community of practice” around SMP implementation that is responsive to new information, and allow local governments to share best practices. Creating a more “transparent” regulatory regime will build support for the regulations and confidence that regulations are being administered fairly and are achieving their goals.

A compliance program will be invaluable in informing future SMP updates during the mandatory “periodic review” cycle.

Likelihood of Success

Ecology currently has no formalized routine and consistent compliance program. However, staff recently completed a quick compliance assessment of Puget Sound, which identified areas of improvement and a spectrum of compliance recommendations. Furthermore, staff have been working with local jurisdictions on SMP updates and have detailed understanding of what is needed and how to achieve a more systematic approach. Additionally, regional staff will have additional capacity to focus on implementation as comprehensive SMP updates are completed.

Strategy 3:

Goal

Adopt a state rule defining the process for periodic review of locally adopted shoreline regulations, and complete review for jurisdictions in the Puget Sound region.

Description

The SMA includes a requirement that each local government periodically review their SMP on a staggered 8-year cycle starting in 2019. Jurisdictions throughout the Puget Sound region have deadlines in 2019 and 2020 (jurisdictions on the Outer Coast have until 2021).

The periodic review will include catching up with statutory amendments since the comprehensive amendment. It will also require an evaluation of the cumulative effects of authorized development on shoreline conditions, to ensure the program is achieving its intended results. Ecology is required to review these evaluations. Currently there are no rules or procedures guiding the review process. Ecology's strategy is to adopt a state rule defining the process and outcome of the mandatory periodic review. The approaches need to be flexible enough to accommodate the various approaches taken during the comprehensive update process and scaled to development activity and local conditions.

Needs and Gaps Addressed

Ecology's rules do not provide explicit procedures for conducting the mandatory periodic review. Defining the process in rule will ensure the required self-evaluation is transparent, effective and efficient.

Benefits to Coastal Management

Defining a clear process for local governments to review their SMPs will lead to more predictability and hopefully more useful results. The rule will provide a consistent basis for local governments to prepare their evaluations and for Ecology to review them. The periodic review are a significant opportunity to maintain a consistent focus on maintaining and improving the effectiveness of the Coastal Program.

Likelihood of Success

With adequate 309 resources and legislative appropriations, the state is highly likely to complete rule adoption by the July 2017 target date. Meeting the local target dates in statute is more difficult to predict given the variability in capacity and resources at the local level.

STRATEGY WORK PLAN

Total Years: 2016 - 2020

Total Budget: \$1,809,500

Strategy 1: Complete Review and Approval of Comprehensive SMP Updates

Complete review and approve final comprehensive SMP updates for all remaining SMPs in the Coastal Zone. The milestones are approximations based on rough estimates of the extended time required for jurisdictions with more complex and challenging issues. Prepare final additional handbook guidance chapters related to implementation of SMP guidelines. The milestones are based on completing two chapters per year.

Major Milestone(s):

Year 1 (2016)

- Review and approve comprehensive SMP updates for 8 SMPs
- Two SMP Handbook chapters and associated guidance for SMP updates and implementation

Year 2-3 (2017-18)

- Review and approve comprehensive SMP updates for 9 SMPs
- Four SMP Handbook chapters and associated guidance for SMP updates and implementation

Year 4-5 (2019 -20)

- Review and approve comprehensive SMP updates for 9 SMPs
- Four SMP Handbook chapters and associated guidance for SMP updates and implementation

Strategy 2: Develop and Implement a Systematic Approach to Assess Compliance and Effectiveness of Permits

Develop methods to assess compliance and effectiveness of shoreline permits. Build a cooperative program with local governments and other state regulatory agencies. Begin implementation and prepare report on initial findings.

Major Milestone(s):

Year 1 (2016)

- Consult with local governments, state agencies and stakeholders on programmatic approaches.

Year 2-3 (2017-18)

- Develop and test implementation protocols and tracking procedures
- Conduct training and associated outreach for local governments

Year 4-5 (2019-20)

- Prepare report on findings of initial efforts with recommendations for improvements

Strategy 3: Adopt a State Rule Defining Periodic Review Process for SMPs

Adopt a state rule defining the process and outcome of mandatory periodic reviews of SMP. The approaches needs to be flexible enough to accommodate the various approaches taken during the comprehensive update process and scaled to development activity and local conditions.

Major Milestone(s):

Year 1 (2016)

- Consult with stakeholders on scope and approach
- Develop initial draft approaches for informal comments

Year 2-3 (2017-18)

- Prepare draft rule language for formal public comment
- Adopt final rule following state Administrative Procedures Act requirements
- Prepare associated guidance material
- Review and approve any local governments conducting their periodic review ahead of statutory schedule

Year 4-5 (2019-20)

- Review and approve amendments submitted under “periodic review” (113 SMPs in the Puget Sound have statutory deadlines to conduct the periodic review during 2019 and 2020)

Project of Special Merit Ideas

- Evaluating “no net loss” through tracking of shoreline armoring: Developing a cooperative framework for evaluating the implementation of shoreline policies.
- State aquaculture guidance

Ocean Resources

Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas:

- | | |
|---|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input checked="" type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

Strategy Description

The proposed strategy will lead to, or implement, the following types of program changes:

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

STRATEGIES

Strategy 1:

Goal

Revise state coastal program to incorporate complete MSP for Washington's Coast, and implement program change.

Description

Starting next phases of completion, adoption, and implementation of the MSP for Washington's Coast, which will include: 1) adopting the final plan at the state level through the SEPA process; 2) potentially creating MOAs/MOUs with agencies; 3) submitting the plan to NOAA to be incorporated into the state's CZM program; and 4) starting implementation activities. The MSP will likely result in new guidelines and procedures for potential ocean uses. In particular, it will help provide specific interpretations for the Ocean Resources Management Act and the SMA regulations for ocean management. The MSP represents a new plan for a special area of Washington's Coastal Zone (Pacific Coast) and will incorporate plans for Areas of Particular

Concern (APC) or other similar implementation mechanisms and criteria for designating and managing these areas.

The MSP will enable revisions to local SMPs and implementing ordinances. To further implement this program change, CZM staff will provide technical assistance to at least 2 local governments to revise their shoreline programs and ensure the MSP is incorporated.

Implementing the MSP will also require on-going coordination with other governmental entities and this may be aided by establishing agreements to: 1) formally incorporate or consider the MSP in other agencies' decision-making processes; 2) coordinate in responding to proposed projects; and 3) assist in monitoring, evaluating and adapting the plan.

Implementing the MSP will also be enhanced through development of additional data and research to further improve understanding of ocean resources, uses and potential impacts (i.e. fill priority data gaps); monitor ocean health and plan metrics; and enable adaptation or refinement of the plan. For example, the MSP will identify priority seafloor mapping needs by June 2015. See assessment for list of some specific mapping, data, and research needs to support ocean management planning.

Needs and Gaps Addressed

State agencies and the WCZMP have invested in developing a MSP for Washington's coast as a priority management need (see assessment). While much of the work is currently underway, additional work to incorporate it into the WCZMP and implement program changes will help maximize the effectiveness of the plan through the WCZMP's enforceable policies.

Benefits to Coastal Management

The MSP will provide multiple benefits to improving the WCZMP and coastal management, including: vastly improving the baseline information on ocean resources and uses, establishing ecosystem indicators to assess status and trends of ocean health and coastal communities over time, providing analyses to support decision-making related to ocean uses, establishing recommendations for managing particular areas and siting new ocean uses, and improving integration of existing policies and management across agencies. It will also improve the existing enforceable policies within the WCZMP by providing clearer interpretations of the policies, procedures, and guidelines.

The implementation activities will ensure more wide-spread use and consideration of MSP for improved decision-making as well as increase knowledge and information needed to decrease uncertainty for management decisions and to adapt or refine guidelines and procedures for siting ocean uses.

Likelihood of Success

Washington has a state law that enables the development of MSP and requires these plans to be submitted to NOAA as changes to Washington's coastal program. The Legislature has provided significant funds for the development of the MSP on Washington's Coast. In addition,

the Governor's budget proposal (FY 16-17) included funding to complete the MSP in the next biennium. Good support for completing this work also exists across state agency partners and from many and diverse stakeholders, including the Washington Coastal Marine Advisory Council. These all provide good indicators of success for this strategy.

However, it is possible that state funding will not materialize for completing the MSP or not at the level necessary to complete it as envisioned. In this case, it is likely that agencies would develop a revised (and longer) timeline for completing the planning process with existing resources and/or pursue alternative funding sources. A Project of Special Merit may be necessary to complete the program change.

Education and outreach as part of the MSP is also building support for the associated future program changes (by ensuring stakeholders are aware of the WCZMP and the plans to incorporate MSP into it). It is very possible that some stakeholders may disagree with the scope, substantive outcomes or recommendations that are included in the final MSP. This may make it more challenging to pursue a program change or implement the MSP and may require additional education and outreach activities.

Strategy 2:

Goal

Evaluate additional ocean management priorities and gaps and develop additional plans to address needs, such as through a revised Ocean Action Plan and Research Agenda.

Description

Evaluating the overall management priorities and gaps and developing plans to address management needs will enable the WCZMP to address ocean resources more comprehensively than can be accomplished through the MSP for Washington's Pacific Coast. This includes reviewing broader ocean issues, impacts and programs available to address the issues such as ocean acidification, climate change, invasive species, water quality, spills, public access or marine debris. It also provides a mechanism to guide and prioritize monitoring and research needs for coastal managers. These evaluations and plans may result in new or revised management programs, authorities or agreements.

Needs and Gaps Addressed

Updating Washington's comprehensive Ocean Action Plan and creating a Research Plan are priority management needs (see assessment). These planning activities provide a way to more comprehensively evaluate other significant ocean stressors (e.g. ocean acidification, hypoxia, climate change effects) and emerging ocean issues (e.g. species declines and marine transportation), to identify existing management activities and needs, and to create actions that can meaningfully address the gaps and needs (see assessment).

Benefits to Coastal Management

Evaluating the overall management priorities and gaps and developing plans to address management needs will enable the WCZMP to address ocean resources more comprehensively

than can be accomplished through the MSP for Washington's Pacific Coast. It also improves coastal management, in general, by enabling prioritization of management issues; identification of needs and gaps; and development and implementation of coordinated and effective response strategies.

Likelihood of Success

During assessment key agency partners suggested that Washington's comprehensive approach to ocean management on the Pacific Coast needs a fresh look. Stakeholders often bring up coastal management issues and needs that do not relate to the MSP. Creating plans and strategies that cover broader ocean management issues and priority research and information needs can provide a way to address these concerns as well as have good support from these groups. However, coming on the heels of an extensive planning process (for MSP), there may be some confusion and fatigue for developing additional plans/strategies. Therefore, additional education and outreach activities will likely be necessary to clarify the scope, distinguish efforts, and build/maintain support for developing these plans.

STRATEGY WORK PLAN

Total Years: 2016-2020

Total Budget: \$387,750

Year 1 (2016):

Completion of MSP – adopted at state level through SEPA process. Submit to NOAA for approval as part of federally-approved coastal program. Coordinate with governments to incorporate and implement plan, including through MOUs/MOAs. Provide technical assistance to local coastal communities on local shoreline program changes. As time allows, pursue additional data for MSP plan implementation (activity extends into years 2-5) and identify initial process and timeline for ocean action plan and/or research plan (activities kick off in year 2).

Major Milestone(s):

- Final MSP Adopted at state level (December 2016)
- Draft submission of coastal program documents to NOAA (Spring 2017)
- Final submission of coastal program documents NOAA (Summer 2017)
- Review 2 local shoreline programs and provide comments related to incorporation of MSP information and analyses.
- Draft agreements with state and federal agencies to implement or consider MSP.
- Pursue additional data for MSP plan implementation (see projects of special merit)
- Draft timeline and process for ocean action plan and/or research plan.

Years 2-3 (2017-18):

Coordinate with governments to incorporate and implement MSP. Provide technical assistance to local coastal communities on local shoreline program changes. Pursue additional data for MSP plan implementation/adaptation. Begin development of ocean action plan.

Major Milestone(s):

- Final review and comments on revisions to 2 local shoreline programs.
- 2 local governments finalize changes to local programs that incorporate MSP information and analyses.
- Final agreements with state and/or federal agencies to implement or consider MSP (Year 2).
- Additional data incorporated into MSP.
- Pursue additional data for MSP plan implementation (see projects of special merit).
- Research and coordination with agencies on ocean action plan scope and process. (Year 2)
- Complete scoping for ocean action plan. (Year 2)
- Outreach meetings and comments received on ocean action plan.
- Draft outline for Ocean Action Plan: draft management priorities, goals and actions.

Years 4-5 (2018-20):

Coordinate with governments to implement and monitor MSP. Continue technical assistance to local governments, as needed. Pursue additional data for MSP plan implementation/adaptation. Finalize ocean action plan. Develop and finalize research plan (if not done in conjunction with ocean action plan development).

Major Milestone(s):

- Additional data incorporated into MSP.
- Pursue additional data for MSP plan implementation (see projects of special merit).
- Coordination meetings with governments on MSP implementation and monitoring, as needed.
- Final Ocean Action Plan published.
- Outreach meetings and comments received on research plan.
- Draft research plan.
- Final research plan published that supports ocean action plan and MSP needs.

Fiscal Needs

Additional funding is needed to complete the MSP as currently envisioned. As noted above, state funds have been proposed by the Governor to fill those needs. 309 funds should be sufficient for most of the activities in this strategy.

The exception is developing additional data and research for supporting ocean management planning and implementation. The funds required for these activities will be pursued through projects of special merit or through other funding sources.

Project of Special Merit Ideas

- Undertake seafloor mapping to provide additional data for ocean management planning and implementation.
- Undertake additional baseline studies and impact monitoring for siting ocean uses and management.
- Support additional research on: species declines, habitat-species relationships, climate change impacts on marine systems and processes, and paleo-shorelines for ocean management planning and implementation.
- Finalize the MSP development: research, writing, compiling and responding to comments, and final revisions.

5-Year Budget Summary by Strategy

Strategy Title	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Coastal Hazards	\$77,550	\$77,550	\$77,550	\$77,550	\$77,550	\$387,750
Cumulative and Secondary Impacts	\$361,900	\$361,900	\$361,900	\$361,900	\$361,900	\$1,809,500
Ocean Resources	\$77,550	\$77,550	\$77,550	\$77,550	\$77,550	\$387,750
Total Funding	\$517,000	\$517,000	\$517,000	\$517,000	\$517,000	\$2,585,000

References

- Archer, Jessica A.; Bennett, Jessica J. 2009. The Washington Marine Shoreline Public Access Project. Beach Environmental Assessment, Communication and Health Program. Washington State Department of Ecology, Publication # 09-03-019:
<https://fortress.wa.gov/ecy/publications/summarypages/0903019.html>
- Climate Impacts Group. 2009. The Washington Climate Change Impacts Assessment. M. McGuire Elsner, J. Littell, and L Whitely Binder (eds). Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Oceans, University of Washington, Seattle, Washington. <http://ces.washington.edu/cig/res/ia/waccia.shtml>
- Coastal Zone Management Section 309 Assessment and Program Enhancement Strategy, 1992-1995. May 1992. Washington State Department of Ecology, Shorelands and Environmental Assistance Program. Publication # 05-06-023:
<https://fortress.wa.gov/ecy/publications/summarypages/0506023.html>
- Coastal Zone Management Section 309 Assessment and Program Enhancement Strategy, 1996-2000. April 1997. Washington State Department of Ecology, Shorelands and Environmental Assistance Program. Publication # 97-92:
<https://fortress.wa.gov/ecy/publications/summarypages/9792.html>
- Coastal Zone Management Section 309 Assessment and Program Enhancement Strategy, 2001-2005. January 2001. Washington State Department of Ecology, Shorelands and Environmental Assistance Program. Publication # 01-06-003:
<https://fortress.wa.gov/ecy/publications/summarypages/0106003.html>
- Coastal Zone Management Section 309 Assessment and Program Enhancement Strategy, 2006-2010. August 2006. Washington State Department of Ecology, Shorelands and Environmental Assistance Program. Publication # 06-06-001:
<https://fortress.wa.gov/ecy/publications/summarypages/0606001.html>
- Dalton, M.M., P.W. Mote, and A.K. Snover [Eds.]. 2013. Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities. Washington, DC: Island Press.
<http://ces.washington.edu/db/pdf/daltonetal678.pdf>
- Electric Power Research Institute. (2011). Mapping and assessment of the United States ocean wave energy resource (Technical Report No. 1024637). Retrieved from
<http://www1.eere.energy.gov/water/pdfs/mappingandassessment.pdf>
- Geotechnical Extreme Events Reconnaissance. 2014. Turning Disaster into Knowledge. Sponsored by the National Science Foundation.
<http://snohomishcountywa.gov/DocumentCenter/View/18180>

- Industrial Economics, Inc. (2014). Marine sector analysis report: Marine renewable energy (Sector Analysis Report; Washington Department of Natural Resources Contract No. SC 14-327). Prepared for the Washington Coastal Marine Advisory Council. Retrieved from <http://www.msp.wa.gov/msp-projects/projects/>
- Johannessen, J., and A. MacLennan. 2007. Beaches and bluffs of Puget Sound and the northern straits. Puget Sound Nearshore Partnership, 1-34
http://www.pugetsoundnearshore.org/technical_papers/beaches_bluffs.pdf
- John M. Kleim, Creative Community Solutions, Inc. 2013. Coastal Voices: A report on citizen priorities, interests, and expectations for Marine Spatial Planning along Washington's Pacific Coast. http://www.msp.wa.gov/wp-content/uploads/2013/06/060413_Coastal-Voices-Version-Final.pdf
- Lopez, A., Roberts, B., Heimiller, D., Blair, N., & Porro, G. (2012). U.S. Renewable energy technical potentials: A GIS-based analysis (Technical Report No. NREL/TP-6A20-51946). National Renewable Energy Laboratory. Retrieved from <http://www.nrel.gov/docs/fy12osti/51946.pdf>
- Marine Sector Analysis Report: Aquaculture. October 2014. Prepared by Industrial Economics, Incorporated prepared for Washington Coastal Marine Advisory Council under Contract No. SC 14-327. <http://msp.wa.gov/wp-content/uploads/2014/03/AquacultureSectorAnalysis.pdf>
- Marine Sector Analysis Report: Non-tribal Fishing. October 2014. Prepared by Industrial Economics, Incorporated prepared for Washington Coastal Marine Advisory Council under Contract No. SC 14-327 <http://msp.wa.gov/wp-content/uploads/2014/03/FishingSectorAnalysis.pdf>
- Marine Sector Analysis Report: Recreation and Tourism. October 2014. Prepared by Industrial Economics, Incorporated prepared for Washington Coastal Marine Advisory Council under Contract No. SC 14-327. <http://msp.wa.gov/wp-content/uploads/2014/03/RecreationSectorAnalysis.pdf>
- Nathan Wood and Christopher Souldard. 2008. Variations in Community Exposure and Sensitivity to Tsunami Hazards on the Open-Ocean and Strait of Juan de Fuca Coasts of Washington. U.S. Geological Survey, January 9, 2008 (March 5, 2008).
<http://pubs.usgs.gov/sir/2008/5004/>
- National Research Council. 2012. Sea-Level Rise for the Coast of California, Oregon, and Washington: Past, Present, and Future. National Academy of Sciences.
<http://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington>

- Ocean Acidification: From Knowledge to Action, Washington State's Strategic Response. H. Adelsman and L. Whitely Binder (eds). November 2012. Washington Department of Ecology, Olympia, Washington. Publication no. 12-01-015.
<https://fortress.wa.gov/ecy/publications/documents/1201015.pdf>
- Ocean Conservancy. 2013. Working for Clean Beaches and Clean Water.
<http://www.oceanconservancy.org/our-work/international-coastal-cleanup/icc-2013-report.pdf>
- Ocean Conservancy. 2014. Turning the Tide on Trash. <http://www.oceanconservancy.org/our-work/marine-debris/icc-data-2014.pdf>
- Pacific Shellfish Institute. 2010. Shellfish: West Coast Research & Information Needs and Priorities. <http://pacshell.org/pdf/ShellfishNeedsAssessment2011.pdf>
- Principle Power (May 7, 2014). Press Release: U.S. Department of Energy Supports Oregon Offshore Wind with Grant Accelerating Development of WindFloat Pacific Project. Retrieved from http://www.principlepowerinc.com/news/press_PPI_DOE_DSLCT.html.
- Proceedings of a State of the Science Workshop, May 2009, U.S. Geological Survey Special Investigations Report 2010-5254, p 19-33.
http://pubs.usgs.gov/sir/2010/5254/pdf/sir20105254_chap2.pdf
- Puget Sound Nearshore Ecosystem Restoration Project (PSNERP). Management Measures Report: Appendices (related to sea level rise)
http://www.pugetsoundnearshore.org/technical_papers/management_measures.pdf
- Ruggiero, Peter, Kratzmann, M.G., Himmelstoss, E.A., Reid, David, Allan, John, and Kaminsky, George, 2013, National assessment of shoreline change—Historical shoreline change along the Pacific Northwest coast: U.S. Geological Survey Open-File Report 2012–1007, 62 p.
<http://pubs.usgs.gov/of/2012/1007/>
- Ruggiero, P. and Voigt, B. 2000. Beach monitoring in the Columbia River littoral cell, 1997–2000, Washington State Department of Ecology, Coastal Monitoring & Analysis Program, Publication No. 00-06-26, 112 p. (SWCES Publication No. 59)
http://www.ecy.wa.gov/programs/sea/swces/products/publications/pubs_author.htm
- Scott, James; Reuling, Melly. 1986. Washington Public Shore Guide: Marine Waters. University of Washington Press. Department of Ecology.

Section 309 Program Guidance 2016 to 2020 Enhancement Cycle. June 2014. National Oceanic and Atmospheric Administration, Office for Coastal Management.

http://coast.noaa.gov/czm/media/Sect-309_Guidance_June2014.pdf

Shipman, H., 1990, Vertical land movement in coastal Washington: Washington Geologic Newsletter, v. 18, p. 26-33.

Shipman, H. 2004. Coastal bluffs and sea cliffs on Puget Sound, Washington, in Hampton, M.A., and Griggs, G.B., eds., Formation, Evolution, and Stability of Coastal Cliffs -- Status and Trends: Professional Paper 1693, U.S. Geological Survey, p. 81-94.

<http://www.ecy.wa.gov/biblio/0406029.html>

Shipman, H. 2009. The response of the Salish Sea to rising sea level: A geomorphic perspective, Puget Sound Georgia Basin Ecosystem Conference, Seattle, February 9-11, 2009.

http://depts.washington.edu/uwconf/psgb/proceedings/papers/6a_shipm.pdf

Shipman, H. 2010. The Geomorphic Setting of Puget Sound: Implications for Shoreline Erosion and the Impacts of Erosion Control Structures, in Shipman, H., Dethier, M.N., Gelfenbaum, G., Fresh, K.L., Dinicola, R.S. (editors), 2010, Puget Sound Shorelines and the Impacts of Armoring – Proceedings of a State of the Science Workshop.

http://pubs.usgs.gov/sir/2010/5254/pdf/sir20105254_chap2.pdf

Snohomish County Public Utility District No. 1. (2014, September 30). Press Release: PUD tidal project not to advance. Snohomish County Public Utility District No. 1. Retrieved from

<http://www.snopud.com/PowerSupply/tidal/tidalpress.ashx>

University of Washington – Baker, Kate; Huang, Meihui; Januzzi, Alex; Monsoor, Anthony. 2014. Agency Coordination of Offshore Wind Projects in Washington State. University of Washington Environmental Management Certificate Program, Keystone Project.

<http://depts.washington.edu/poeweb/pdfs/keystones/2014%20OSE%20Report.pdf>

US Department of Agriculture National Agricultural Statistics Service, May 2014. Census of Agriculture, United States Summary of State Data, Volume 1, Geographic Area Series, Part 51. Publication AC-12-A-51, May 2014. <http://agcensus.usda.gov/index.php/>

Van Cleve, F. B., Judd, C., Radil, A., Ahmann, J., & Geerlofs, S. H. (2013). Geospatial analysis of technical and economic suitability for renewable ocean energy development on Washington's outer coast (No. PNNL-22554). Pacific Northwest National Laboratory.

Retrieved from http://www.msp.wa.gov/wp-content/uploads/2013/07/PNNL_EnergySuitability_Final-Report.pdf

- Washington Coast Marine Spatial Planning Assessment of Shipping Sector: Final Sector Assessment. August 2014. Prepared by BST Associates for Washington Department of Natural Resources. <http://msp.wa.gov/wp-content/uploads/2014/03/ShippingSectorAnalysis.pdf>
- Washington Emergency Management Division of the Washington Military Department. 2013. Washington State Enhanced Hazard Mitigation Plan. <http://mil.wa.gov/other-links/enhanced-hazard-mitigation-plan>
- Washington State Department of Ecology. 2011. State of Washington RiskMAP Business Plan 2011, in partnership with FEMA. http://www.ecy.wa.gov/programs/sea/floods/riskmap_pdf/riskmap_business_plan.pdf
- Washington State Department of Ecology. 2002. Brochure, Seawater Intrusion in Washington. Publication # 02-11-018
<https://fortress.wa.gov/ecy/publications/SummaryPages/0211018.html>
- Washington State Department of Ecology. 2012. Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy. Publication # 12-01-004
http://www.ecy.wa.gov/climatechange/ipa_responsestrategy.htm#REPORT
- Washington Department of Ecology. 2012. Shoreline Master Program Updates: Aquaculture Interim Guidance. Shoreline Master Program Handbook. http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/aquaculture_guidance.pdf
- Washington State Department of Ecology. 2012. Washington State Marine Debris Response Plan. http://marinedebris.wa.gov/docs/responseplan_marinedebris.pdf
- Washington Department of Ecology. 2015. Focus on Shores, Shoreline Master Programs: commercial salmon net pens. Shorelands and Environmental Assistance Program, Publication # 15-06-006. <https://fortress.wa.gov/ecy/publications/documents/1506006.pdf>
- Washington Department of Fish and Wildlife. 2015. Water Access Sites: http://wdfw.wa.gov/lands/water_access/county_map.html
- Washington State Department of Transportation Rail Division. 2014. Landslide Mitigation Action Plan. <http://www.wsdot.wa.gov/NR/rdonlyres/8B3B653E-5C50-4E2B-977E-AE5AB36751B7/0/LandslideMitigationActionPlan.pdf>
- Washington State Recreation and Conservation Office. 2013. Outdoor Recreation in Washington, The 2013 State Comprehensive Outdoor Recreation Plan. http://www.recpro.org/assets/Library/SCORPs/wa_scorp_2013.pdf

Appendix A: Stakeholder Engagement

Washington has a rich level of existing partnerships for coastal management. This strong network allowed staff to reach out to a number of internal and external representatives from state and federal agencies to gather data, information, and expertise. The level of involvement and input varied based on the enhancement area, however, this work included individual and group meetings, review and feedback on draft documents, and coordinated efforts to align strategies with key partnering agencies:

NOAA Marine Debris Program Pacific Northwest Region
NOAA Office for Coastal Management
NOAA Olympic Coast National Marine Sanctuary
Northwest Straits Marine Conservation Initiative
Puget Sound Partnership
University of Washington Climate Impacts Group
US Army Corps of Engineers
US Thirteenth Coast Guard District
Washington Department of Agriculture
Washington Department of Commerce
Washington Department of Ecology Floods Program
Washington Department of Ecology Shorelands and Environmental Assistance
Washington Department of Fish and Wildlife
Washington Department of Health
Washington Department of Natural Resources
Washington Military Department's Emergency Management Division
Washington Sea Grant
Washington State Energy Facility Site Evaluation Council
Washington State Ocean Caucus
Washington State Parks and Recreation Commission

Appendix B: Public Comments and Response Summary

The public comment period for the 2016-2020 Assessment and Strategy was open for 36 days, June 11 through July 17, 2015. In addition to the stakeholder collaboration described in Appendix A, the draft document was described and posted on our CZMP website,³⁹ available on the agency Public Involvement Calendar, and sent to key shoreline and coastal management mailing lists (e.g., Shoreline Master Program Interested Parties).⁴⁰

A total of two responses were submitted, Doug Peters (Commerce) and Eliza Ghitis (Northwest Indian Fisheries Commission). These comments were minor, including grammatical corrections and areas where additional information could be provided to clarify topics in the Coastal Hazards Assessment. WCZMP staff included the appropriate additions and modifications in the final draft submitted to NOAA.

³⁹ CZMP 309 Assessment and Strategy websites: <http://www.ecy.wa.gov/programs/sea/czm/Grants.html>;
<http://www.ecy.wa.gov/programs/sea/czm/309-improv.html>

⁴⁰ Washington Department of Ecology Public Involvement Calendar: <https://fortress.wa.gov/ecy/publiccalendar/>