

CUMULATIVE IMPACTS ANALYSIS

FOR SHORELINES IN WAHKIAKUM COUNTY AND THE TOWN OF CATHLAMET



PREPARED BY:



WWW.COLUMBIAESTUARY.ORG
818 COMMERCIAL STREET, SUITE 203
ASTORIA, OR 97103
(503) 325 - 0435



THIS REPORT WAS FUNDED IN PART THROUGH
A GRANT FROM THE WASHINGTON
DEPARTMENT OF ECOLOGY

Contents

1. Introduction	3
2. Methods	5
3. Existing Ecological Functions.....	6
4. Anticipated Future Development, Impacts, and SMP Protections	8
5. Other Programs Protecting Shorelines	31
6. Restoration Plan Summary.....	35
7. Cumulative Impacts Summary	36
8. No-Net Loss Report	37
References	38
Table 1: List of Watersheds.....	5
Table 2: Foreseeable development, protections, & anticipated impacts.....	13
Table 3: SMP Environment designations, WAC recommendations, & implications.....	18

1. Introduction

This Cumulative Impacts Analysis assesses the proposed Wahkiakum County and Town of Cathlamet Shoreline Master Program (SMP) policies and regulations and existing shoreline conditions to determine if future development allowed by these provisions can result in no net loss of ecological function. This analysis is a required step in completing the Shoreline Master Program, and it is a tool for the County and Town to use in evaluating the Draft SMP prior to adoption to ensure WAC consistency.

The Shoreline Management Act and Master Program Guidelines (SMP Guidelines; WAC 173-26) require local jurisdictions to regulate new development to “achieve no net loss of shoreline ecological function.” To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts ((WAC 173-26-186(8)(d))). The Inventory and Characterization Report documents the baseline ecological functions that are, on a net basis, to be protected.

The Cumulative Impacts Analysis assesses current shoreline conditions documented In the Inventory and Characterization Report, the policies, regulations, and mitigation requirements in the draft SMP, proposed restoration actions in the Shoreline Restoration Plan, the effects of other regulations, and predictable future development trends to assess likely cumulative impacts to ecological function.

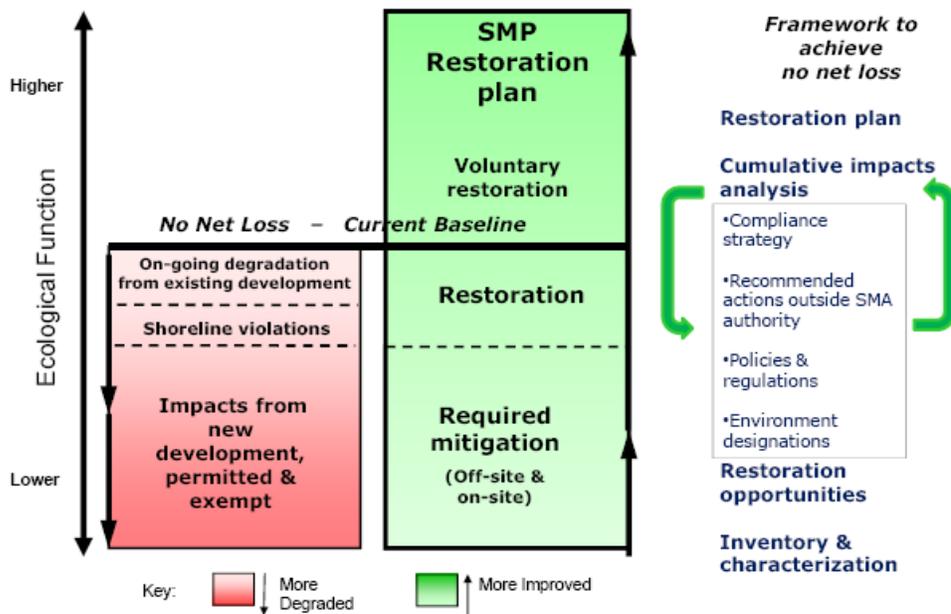


Figure 1: Framework to achieve no net loss of ecological function. (Department of Ecology)

While implementing this SMP, the County and Town are required to track shoreline conditions, land use and development activities, and policy and regulatory effectiveness toward no-net loss of ecological function. Additionally on a case by case basis while considering shoreline development applications, the County and Town must consider whether SMP implementation is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the Inventory and Characterization Report.

The County and Town will conduct an annual review of exemptions and permits for the prior year to assess their impacts on ecological function. A reassessment of conditions, policies and regulations will be conducted during the required SMP periodic review, due by 2022 and every eight years thereafter. The County and Town must identify metrics and then monitor, record and maintain the metrics to compare them with current shoreline conditions documented in the Inventory and Characterization Report. The County can use its continued monitoring and eight year periodic review to modify the SMP as needed toward changing circumstances and ensuring no net loss of ecological function in the long term.

Contents in the remainder of this document include:

Chapter 2 describes the methods used to complete the Cumulative Impacts Analysis

Chapter 3 describes existing shoreline conditions using information from the Inventory and Characterization Report.

Chapter 4 describes likely future development based on existing land use and shoreline conditions, recent trends, and permit history; based on the assumption that future land use trends will be roughly comparable to past trends. Chapter 4 also describes how the SMP regulations protect ecological functions from otherwise likely impacts of foreseeable development, and how the SMP regulations fall short of protecting against incremental impacts, the impacts of unpermitted development, and impacts from uses not substantially regulated by the SMP. The role of the environment designation system and the role of critical areas regulations are discussed.

Chapter 5 describes how programs other than the SMP will protect ecological functions.

Chapter 6 describes how the SMP Restoration Plan will improve ecological functions.

Chapter 7 uses information from the previous Chapters to holistically describe likely cumulative impacts.

Chapter 8 constitutes the No-net loss Report for the SMP, a required element of the update process.

2. Methods

Hydrologic Unit Code (HUC) 10 watersheds and the Water Resource Inventory Areas (WRIAs) are the geographic units of analysis. WRIAs are designated by Washington Department of Ecology as administrative units for watershed planning in the state. The units are listed below: WRIA 24 (Willapa) consists of a part of the Naselle River – Frontal Willapa Bay watershed. WRIA 25 (Grays-Elochoman) consists of Wallacut River – Frontal Columbia River, Grays Bay, Baker Bay – Columbia River, Elochoman River – Frontal Columbia, Cathlamet Channel – Columbia River and Germany Creek – Columbia River watersheds.

Table 1: List of Watersheds

WRIA Watershed	HUC 10 Watershed	Acres (land + water)	Tributary to
WRIA 24 (Willapa)	Naselle River – Frontal Willapa Bay	2,289	Willapa Bay
WRIA 25 (Grays-Elochoman)	Wallacut River – Frontal Columbia River	180,794	Columbia River
	Grays Bay		
	Baker Bay – Columbia River		
	Elochoman River – Frontal Columbia River		
	Cathlamet Channel – Columbia River		
Germany Creek – Columbia River			

The following steps were followed to complete the Cumulative Impacts Analysis.

Identify existing shoreline ecological functions. Existing ecological functions were characterized by HUC 10 Watershed and by shoreline reaches in the Inventory and Characterization Report. Existing conditions described in this report represent a summary of the Inventory and Characterization Report.

Determine reasonably foreseeable future development. An assessment of foreseeable shoreline uses and activities was conducted, based on data from the Washington Office of Financial Management, US Census Bureau, and local permit records.

Determine ecological functions at risk from foreseeable development. The ecological functions that could be at risk of degradation from foreseeable development were described.

Determine how impacts will be adequately avoided or mitigated. The next step describes how the SMP will mitigate potential impacts of foreseeable development, focusing on at risk ecological functions. The role of environment designations, standards, and critical areas regulations were considered here.

Evaluate incremental impacts. The next step evaluates incremental impacts anticipated from development and other activities in the shoreline after mitigation is applied, and the possibility and the net effect on shoreline ecological function of implementing the Restoration Plan.

3. Existing Ecological Functions

Ecological functions are described in detail in the Inventory and Characterization Report (ICR). The main body of the ICR describes conditions for each HUC 10 watershed. The Reach Inventory matrix describes ecological functions at the reach scale. The Ecosystem Wide Process Analysis describes conditions at an even finer scale. Ecological function conditions vary substantially within watersheds and even within reaches, however some generalizations and themes are provided here.

Habitat

Despite widespread and extensive habitat modifications including levees, agriculture, commercial forestry, and residential development, County shorelines provide habitat to hundreds of species, including dozens of federally listed species and state priority species and habitats. There are 13 (thirteen) federally listed fish that migrate, spawn, or rear in County and Town aquatic habitats. Typical salmon habitat limiting factors include low summer flows, high peak flows, high temperatures, sediment, lack of LWD, and barriers to off channel habitat.

The Town of Cathlamet's terrestrial shoreline habitat is severely altered, with residential development on lots of 5000 square feet or less, extensive impervious surfaces associated with water dependent uses in the town center, over water structures, extensive riprapping, a marina, and open space that is none the less heavily impacted by historic uses. The Town of Cathlamet's aquatic habitat is limited to the Columbia River and Elochoman Slough.

Water Quality

The primary water quality issues in Wahkiakum County are temperature and sediment in so much as they affect fish habitat. 27 of the 187 reaches (14%) in the WRIAs 24 and 25 planning area are on the 2012 303(d) list. Rivers and associated tributaries within SMP jurisdiction in Wahkiakum County that do not contain 303 (d) listed reaches include:

- Naselle River
- Salmon Creek
- Deep River
- Mill Creek

Listed impaired stream reaches include river and tributary reaches in the Columbia River (North, south, and east of Puget Island), Elochoman River, Skamokawa River, Jim Crow Creek, and Upper Grays River. All impaired reaches, with the exception of the sections of the Columbia River and Elochoman River, are listed for water temperature. The Columbia River is listed as impaired for (Category 5, 2, 3, 7, and 8 TCDD) Dioxins. A section of the Elochoman River is listed for Bacteria.

Hydrology

The hydrology of the Columbia River is modified by levees, dikes, and upstream dams located outside the County and shoreline jurisdiction. The hydrology of Columbia River tributaries in their floodplains is modified by dikes and levees, and the historic legacy of forest practice induced sedimentation. Low summer stream flows are a contributing factor to 303(d) listings for temperature in several stream sections. Low flows and peak flows are considered salmon habitat limiting factors in several streams.

Floodplains and channel migration zones are extensive. River systems in Wahkiakum County that experience the most frequent flooding include the Grays River, Elochoman River and the Columbia River. Major active channel migration areas include the upper Grays River basin in Hull Creek, West Fork – Grays River and in upper Fossil Creek. Active channel migration areas occur in Skamokawa Creek upstream of the West Fork of Skamokawa Creek, particularly in Wilson Creek and between Standard Creek and Falk Creek. In the Elochoman River, active channel migration areas occur throughout the watershed as far downstream as below Beaver Creek to the headwaters.

4. Anticipated Future Development, Impacts, and SMP Protections

Future development is anticipated to be very limited throughout the County and Town shoreline jurisdiction compared with development trends typical in many other parts of Washington. Trends in the County and Town from the last ten to 15 years are expected to continue in the 20 year SMP planning period. These include:

- Modest new residential subdivision and development in shorelines, primarily on Puget Island and in the Elochoman Valley in areas currently used for agriculture or among existing residential development. Densities are expected to be determined by landowner preferences and sanitary septic regulations.
- Relative to new residential development, there will be more development accessory to existing residential development, such as new and replacement docks and shoreline stabilization.
- Modest amounts of small scale commercial and industrial development, primarily in Cathlamet and in rural population centers such as Grays River and Skamokawa.
- Modest amounts of bridge and culvert replacements on existing public roads.
- Dredging and dredge material disposal at locations where these activities are currently occurring or historically occurred.
- Modest amounts of public access development at sites already developed for that purpose or at sites previously developed for commercial or utility purposes, including waterfront park and boat ramp development.

The SMP employs several interrelated regulatory mechanisms for ensuring no net loss of ecological functions. Environment Designations are assigned to every reach of County and Town shorelines. Within each Environment, specific uses are permitted, conditionally permitted, or prohibited. Use and modification standards are used to prescribe how permitted and conditionally permitted uses and modifications can occur. Critical Areas Regulations provide further protection to ecological functions, primarily in the form of buffers where activities are limited or prohibited, and through the mitigation sequence.

Residential Development

Foreseeable Residential Development

In rapidly developing jurisdictions, a buildable lands analysis can assist in determining whether there is sufficient buildable land to accommodate anticipated population and economic growth and in determining where that growth is likely to occur under environmental and zoning restraints. Wahkiakum County does not have a zoning code that limits uses and densities across the landscape. Recent trends and OFM population projections indicate that both the County and the Town will lose population over the next twenty years. Building permit and shoreline permit data from the last ten to fifteen years is available however. For these reasons, in the Wahkiakum County and Town of Cathlamet context, recent development trends are better indicator of where future development will occur than a buildable lands analysis. The trends and implications for future anticipated development are discussed in the following paragraphs.

Washington OFM estimated that the number of housing units in Wahkiakum County would grow from 2,067 in 2010, to 2,127 in 2015.¹ Extrapolated to 2035, the WA OFM forecast suggests that there will be 2,385 housing units, which is 258 more than in 2015, or about 13 to 14 net new housing units per year.

¹ WA OFM housing estimates. <http://www.ofm.wa.gov/pop/april1/default.asp#housing>

These estimates are consistent with building permit data reported by Wahkiakum County and Town of Cathlamet to the US Census Bureau.

For the nine year period from 2005 through 2014 there were 48 single family residential building permits issued in shoreline jurisdiction. Projected from 2015 to 2035, there would be an additional 121 single family residences in shoreline jurisdiction, or about 5.3 per year, less than half of the extrapolated OFM prediction.

In the 2010-2014 period when there were 49 new residential dwelling building permits issued throughout the County and Town, there were 11 permits issued for new residential development in shoreline jurisdiction. If future shoreline residential development mirrors the 2010-2014 trend, there would be less than half the number of projected new shoreline residences (less than 50).

Thus the anticipated amount of future shoreline jurisdiction residential development in the next twenty years ranges from about 50 units to 120 units (2.5 to 6 units per year). Because all of the shoreline area dwelling units developed in the analysis period were single family, it is anticipated that nearly all of the dwelling units developed in the next 20 years will be single family units as well. Accessory dwelling units (e.g. guests/mother-in-law cottages) are increasing in popularity in Washington and Oregon, and are another form of shoreline residential likely to occur aside from single family dwellings.

Most residential development in the last twenty years has occurred in the Elochoman Valley, unincorporated East Cathlamet, and Puget Island. It is expected that these areas will continue to receive most new residential development. These areas, with the exception of much of the Elochoman Valley, are served by community water/and or sewer systems, facilitating denser development than would otherwise be the case. These areas already have residential development at densities in the 1 dwelling per ½ acre to 5 acre range (i.e. 1:0.5 to 1:5), and have substantial amounts of undeveloped land surrounding and among the existing development and in close proximity to public and private utility services and roads.

Otherwise, residential development, along with other types of development, could occur throughout the County at densities and in forms primarily determined by available infrastructure, geography, this SMP, and sanitary/ septic regulations.

Along the Town of Cathlamet's waterfront between the Town Dock and the former sewage lagoons, existing water dependent commercial uses could be redeveloped to residential uses under Town zoning. Additionally in Town of Cathlamet on Elochoman Slough North of the Marina, there is a currently vacant former log sorting yard that could be redeveloped to residential uses under Town zoning. While single family residential is included among preferred shoreline uses by the SMA, it is not a water-dependent use and can potentially displace other water oriented activities from key commercial, industrial, and public access locations. A balanced approach is needed to ensure appropriate use, protection, and restoration of shoreline resources.

Shoreline stabilization is anticipated to primarily occur in areas with existing residential development. Small portions of Columbia River shoreline of Puget Island are known for unstable shorelines adjacent to existing residential development.

SMP Protections for Residential Development Impacts

Residences can be permitted in all of the environment designations, although a conditional use permit is required in the Natural Environment. Riparian buffer regulations and the standard 15 ft. setback from buffers will lead to the avoidance of most impacts to ecological functions that would otherwise result from residential structures and accessory upland uses and development. Mitigation sequencing will ensure that most remaining impacts are minimized or compensated for. Regulations on subdivision require every lot include buildable areas outside of critical areas and their buffers, and require that applicants demonstrate that shoreline stabilization will not be needed to protect residences. Shoreline stabilization requires mitigation sequencing and otherwise is subject to SMP regulations that closely mirror the relevant SMA WAC provisions.

Anticipated Impacts of Residential Development

Inadvertent ecological function impacts may occur from unpermitted development, and unpermitted or unregulated activities associated with residential development, such as private recreational use of riparian buffers, impacts of pets on riparian and wetland habitats, and improper storage or disposal of household chemicals.

Although legally established non-conforming uses and development enjoy some protections under the SMP, their replacement will entail some enhanced protection of ecological functions over time, balancing some of the ecological function impacts of new development.

A primary potential impact associated with residential development regulated through other comprehensive regulatory schemes is withdrawal of groundwater and surface water for domestic use and associated impacts on stream flow and stream temperature. Impacts associated with residential docks and shoreline stabilization are addressed in the following sections.

In Water Development

Foreseeable In Water Development

In water development is anticipated to primarily take the form of docks serving residences, and other shoreline modifications to improve public access.

These developments will primarily occur where existing and future residential development is located, but will likely be limited to the tidally influenced sloughs and channels associated with the Columbia River. Water depths and/or velocities otherwise limit the viability of residential docks. Waterbodies anticipated to receive new and replacement docks include Puget Island's Welcome Slough and Birnie Slough, the 4000 ft. of Columbia River Shoreline upstream from Welcome Slough that is protected from navigation channel ship wakes by Coffeepot Island, Elochoman Slough's East Bank in the Town of Cathlamet, the lower 1500 ft. of Skamokawa Creek and Steam Boat Slough, and Deep River downstream from the town of Deep River. Extrapolating year 2000 to 2014 new and replacement dock trends (27 total, 1.8 per year), it is anticipated that there will be 36 new or replacement docks in the planning period.

In water modifications to improve public access are anticipated in the Town of Cathlamet at the site of the former sewage treatment lagoons, and at Skamokawa Vista Park to improve or replace the existing boat ramp.

SMP Protections for In Water Development Impacts

The mechanisms that contribute to no net loss from in water development include categorical prohibitions or conditional use requirements in areas adjacent to the Natural Environment, mitigation sequencing, and extensive standard specifications otherwise required.

Anticipated Impacts of In Water Development

Inadvertent ecological function impacts may occur from unpermitted development, and from the aquatic activities associated with in water development. For example, an increase in boat ramps and docks can lead to pollution from motorized vessels, and increase shoreline recreational activity that can disturb aquatic habitats. Although some inadvertent impacts from new modifications will occur despite the SMP protections, the gradual replacement of existing shoreline modifications to the specifications provided in this SMP are expected to improve ecological functions, cumulatively resulting in no net loss of ecological functions.

Dredging Activities

Anticipated Dredging Activities

Maintenance dredging under existing authorizations will occur in the Columbia River Navigation Channel. Other maintenance dredging is likely to occur in Cathlamet Channel, Elochoman Slough, and in the Puget Island-Westport Ferry channel. Additional dredging could conceivably occur in Skamokawa Creek, Baker Bay or around the mouths of Deep River and Grays River. Dredge material disposal is anticipated to occur in the Columbia River Navigation Channel Flowlane, and at various upland and shoreline sites previously vetted through the Lower Columbia River Dredge Material Management Plan, 2002.

SMP Protections for Dredging Activity Impacts

New dredging requires a conditional use permit. Upland and shoreline disposals are limited to selected sites, and otherwise require a conditional use permit. Mitigation sequencing is required.

Anticipated Impacts of Dredging Activities

Cumulative ecological function impacts are not anticipated from dredging and dredge disposal, given SMP and other regulatory protections.

Mining

Anticipated Mining Activities

In stream and shoreline gravel mining is the primary form of mining that has historically occurred in shoreline jurisdiction. It is anticipated that there will be a continued interest in this activity in the future.

SMP Protections for Mining Impacts

Mining requires a conditional use permit and mitigation sequencing, and must conform to standards that will further limit anticipated ecological impacts.

Anticipated Impacts of Mining

Inadvertent ecological function impacts are not anticipated from mining.

Agriculture

Anticipated Agriculture Activities

Agricultural activities have not recently expanded in area or intensity, and are not expected to do so during the planning period.

SMP Protections for Agriculture Impacts

New agriculture is prohibited in the Natural Environment. Critical areas regulations, regulations specific to agriculture, and mitigation sequencing will otherwise limit impacts from new agriculture.

Anticipated Impacts of Agriculture

Any future loss of shoreline function due to agriculture would most likely result from changes to agricultural activities on agricultural land, because these are not regulated by the SMP.

Forest Practices

Anticipated Forest Practices Activities

Forest practices include timber harvesting, road work, and pesticide applications on forest lands, among other activities. Forest practices are anticipated to regularly occur within shoreline jurisdiction, typically upstream of tidally influenced areas and floodplains. Commercial forest land is not anticipated to substantially expand in area.

SMP Protections for Forest Practices Impacts

The SMP regulates forest practices along shorelines of statewide significance, forest land conversions to other uses, and non-harvest forest practices (e.g. road work, site prep).

Anticipated Impacts of Forest Practices

Short term net losses and gains of ecological function within the 20 year planning period are expected as the level of harvest activity in individual watersheds intensifies or wanes, however a long term net loss of function is not anticipated to result from forest practices. To the contrary, as forest roads and water crossings are brought up to Forest Practices Rule standards and riparian areas protected by Forest Practices Rules mature to their full potential, the ecological functions historically impaired by forest practices are expected to improve on a long term net basis.

Other Activities

Other Anticipated Activities

Modest amounts of commercial and industrial activities, replacement of existing transportation infrastructure, and new utility infrastructure are anticipated in shoreline jurisdiction, among and adjacent to where each of these activities currently exist and have historically occurred.

SMP Protections for Other Activity Impacts

The SMP critical areas regulations, mitigation sequencing requirements, and regulations specific to individual uses and modifications protect ecological functions.

Table 2: Foreseeable development, protections, & anticipated impacts.

Use/ Activity/ Modification	Ecological Functions Most Affected	Current Uses, Activities, & Modifications	Foreseeable Uses, Activities & Modifications	SMP Provisions	Other Regulatory Programs	Foreseeable Ecological Impacts
On-site Septic Systems	Failing septic systems may deliver pathogens to waterbodies.	On-site septic systems are associated with rural residential and agricultural land uses outside of areas served by central wastewater systems.	On site -septic systems will grow in number commensurate with rural residential development.	Provisions include critical area buffering to prevent pathogen inputs.	Wahkiakum County Department of Public Health septic permitting.	New on-site septic systems may cumulatively contribute to nutrient loading, however are expected to be functional and thus not deliver pathogens to aquatic environments. Wahkiakum County's Septic permitting process, combined with SMP standards requiring new development and intensification of existing development to demonstrate septic system functionality, will over time result in net improvement of septic system performance and shoreline ecological functions.
New Agriculture on land not currently in agricultural use	Riparian vegetation removal impacts riparian habitat, causes erosion to waterbodies, limits the riparian function of limiting upland erosion to waterbodies, and limits the potential for riparian vegetation to maintain stream temperatures and deliver large woody debris to streams. Fertilizers and animal waste deliver nutrients to water bodies.	Agriculture is a predominant land use in floodplains. Cattle grazing is a predominant form of agriculture.	Agriculture activities will continue where they currently exist, will likely not substantially expand, and on Puget Island and in the Elochoman Valley will be partly replaced by residential uses. There are no clear trends in agricultural uses changing to other or more intensive types of agricultural.	Provisions include SMP Critical Areas Regulations, limiting livestock intrusion to surface water, water quality contamination from the use of fertilizers and pesticides, and manure management requirements. Commercial feedlots are only permitted in Rural Conservancy and there may only be approved as a conditional use.	Department of Ecology Concentrated Animal Feeding Operation General Permit (NPDES); Department of Ecology and Department of Agriculture pesticide application regulations;	New agricultural development will conform to the SMP standards for protecting water quality and habitat. Changes from an existing agricultural use to a different agricultural use are changes in agricultural practices and technologies are not considered new agriculture, thus there could be impacts associated with these changes that are not addressed by the SMP or other regulations.
Aquaculture	Net pen aquaculture facilities can develop pathogens that spread to wild fish populations. Net pen aquaculture can have temporary impacts on sediment quality and benthic life which surrounds the net pen. The area can recover after the net pen is removed.	Net pen aquaculture activities take place intermittently at the Cathlamet Town Dock. Fish hatcheries operate on the Grays River and Elochoman River.	Additional net pen aquaculture may occur in the Columbia river.	Aquaculture requires a CUP, and through that process must demonstrate that it will not cause a net loss of ecological functions. Aquaculture is a water dependent use and thus a preferred use under the SMA.	WDFW Aquaculture Registration and Transfer Permit; Department of Health Aquatic Farm Registration and Shellfish Operation License; Department of Natural Resources Aquatic Use Authorization; Department of Ecology permits for waste discharge.	Pathogen related impacts are expected to be addressed in the design of aquaculture facilities as prescribed in the permitting standards, and as conditions of approval in the conditional use permitting process.
Boating Facilities	Any facilities that serve boats are at increased risk of accidental or illegal discharges of hazardous waste and sewage. Marinas are hubs of boating activity. Docks and covered moorage shades out native aquatic vegetation. Historically, materials used preserve wooden docks and pilings were toxic. Docks and boat ramps can disrupt natural hydrologic cycles, and create areas of relative erosion and accretion.	Docks are the primary form of overwater structure and boating facility in the County. Docks are primarily located near residential uses on shorelines with sufficient water depth, slow flowing water, and protection from large vessel wakes. There is one marina and there are several boat ramps.	More new and replacement docks to serve residences are anticipated among the same areas where they currently occur. No new marinas or marina expansions are anticipated. Replacement or expansion of boat ramps is anticipated.	Docks to serve residential uses are a preferred SMA use. SMP provisions will reduce the number of docks otherwise created by requiring shared docks in some cases. The SMP provides specifications for dock location and design to limit ecological function impacts. Covered moorage is prohibited in most situations. Marina's must provide for hazardous waste disposal and sewage pump out. Location and design specifications for marinas and boat ramps are provided.	WDFW HPA and Corps of Engineers Section 10 permits	A limited amount of illicit sewage and hazardous waste discharge is expected, despite the SMP and other regulatory programs. Otherwise, ecological function impacts will be addressed by prescriptive SMP permitting standards including the mitigation sequence, and other regulatory programs.
Breakwaters, Jetties, Groins, and Pile Dikes	These structures can disrupt natural hydrologic cycles, and create areas of relative erosion and accretion. This includes the potential for developed	There are no major breakwaters, jetties, or groins. There are pile dikes in the Columbia River used	No new structures are anticipated. Existing pile dikes may be replaced or	The listed structures are conditional uses throughout shoreline jurisdiction. Proponents must demonstrate they are the minimum size necessary to achieve their public	WDFW HPA and Corps of Engineers Section 10 permits	The conditional use permitting process and Critical Areas Regulations will address the impacts from these structures.

	shorelines adjacent to the pile dikes to be eroded by water flowing between the pile dike and the shoreline, thus indirectly necessitating shoreline nourishment or shoreline stabilization, as may be the case with Columbia River pile dikes on Puget Island.	to maintain the Columbia River Navigation Channel.	expanded.	purpose. They must be designed by an engineer and a biologist. They must follow the mitigation sequence.		Pile Dikes may provide some habitat benefits, creating shallow water habitat and mimicking large woody debris.
Use/ Activity/ Modification	Ecological Functions Most Affected	Current Uses, Activities, & Modifications	Foreseeable Uses, Activities & Modifications	SMP Provisions	Other Regulatory Programs	Foreseeable Ecological Impacts
Commercial & Industrial	To the extent that commercial and industrial development is associated with clearing/grading, increased impervious surfaces, landscaped areas, and increased vehicle traffic, it may increase stream flashiness, erode sediment, and deliver nutrients and toxic substances, and eliminate or reduce riparian and wetland functions. Particular uses will be associated with various forms of regulated point source discharges, and accidental or unregulated discharges of substances harmful to water quality and habitat.	There are few commercial and industrial uses in the County and Town, though they take variety of forms. There are retail commercial uses on shorelines in Grays River, Skamokawa, and Cathlamet. There are water dependent commercial uses on shorelines in Cathlamet.	Modest new and redevelopment commercial and industrial use is expected, including potential redevelopment or intensification of existing water dependent commercial uses in Cathlamet, and redevelopment of former log sorting yards in Cathlamet and Deep River. Increased demand for water enjoyment commercial uses in Cathlamet and other activity centers is anticipated.	Commercial and industrial uses are encouraged to locate where those uses already occur, and there are provisions limiting other uses from locating in those areas. Parking is limited to the minimum necessary. These uses are a conditional use in several environment designations. Water dependent uses are SMA preferred uses. Non-water oriented uses are prohibited throughout shoreline jurisdiction, except they may be permitted as a conditional use in the Medium Intensity and High Intensity Environments. All Commercial/Industrial uses are prohibited in the Natural Environment.	NPDES permits and others depending on the proposal details.	Impacts of commercial and industrial uses vary depending on the particular use, and are primarily addressed through the SMP Critical Areas Regulations in addition to the environment designation system.
Dredging and Dredge Disposal	Dredging and dredge material disposal removes and covers aquatic and riparian vegetation, can create water column turbidity that is harmful to fish, and can disturb and deposit toxic substances.	The Columbia river navigation channel is actively dredged, with disposal occurring at several shoreline and upland sites. Cathlamet Channel is dredged occasionally.	Cathlamet Channel, Elochoman Slough, lower Skamokawa Creek, and the mouths of Deep River and Grays River may be dredged, with disposal occurring in the Columbia River Flowlane or at nearby previously vetted sites.	New development must be sited to avoid and minimize the need for dredging. Dredging locations and depths, and dredge disposal locations are generally limited to those previously conducted. Disposal impacts to habitat and vegetation are primarily controlled by requiring a conditional use permit for new disposal sites, requiring that a qualified professional demonstrate that significant habitats will not be impacted, and by imposing several objective standards that must be met in addition to following the mitigation sequence.	USACE Section 404, ESA and CZMA processes, WDFW HPA permitting, and Ecology Water Quality Certification. USACE Sediment Quality Evaluation process informs aforementioned permits.	SMP regulations, including the mitigation sequence and other regulatory programs are expected to address the ecological function impacts of dredging and dredge material disposal.
Fill and Excavation	Fill and excavation may cause erosion, may remove riparian and aquatic vegetation, and may replace aquatic and riparian habitats with other habitats or non-functional habitats.	Fills and excavations above the ordinary high water mark are associated with the modest amounts of development occurring throughout the County. Aquatic fills and excavations are rare, and mostly associated with projects to improve ecological function, such as culvert replacements or restoration projects.	Modest amounts of fill and excavation above the ordinary high water mark are expected to continue. Aquatic fills and excavations are expected to be rare, and only associated with ecological restoration or public access improvements.	Temporary and permanent impacts of fill and excavation are addressed by the critical areas regulations and mitigation sequence.	NPDES SWPPP, Corps Section 10 Permits, WDFW HPA.	Increased erosion will occur during fill and excavation activities. Permanent impacts are expected to be addressed by the SMP regulations and mitigation sequence.

Use/ Activity/ Modification	Ecological Functions Most Affected	Current Uses, Activities, & Modifications	Foreseeable Uses, Activities & Modifications	SMP Provisions	Other Regulatory Programs	Foreseeable Ecological Impacts
Forest Practices	<p>Timber harvests and forest roads cause erosion and resulting sedimentation of stream beds.</p> <p>Riparian vegetation removal damages riparian habitat, and reduces stream shading.</p> <p>Timber harvest and forest roads increase stream flashiness</p>	Forest practices are widespread and a dominant feature of the landscape upstream and upland from floodplains.	The geographic extent of forest practices is not expected to increase, although periods of relatively intensive and less intensive activity may occur in any given watershed.	<p>In shorelines of statewide significance, harvests are limited by the SMP per minimum SMA requirements.</p> <p>Forest practice conversions to others uses are regulated by the SMP, including the SMP Critical Area Regulations.</p>	Washington Forest Practices Act and implementing Rules regulate most forest practices in shoreline jurisdiction.	<p>Ongoing erosion from existing and historic forest roads will continue but gradually decrease as roads are brought into compliance with the Forest Practices Act.</p> <p>Impacts of forest practices in the future will primarily be limited by the Forest Practices Act.</p> <p>In the years following relatively intensive harvesting, a given watershed may experience net loss of ecological function in terms of hydrology and sedimentation of spawning beds, however considered across larger time scales, net loss of ecological functions resulting from forest practices are not expected.</p>
Habitat and Natural System Enhancement	Impacts are temporary and primarily related to erosion. Restoration projects create net increases in ecological function.	Restoration projects have primarily occurred in floodplains, and include dike breaching, and excavation and grading to create wetland habitats.	Restoration projects are expected to continue in floodplains.	Restoration projects must be carried out in accordance with a restoration plan, and must include maintenance and monitoring.	WDFW HPA, Corps. Section 10 permits and others depending on project details.	Restoration projects are particularly expected to increase recruitment of LWD, increase the function of various wetland and riparian habitats, increase the amount of off channel fish habitat, and improve stream hydrology.
In Stream Structures	Dams reduce large woody debris recruitment, prevent fish passage, functionally divide aquatic systems, and eliminate natural hydrological cycles	There are currently no major dams.	A dam for the purposes of hydroelectric, flood control, and habitat enhancement purposes has been considered in the Grays River Watershed. Agricultural water diversion dams may be developed.	<p>Provisions include that habitat and species protection and restoration is the most emphasized criteria in deciding whether to permit an in stream structure, and that in stream structures may only be permitted as conditional uses.</p> <p>Provisions include that habitat and species protection and restoration is the most emphasized criteria in deciding whether to permit a dam, and that dams and other in stream diversion structures may only be permitted as conditional uses.</p>	<p>WDFW HPA, Corps. Section 10 permits,</p> <p>Assuming a federal nexus, ESA and CZMA processes.</p> <p>Washington Department of Ecology dam and reservoir permits.</p> <p>WDFW HPA.</p>	SMP regulations are expected to address the ecological impacts of dams, though none are expected to be developed.
Mining	Mining may involve clearing or disturbance of riparian vegetation, sediment runoff from upland operations, disturbance of aquatic substrates, and removal of gravel from the stream system,	Gravel mining has historically occurred in stream gravel bars throughout the county.	Demand for gravel mining to supply gravel and to reduce flood hazard and bank erosion is expected	Renewals, reauthorizations, and extensions are permitted under the same standards as new mining operations. A Conditional Use Permit is required in the Natural Environment, and in Channel Migration Zones. Mining is not permissible except in locations designated as mineral resource land of long term significance. Critical Areas Regulations and the mitigation sequence address impacts. Significant impacts to system wide gravel transport, priority species habitat, ecological function, bank stability, and flooding are prohibited. Reclamation is required.	Washington Surface Mining Act. WDFW HPA permitting.	SMP regulatory provisions and other regulatory programs are expected to address the ecological impacts of the limited amount of mining that is anticipated.
Recreational Development and Public Access	<p>Public access and recreation sites are associated with dumping of trash and toxic substances, recreational disturbance of riparian and aquatic habitats, and erosion from foot traffic and off road vehicles use.</p> <p>Habitat may be converted to impervious or landscaped areas, increasing runoff and contributing nutrients and other substances associated with landscaping and automobile traffic.</p>	Recreation and public access sites are located throughout the County's shorelines.	Expanded and new recreation facilities are expected at existing recreation sites and at sites that have already been severely altered such as the Cathlamet sewage lagoons.	Non-water oriented recreational development is prohibited. Proponents must demonstrate no net loss of ecological functions.	Varies depending on project details.	Public access is an SMA preferred use. Impacts are expected to be addressed through the Critical Areas Regulations and mitigation sequence. Some impacts are addressed by SMP regulations on parking and boating facilities, among others.
Residential Development	To the extent that residential development is associated with clearing/grading, increased impervious surfaces, landscaped areas, and increased	Residential development at urban densities occurs in Cathlamet, East Cathlamet, Skamokawa, Grays	Rural residential development at moderate paces is expected to occur	New overwater and floating homes are prohibited. A CUP is required for new dwellings in the Natural environment; Subdivisions require a CUP in the Natural SED.	NPDES stormwater pollution prevention permitting for	<p>Residential use is a preferred SMA use.</p> <p>Residential development is expected to be minimal, and to only</p>

	<p>vehicle traffic, it may increase stream flashiness, erode sediment, and deliver nutrients and toxic substances, and eliminate or reduce riparian and wetland functions.</p> <p>Shoreline stabilization and docks are associated with residences.</p> <p>Septic systems are often associated with residential development and are addressed in a separate row of this table.</p> <p>Overwater residences are associated with all of the impacts as upland residences, in addition to the impacts associated with overwater structures.</p>	<p>River, Deep River, Rosburg, and adjacent to some Puget Island shorelines.</p> <p>Residential development at rural intensities and in support of agricultural uses occurs throughout the County's flood plains and lower stream reaches.</p>	<p>primarily in the Elochoman Valley and on Puget Island. Urban residential Development at modest paces is expected to occur in Cathlamet, unincorporated East Cathlamet. And along some Puget island shorelines.</p>	<p>Intensity limitations apply to the other environment designations.</p> <p>New residences and subdivisions must avoid the need for shoreline stabilization.</p> <p>SMP Critical Areas Regulations protect wetlands and habitat and water quality functions. Otherwise single family residences are exempt from obtaining a shoreline substantial development permit, but still must demonstrate compliance with the SMP.</p>	<p>disturbances greater than 1 acre.</p>	<p>rarely occur in locations with highly intact ecological functions.</p> <p>The SMP regulations and particularly the critical areas regulations are expected to address most ecological impacts associated with residential development when it occurs among other residential development or as a conversion of agricultural land.</p> <p>Inadvertent impacts to ecological function are expected from individuals recreating on their shoreline properties, introducing toxic substances to the local environment, and from the occasional failed septic system.</p>
Use/ Activity/ Modification	Ecological Functions Most Affected	Current Uses, Activities, & Modifications	Foreseeable Uses, Activities & Modifications	SMP Provisions	Other Regulatory Programs	Foreseeable Ecological Impacts
Shoreline Stabilization	<p>Structural stabilizations can cause scouring and increased erosion of adjacent shorelines. Structural stabilization replaces aquatic and riparian habitats, and removes vegetation that could otherwise maintain stream temperatures.</p>	<p>Riprap armoring is sporadically present in County and Town shorelines. Notable concentrations are associated with the Cathlamet sewage lagoons and Elochoman Marina, SR 4 adjacent to the Columbia River, Ostervald Road adjacent to the Columbia river on Puget Island. And Altoona Pillar Rock Road adjacent to the Columbia River.</p>	<p>Occasional reinforcement of existing stabilization to protect public roads is expected. New structural stabilization is expected to be rare given SMP restrictions.</p>	<p>New development must demonstrate that stabilization will not be needed. New stabilization must demonstrate imminent threat, that stabilization is the minimum necessary, and that other feasible options have been exhausted. Enlargement or intensification of existing stabilization must be permitted as new stabilization. Critical areas regulations and the mitigation sequence otherwise protect ecological functions.</p>	<p>WDFW HPA, Corps Section 10 permits.</p>	<p>Impacts from new stabilization are expected to be minimal given SMP protections, and will only occur in the course of protecting SMA preferred uses.</p>
Transportation Parking and Circulation	<p>Transportation and parking facilities increase impervious surfaces, introduce toxic substance runoff may replace riparian vegetation,</p> <p>Shoreline stabilization is needed to protect some transportation facilities.</p> <p>Stream crossings may restrict flows.</p>	<p>Public roads are present in much of the shoreline jurisdiction, and run adjacent to many streams. In these cases, they are typically associated with riprap armoring, or are on top of dikes.</p>	<p>New major transportation facilities are not expected. New minor transportation facilities are expected to serve new development.</p>	<p>New parking and transportation facilities can only be located in shoreline jurisdiction to serve authorized uses, and only if other feasible locations outside of shoreline jurisdiction do not exist. Parking must be located landward of the proposed use if feasible. Protection will primarily be afforded by Critical Areas Regulations and the mitigation sequence.</p>	<p>Varies depending on proposal.</p>	<p>Due to low amounts of development in the County and Town, combined with SMP protections, ecological impacts from new transportation facilities are expected to be minimal.</p>
Utilities	<p>Impacts vary depending on the particular proposal. Substantial impacts can occur from construction, maintenance (as in the case of pipeline maintenance), and hazardous materials discharges.</p>	<p>Some water and sewage conveyance and treatment infrastructure is located ins shoreline jurisdiction.</p>	<p>New major utility systems are not anticipated, because local development served by utilities is growing slowly. Natural gas pipelines and an electricity generating dam have been discussed since the last SMP update. The primary form of utility development in the county will be minor expansions to local utility conveyance infrastructure.</p>	<p>All utility system development requires a conditional use permit, unless permitted as local service for an otherwise authorized project. The SMP provides some specification for location and design of various types of utility systems. The SMP Critical Areas Regulations and mitigation sequence otherwise address potential impacts.</p>	<p>Varies depending on proposal.</p>	<p>Ecological impacts from utilities are expected to be minimal, due to low levels of development, and SMP protections.</p>

The Role of Environment Designations

The SMP designates every reach of shoreline in the County and Town to a specific Shoreline Environment Designation (SED) based on WAC Guidelines, ecological functions and existing use and development patterns as described in the ICR, and the County and Town's development aspirations for the future..

Within each environment designation, the SMP determines which uses and activities are either: prohibited, permissible, or only permissible through a shoreline conditional use permit. Also, the Standard Riparian Buffers in the Critical Area Regulations are organized by SED. The environment designations are intended to prevent loss of the existing ecological functions while accommodating preferred SMA uses and precluding the need for preferred SMA uses to substantially expand into less developed areas.

Uses and activities are permitted in an environment designation if objective regulatory standards and the mitigation sequence can ensure no net loss of ecological functions. Some uses and modification that are permitted in a given environment designation are subject to many standards that substantially limit the locations and circumstances under which they could actually be permitted. Structural shoreline stabilization is an example.

Uses and activities are conditionally permitted if less objective standards and proposal and site details need to be considered to ensure no net loss and ensure that neighbors and the community will not be excessively impacted. Dredge material disposal in locations not previously vetted through a regional plan is an example.

Other uses and activities pose too great a risk to ecological functions to be permitted, are not consistent with SMA preference for certain uses, or are incompatible with neighboring uses and development.

The SMP employs the Environment Designation categories recommended by the SMA Guidelines with the following exception:

There is a Mixed Waterfront Environment, that mirrors the criteria and policies of SMA Guidelines' High Intensity Environment, but that is tailored to fit the local shoreline character, mix of existing uses, and ecological functions present in the Town's and County's shorelines.

Following is a table summarizing the criteria used to designate reaches to each environment designation, and the management policies for each environment designation that were used to determine which uses are prohibited, permitted, or conditionally permitted. The table provides an introductory statement for each Environment Designation, explaining the ecological function implications of County / Town designation criteria and management policies for that particular Environment Designation, relative to what would be expected from using the WAC recommended categories.

Table 3: SMP Environment designations, WAC recommendations, & implications.

Table 3. SMP environment designations, WAC recommendations, and implications for ecological functions.			
Aquatic: The aquatic designation criteria and management policies closely resemble the WAC recommendations. There are no differences with implications for impacts to ecological functions.			
WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
<p>Assign an "aquatic" environment designation to lands waterward of the ordinary high-water mark.</p> <p>Local governments may designate submerged and intertidal lands with shoreland designations (e.g., "high-intensity" or "rural conservancy") if the management policies and objectives for aquatic areas are met. In this case, the designation system used must provide regulations for managing submerged and intertidal lands that are clear and consistent with the "aquatic" environment management policies in this chapter. Additionally, local governments may assign an "aquatic" environment designation to wetlands.</p>	<p>1. Criteria: The Aquatic designation is assigned to all shoreline waters in Wahkiakum County and the Town of Cathlamet.,) and includes the area waterward of the OHWM together with their underlying lands and their water column.</p> <p>2.</p>	<p>(A) Allow new over-water structures only for water-dependent uses, public access, or ecological restoration.</p> <p>(B) The size of new over-water structures should be limited to the minimum necessary to support the structure's intended use.</p> <p>(C) In order to reduce the impacts of shoreline development and increase effective use of water resources, multiple use of over-water facilities should be encouraged.</p> <p>(D) All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation, to consider impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.</p> <p>(E) Uses that adversely impact the ecological functions of critical saltwater and freshwater habitats should not be allowed except where necessary to achieve the objectives of RCW 90.58.020, and then only when their impacts are mitigated according to the sequence described in WAC 173-26-201 (2)(e) as necessary to assure no net loss of ecological functions.</p> <p>(F) Shoreline uses and modifications should be designed and managed to prevent degradation of water quality and alteration of natural hydrographic conditions.</p> <p>(G) Local governments should reserve shoreline space for shoreline preferred uses. Such planning should consider upland and in-water uses, water quality, navigation, presence of aquatic vegetation, existing shellfish protection districts and critical habitats, aesthetics, public access and views.</p>	<p>a. New structures should be allowed in- or over-water only when necessary for approved water-dependent uses, public access, or ecological restoration.</p> <p>b. The size of new in-/over-water structures should be limited to the minimum necessary to support the structure's intended water-dependent use</p> <p>c. To reduce cumulative impacts on shoreline functions and processes, new in-/over-water structures should serve more than one approved use where feasible.</p> <p>d. New in-/over-water structures should be located, oriented and designed to minimize interference with public views and surface navigation and to allow for the safe, unobstructed movement of fish and wildlife species that depend on the waters for migration, rearing or spawning.</p> <p>e. New in-/over-water uses should be located, oriented and designed to minimize impacts on water quality, sediment delivery and transport, natural hydrologic conditions, productivity of aquatic vegetation, and shellfish productivity (if applicable).</p>

Table 3. Summary of SMP environment designations, WAC recommendations, and implications for ecological functions.

Natural: SMP criteria and policies closely resemble WAC recommendations. Some WAC recommendations pertaining to non-water oriented recreation, roads, utility corridors, and parking are actually applied to all of the other environment designations as well, further reducing ecological impacts.

WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
<p>(A) The shoreline is ecologically intact and therefore currently performing an important, irreplaceable function or ecosystem-wide process that would be damaged by human activity;</p> <p>(B) The shoreline is considered to represent ecosystems and geologic types that are of particular scientific and educational interest; or</p> <p>(C) The shoreline is unable to support new development or uses without significant adverse impacts to ecological functions or risk to human safety.</p> <p>Such shoreline areas include largely undisturbed portions of shoreline areas such as wetlands, estuaries, unstable bluffs, coastal dunes, spits, and ecologically intact shoreline habitats. Shorelines inside or outside urban growth areas may be designated as "natural."</p> <p>Ecologically intact shorelines, as used here, means those shoreline areas that retain the majority of their natural shoreline functions, as evidenced by the shoreline configuration and the presence of native vegetation. Generally, but not necessarily, ecologically intact shorelines are free of structural shoreline modifications, structures, and intensive human uses. In forested areas, they generally include native vegetation with diverse plant communities, multiple canopy layers, and the presence of large woody debris available for recruitment to adjacent water bodies. Recognizing that there is a continuum of ecological conditions ranging from near natural conditions to totally degraded and contaminated sites, this term is intended to delineate those shoreline areas that provide valuable functions for the larger aquatic and terrestrial environments which could be lost or significantly reduced by human development. Whether or not a shoreline is ecologically intact is determined on a case-by-case basis.</p> <p>The term "ecologically intact shorelines" applies to all shoreline areas meeting the above criteria ranging from larger reaches that may include multiple properties to small areas located within a single property.</p> <p>Areas with significant existing agriculture lands should not be included in the "natural" designation, except where the existing agricultural operations involve very low intensity uses where there is no significant</p>	<p>1. Criteria: The Natural Environment is applied to shoreline areas landward of the OHWM located outside of County Forest Lands of long-term commercial significance designated pursuant to RCW 36.70A.170. These shorelines are characterized as also having some or all of the following characteristics:</p> <p>a. Intact or minimally degraded, densely Forested (Closed canopy) riparian and/or floodplain habitat extending throughout the shoreline environment.</p> <p>b. Shorelines and adjacent upland areas are largely free of development and modification; existing residential development, if any, is scattered at densities generally lower than one dwelling unit per 20 acres.</p> <p>c. Mostly undeveloped and unaltered estuarine wetland habitat</p> <p>d. Mostly encumbered by erosion and/or landslide hazards, including areas of feeder bluff and channel migration</p> <p>e. High priority river or riparian restoration areas within the SMP jurisdiction</p>	<p>(A) Any use that would substantially degrade the ecological functions or natural character of the shoreline area should not be allowed.</p> <p>(B) The following new uses should not be allowed in the "natural" environment:</p> <ul style="list-style-type: none"> • Commercial uses. • Industrial uses. • Nonwater-oriented recreation. • Roads, utility corridors, and parking areas that can be located outside of "natural" designated shorelines. <p>(C) Single-family residential development may be allowed as a conditional use within the "natural" environment if the density and intensity of such use is limited as necessary to protect ecological functions and be consistent with the purpose of the environment.</p> <p>(D) Commercial forestry may be allowed as a conditional use in the "natural" environment provided it meets the conditions of the State Forest Practices Act and its implementing rules and is conducted in a manner consistent with the purpose of this environment designation.</p> <p>(E) Agricultural uses of a very low intensity nature may be consistent with the natural environment when such use is subject to appropriate limitations or conditions to assure that the use does not expand or alter practices in a manner inconsistent with the purpose of the designation.</p> <p>(F) Scientific, historical, cultural, educational research uses, and low-intensity water-oriented recreational access uses may be allowed provided</p>	<p>a. Ensure retention of the existing natural character of shoreline reaches as part of the evaluation and permitting of new uses, developments and shoreline modification activities.</p> <p>b. Any use that would substantially degrade or result in a net loss of ecological functions or natural character of the shoreline area should not be allowed.</p> <p>c. New development or significant vegetation removal that would reduce the capability of vegetation to perform ecological functions should not be allowed.</p> <p>d. Subdivision of property in a configuration that will require significant vegetation removal or shoreline modification that adversely impacts ecological functions is not allowed.</p> <p>e. Identify and pursue opportunities to restore and enhance shoreline functions in these overall ecologically intact shoreline reaches</p> <p>f. New uses and developments in the Natural environment should be limited to low intensity, land uses and implement low impact development site design techniques and practices.</p> <p>g. New commercial, industrial, mixed use, multi-family residential and other types of intensive development and nonwater-oriented recreation should be prohibited..</p> <p>h. Property owners should be made aware these areas may be subject to hazards such as storm surges, flooding, landslides, erosion caused by wind and waves, and/or channel migration even where there are bulkheads, levees, or other flood/erosion protection structures in place.</p> <p>i. New single-family residential development and low intensity water-oriented recreational uses may be allowed as a conditional use..</p> <p>j. Scientific, historical, cultural, and education research uses may be allowed provided the uses do not result in significant ecological impact on the area.</p> <p>k. New roads, utility corridors, and parking areas that can be located outside of the Natural environment should not be allowed. Maintenance of existing roads and infrastructure should be allowed while minimizing and mitigating impacts to shoreline ecological functions.</p>

<p>impact on natural ecological functions, and where the intensity or impacts associated with such agriculture activities is unlikely to expand in a manner inconsistent with the "natural" designation.</p>		<p>that no significant ecological impact on the area will result. (G) New development or significant vegetation removal that would reduce the capability of vegetation to perform normal ecological functions should not be allowed. Do not allow the subdivision of property in a configuration that, to achieve its intended purpose, will require significant vegetation removal or shoreline modification that adversely impacts ecological functions. That is, each new parcel must be able to support its intended development without significant ecological impacts to the shoreline ecological functions.</p>	<p>I. Subdivision to create additional shoreline residential lots may be permitted as a conditional use.</p>
--	--	--	--

Table 3. Summary of SMP environment designations, WAC recommendations, and implications for ecological functions.			
Rural Conservancy: SMP criteria and policies closely resemble WAC recommendations.			
WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
<p>Assign a "rural conservancy" environment designation to shoreline areas outside incorporated municipalities and outside urban growth areas, as defined by RCW36.70A.110, if any of the following characteristics apply:</p> <p>(A) The shoreline is currently supporting lesser-intensity resource-based uses, such as agriculture, forestry, or recreational uses, or is designated agricultural or forest lands pursuant to RCW36.70A.170;</p> <p>(B) The shoreline is currently accommodating residential uses outside urban growth areas and incorporated cities or towns;</p> <p>(C) The shoreline is supporting human uses but subject to environmental limitations, such as properties that include or are adjacent to steep banks, feeder bluffs, or flood plains or other flood-prone areas;</p> <p>(D) The shoreline is of high recreational value or with unique historic or cultural resources; or</p> <p>(E) The shoreline has low-intensity water-dependent uses.</p> <p>Areas designated in a local comprehensive plan as "limited areas of more intensive rural development," as provided for in chapter 36.70A RCW, may be designated an alternate shoreline environment, provided it is consistent with the objectives of the Growth Management Act and this chapter. "Master planned resorts" as described in RCW 36.70A.360 may be designated an alternate shoreline environment, provided the applicable master program provisions do not allow significant ecological impacts.</p> <p>Lands that may otherwise qualify for designation as rural conservancy and which are designated as "mineral resource lands" pursuant to RCW 36.70A.170 and WAC 365-190-070 may be assigned a designation within the "rural conservancy" environment that allows mining and associated uses in addition to other uses consistent with the rural conservancy environment.</p>	<p>1. Criteria: The Rural Conservancy Environment is applied landward of the OHWM to:</p> <p>a. Forestry, farming, orchards, and livestock areas, including agricultural or forest lands pursuant to RCW 36.70A.170</p> <p>b. Residential areas outside of the Town of Cathlamet.</p> <p>c. Recreational areas and cultural or historical resource areas.</p> <p>d. Low intensity water dependent use areas.</p> <p>e. Areas supporting human uses but subject to environmental limitations such as steep banks, feeder bluffs, and flood-prone areas</p>	<p>(A) Uses in the "rural conservancy" environment should be limited to those which sustain the shoreline area's physical and biological resources and uses of a nonpermanent nature that do not substantially degrade ecological functions or the rural or natural character of the shoreline area.</p> <p>Except as noted, commercial and industrial uses should not be allowed. Agriculture, commercial forestry, and aquaculture when consistent with provisions of this chapter may be allowed. Low-intensity, water-oriented commercial and industrial uses may be permitted in the limited instances where those uses have located in the past or at unique sites in rural communities that possess shoreline conditions and services to support the use.</p> <p>Water-dependent and water-enjoyment recreation facilities that do not deplete the resource over time, such as boating facilities, angling, hunting, wildlife viewing trails, and swimming beaches, are preferred uses, provided significant adverse impacts to the shoreline are mitigated.</p> <p>Mining is a unique use as a result of its inherent linkage to geology. Therefore, mining and related activities may be an appropriate use within the rural conservancy environment when conducted in a manner consistent with the environment policies and the provisions of WAC 173-26-241 (3)(h) and when located consistent with mineral resource lands designation criteria pursuant to RCW36.70A.170 and WAC 365-190-070.</p> <p>(B) Developments and uses that would substantially degrade or permanently deplete the biological resources of the area should not be allowed.</p> <p>(C) Construction of new structural shoreline stabilization and flood control works should only be allowed where there is a documented need to protect an existing structure or ecological functions and mitigation is applied, consistent with WAC 173-26-231. New development should be designed and located to preclude the need for such work.</p> <p>(D) Residential development standards shall ensure no net loss of shoreline ecological functions and should preserve the existing character of the shoreline consistent with the purpose of the environment. As a general matter, meeting this provision will require density, lot coverage, vegetation conservation and other provisions.</p> <p>Scientific studies support density or lot coverage limitation standards that assure that development will be limited to a maximum of ten percent total impervious surface area within the lot or parcel, will maintain the existing hydrologic character of the shoreline. However, an alternative standard developed based on scientific information that meets the provisions of this chapter and</p>	<p>a. Agriculture, commercial forestry, and aquaculture are supported uses.</p> <p>b. Commercial and industrial uses should not be allowed, except for low-intensity, water-oriented uses where those uses have located in the past or at sites that already possess shoreline conditions and services to support the use.</p> <p>c. Water-dependent and water-enjoyment recreation facilities that do not deplete the resource over time, such as boating facilities, angling, hunting, wildlife viewing trails, and swimming beaches, are preferred uses</p> <p>d. Developments and uses that would substantially degrade or permanently deplete the biological resources of the area should not be allowed.</p> <p>e. Residential development standards shall ensure no net loss of shoreline ecological functions and should preserve the existing character of the shoreline</p> <p>f. New shoreline stabilization, flood control measures, vegetation removal, and other shoreline modifications should be designed and managed to ensure that the natural shoreline functions are protected.</p> <p>g. Construction of new structural shoreline stabilization and flood control works should only be allowed where there is a documented need to protect an existing structure or ecological functions and mitigation is applied, consistent with WAC 173-26-231. New development should be designed and located to preclude the need for such work.</p>

		<p>accomplishes the purpose of the environment designation may be used.</p> <p>Master programs may allow greater lot coverage to allow development of lots legally created prior to the adoption of a master program prepared under these guidelines. In these instances, master programs shall include measures to assure protection of ecological functions to the extent feasible such as requiring that lot coverage is minimized and vegetation is conserved.</p> <p>(E) New shoreline stabilization, flood control measures, vegetation removal, and other shoreline modifications should be designed and managed consistent with these guidelines to ensure that the natural shoreline functions are protected. Such shoreline modification should not be inconsistent with planning provisions for restoration of shoreline ecological functions.</p>	
--	--	---	--

Table 3. Summary of SMP environment designations, WAC recommendations, and implications for ecological functions.

Mixed Waterfront: The Mixed Waterfront designation criteria mirrors that of the WAC’s High Intensity designation, however this designation supports more diverse uses, including alternative residential uses, and water enjoyment uses. The Mixed Waterfront designation will maintain the small town character of and support economic development at a scale and intensity that is consistent with existing ecological functions and development patterns. Additionally, the Mixed Waterfront designation is applied to Cathlamet shorelines that have existing water dependent uses, are zoned for water dependent use, and that are currently unused or used informally for recreational activities, but that in the past were heavily modified. This SED also includes the marina and former sewage lagoons. Shorelines designated Mixed Waterfront, would otherwise under the WAC system be designated High Intensity, or in some cases potentially Urban Conservancy or Residential.

WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
<p>WAC Criteria for High Intensity: Assign a "high-intensity" environment designation to shoreline areas within incorporated municipalities, urban growth areas, and industrial or commercial "limited areas of more intensive rural development," as described by RCW 36.70A.070, if they currently support high-intensity uses related to commerce, transportation or navigation; or are suitable and planned for high-intensity water-oriented uses.</p>	<p>1. The Mixed Waterfront Environment is applied landward of the OHWM to:</p> <ul style="list-style-type: none"> a. Areas that currently support high-intensity uses related to commerce, transportation or navigation. b. Areas suitable and planned for high intensity water oriented uses. c. Mixed residential and non-water oriented commercial use areas. d. Marina and utility properties with low ecological function. 	<p>. For High Intensity, WAC offers:</p> <p>(A) In regulating uses in the "high-intensity" environment, first priority should be given to water-dependent uses. Second priority should be given to water-related and water-enjoyment uses. Nonwater-oriented uses should not be allowed except as part of mixed use developments. Nonwater-oriented uses may also be allowed in limited situations where they do not conflict with or limit opportunities for water-oriented uses or on sites where there is no direct access to the shoreline. Such specific situations should be identified in shoreline use analysis or special area planning, as described in WAC 173-26-200 (3)(d).</p> <p>If an analysis of water-dependent use needs as described in WAC 173-26-201 (3)(d)(ii) demonstrates the needs of existing and envisioned water-dependent uses for the planning period are met, then provisions allowing for a mix of water-dependent and nonwater-dependent uses may be established. If those shoreline areas also provide ecological functions, apply standards to assure no net loss of those functions.</p> <p>(B) Full utilization of existing urban areas should be achieved before further expansion of intensive development is allowed. Reasonable long-range projections of regional economic need should guide the amount of shoreline designated "high-intensity." However, consideration should be given to the potential for displacement of nonwater-oriented uses with water-oriented uses when analyzing full utilization of urban waterfronts and before considering expansion of such areas.</p> <p>(C) Policies and regulations shall assure no net loss of shoreline ecological functions as a result of new development. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply in accordance with any relevant state and federal law.</p> <p>(D) Where feasible, visual and physical public access should be required as provided for in WAC 173-26-</p>	<ul style="list-style-type: none"> a. In regulating uses in the Mixed Waterfront environment, first priority should be given to water-dependent uses. Second priority should be given to water-related and water-enjoyment uses. Third priority should be given to other uses that provide public access as part of the development. b. Non-water-oriented commercial uses may be allowed as part of mixed use developments. c. Non-water-oriented uses may also be allowed in limited situations where they do not conflict with or limit opportunities for water-oriented uses or on sites where there is no direct access to the shoreline. Such specific situations should be identified in shoreline use analysis or special area planning, as described in WAC 173-26-201(3)(d) d. Single family residential development may be allowed if the density and intensity is limited so as to protect ecological functions. e. Multifamily residential development may be allowed if joint use shoreline access facilities are provided for the occupants or if shoreline public access is provided. f. Policies and regulations shall assure no net loss of shoreline ecological functions as a result of new development. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply with any relevant state and federal law. g. Where feasible, visual and physical public access should be required as provided for in WAC 173-26-221(4)(d).

		<p><u>221</u> (4)(d). (E) Aesthetic objectives should be implemented by means such as sign control regulations, appropriate development siting, screening and architectural standards, and maintenance of natural vegetative buffers.</p>	
--	--	---	--

Table 3. Summary of SMP environment designations, WAC recommendations, and implications for ecological functions.

Town Residential: The Town Residential SED is intended to accommodate residential development and appurtenant structures and to provide appropriate public access and recreational uses in the Town of Cathlamet. The criteria and policies closely follow the WAC system. The SED is assigned to two residential areas, each having some distinct conditions. As such, the standard riparian buffers are differentiated for each of these areas.

WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
Assign a "shoreline residential" environment designation to shoreline areas inside urban growth areas, as defined in RCW 36.70A.110 , incorporated municipalities, "rural areas of more intense development," or "master planned resorts," as described in RCW 36.70A.360 , if they are predominantly single-family or multifamily residential development or are planned and platted for residential development.	1. Criteria: The Residential Environment is applied landward of the OHWM to areas of the Town of Cathlamet that are predominantly single-family or multifamily residential development or are planned and platted for residential development.	(A) Standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be set to assure no net loss of shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations. Local governments may establish two or more different "shoreline residential" environments to accommodate different shoreline densities or conditions, provided both environments adhere to the provisions in this chapter. (B) Multifamily and multi-lot residential and recreational developments should provide public access and joint use for community recreational facilities. (C) Access, utilities, and public services should be available and adequate to serve existing needs and/or planned future development. (D) Commercial development should be limited to water-oriented uses.	a. Standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be set to assure no net loss of shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations. b. Multifamily residential development may be allowed if joint use shoreline access facilities are provided for the occupants or if shoreline public access is provided. c. Access, utilities, and public services should be available and adequate to serve existing needs and planned future development. d. Commercial development should be limited to water-oriented uses.

Table 3. Summary of SMP environment designations, WAC recommendations, and implications for ecological functions.

Town Conservancy: Urban Conservancy was assigned to the mouth of Birnie Creek and the northern most portion of town shoreline. Additional areas fit the Urban Conservancy criteria, but also fit other criteria and were assigned to those other SED's. Standard riparian buffers for Urban Conservancy are 200 ft., and most uses require a CUP, if allowed.

WAC Criteria	SMP Criteria	WAC Policies	SMP Policies
<p>Assign an "urban conservancy" environment designation to shoreline areas appropriate and planned for development that is compatible with maintaining or restoring of the ecological functions of the area, that are not generally suitable for water-dependent uses and that lie in incorporated municipalities, urban growth areas, or commercial or industrial "limited areas of more intensive rural development" if any of the following characteristics apply:</p> <p>(A) They are suitable for water-related or water-enjoyment uses; (B) They are open space, flood plain or other sensitive areas that should not be more intensively developed; (C) They have potential for ecological restoration; (D) They retain important ecological functions, even though partially developed; or (E) They have the potential for development that is compatible with ecological restoration.</p> <p>Lands that may otherwise qualify for designation as urban conservancy and which are designated as "mineral resource lands" pursuant to RCW 36.70A.170 and WAC 365-190-070 may be assigned a designation within the "urban conservancy" environment that allows mining and associated uses in addition to other uses consistent with the urban conservancy environment.</p>	<p>Criteria: The Town Conservancy Environment is applied landward of the OHWM to Town of Cathlamet shoreline areas that:</p> <p>a. Are appropriate and planned for development that is compatible with maintaining or restoring ecological functions of the area, and that are not generally suitable for water-dependent uses.</p> <p>a. Are suitable for water-related or water-enjoyment uses;</p> <p>b. Are open space, flood plain or other sensitive areas that should not be more intensively developed;</p> <p>c. Have potential for ecological restoration;</p> <p>d. Retain important ecological functions, even though partially developed;</p> <p>e. Have the potential for development that is compatible with ecological restoration.</p>	<p>A) Uses that preserve the natural character of the area or promote preservation of open space, flood plain or sensitive lands either directly or over the long term should be the primary allowed uses. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting.</p> <p>(B) Standards should be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications within the "urban conservancy" designation. These standards shall ensure that new development does not result in a net loss of shoreline ecological functions or further degrade other shoreline values.</p> <p>(C) Public access and public recreation objectives should be implemented whenever feasible and significant ecological impacts can be mitigated.</p> <p>(D) Water-oriented uses should be given priority over nonwater-oriented uses. For shoreline areas adjacent to commercially navigable waters, water-dependent uses should be given highest priority.</p> <p>(E) Mining is a unique use as a result of its inherent linkage to geology. Therefore, mining and related activities may be an appropriate use within the urban conservancy environment when conducted in a manner consistent with the environment policies and the provisions of WAC 173-26-240 (3)(h) [173-26-241 (3)(h)] and when located consistent with mineral resource lands designation criteria pursuant to RCW 36.70A.170 and WAC 365-190-070.</p>	<p>a. Uses that preserve the natural character of the area or promote preservation of open space, flood plain or sensitive lands either directly or over the long term should be the primary allowed uses. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting.</p> <p>b. Standards should be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications within the "urban conservancy" designation. These standards shall ensure that new development does not result in a net loss of shoreline ecological functions or further degrade other shoreline values.</p> <p>c. Public access and public recreation objectives should be implemented whenever feasible and significant ecological impacts can be mitigated.</p> <p>d. Water-oriented uses should be given priority over nonwater-oriented uses. For shoreline areas adjacent to commercially navigable waters, water-dependent uses should be given highest priority.</p> <p>e. Mining is a unique use as a result of its inherent linkage to geology. Therefore, mining and related activities may be an appropriate use within the urban conservancy environment when conducted in a manner consistent with the environment policies and the provisions of WAC 173-26-240 (3)(h) [173-26-241 (3)(h)] and when located consistent with mineral resource lands designation criteria pursuant to RCW 36.70A.170 and WAC 365-190-070.</p>

SED Determinations

According to the considerations described throughout this document, SED areas were determined with the goal of balancing no net loss of ecological function while protecting the desired character and use of a shoreline. The below charts show how many acres of each SED have been assigned in the County and the Town.

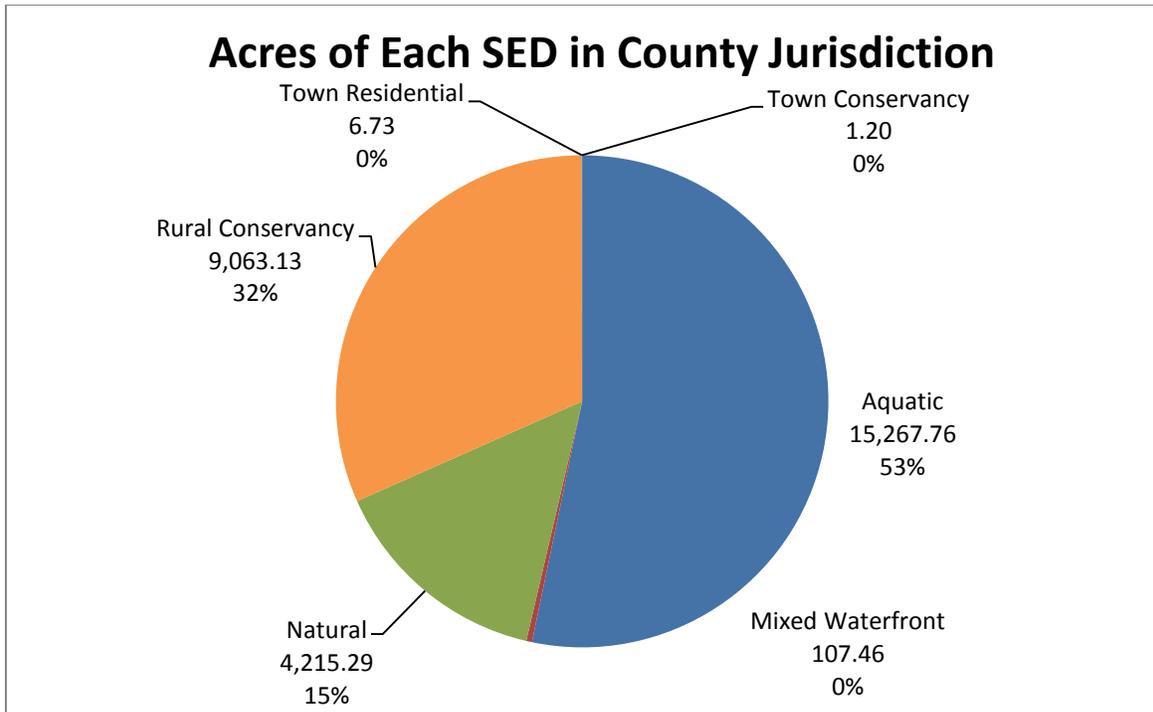


Figure 2: Number of acres in each SED under the County's jurisdiction.

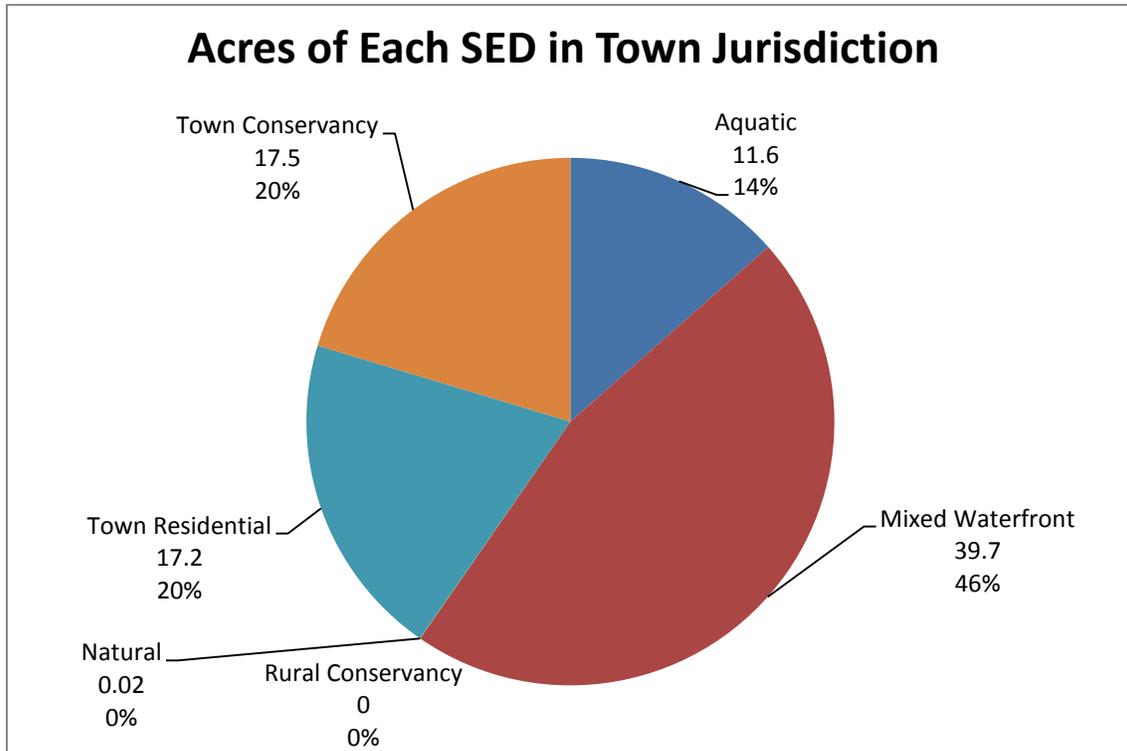


Figure 3: Number of acres in each SED under the Town's jurisdiction.

The Role of Critical Areas Regulations

The ICR found that critical areas are widespread throughout the County and Town. The SMP includes SMP Critical Areas Regulations. The Critical Areas Regulations require site specific analysis of shoreline conditions, and mitigation sequencing, including compensatory mitigation for any impacts not avoided. The wetland and habitat critical areas regulations establish buffers based on site specific conditions, and prohibit activities within critical areas or their buffers that would harm ecological functions. Where flexibility is provided to accommodate SMA preferred uses and to protect private property rights, mitigation sequencing ensures no net loss of ecological functions.

The regulations provide complete, logical, and scientifically supported sequence of actions by applicants and the jurisdictions that will protect ecological functions. The prescribed actions begin prior to the time of application, through the permitting decision, and onward through other assurance processes such as bonding, recording of deed restrictions, and monitoring of compensatory mitigation.

The critical areas regulations are closely based on scientific and technical information consolidated and reproduced by the Department of Ecology and WDFW. They provide a complete sequence for analyzing existing ecological functions, mitigating impacts, and protecting the critical areas into the future.

5. Other Programs Protecting Shorelines

County Regulatory Programs

Zoning

Wahkiakum County has not established land use zoning districts and does not have a zoning map or zoning regulations. The County regulates growth and development under the Wahkiakum County Code with requirements for building, health & safety, environmental protection, and other provisions.

Critical Areas Regulations

Wahkiakum County regulates activities in or adjacent to environmentally sensitive areas under its Critical Areas Ordinance (CAO), adopted in 2000 (RCWC Chapter 43.70). Upon adoption of the new SMP, only the SMP Critical Areas Regulations will apply to shorelines, while the existing CAO (or as amended) will continue to apply outside shoreline jurisdiction.

Flood Ordinance

Wahkiakum County's Flood Damage Prevention ordinance (RCWC Title 86.16) implements comprehensive flood damage reduction measures that are necessary for public health, safety and welfare and that allow property owners to protect their property from flood damage (Ordinance No. 109-89 and 142-06). The ordinance includes minimum requirements of the National Flood Insurance Program regulation.

Subdivision Ordinance

Wahkiakum County has a Subdivision Control ordinance (RCWC Title 58) to regulate the platting and subdivision of land into blocks, lots, tracts, and parcels.

Wastewater Ordinance

Wahkiakum County has On-Site Sewage Systems and Sanitary Sewer ordinances (RCWC 70.06 and 70.15 respectively) to manage water-carried, sewage sludge, septage, and biosolid human or domestic waste.

Transportation and Parks Ordinances

Wahkiakum County's Roads & Bridges ordinance (RCWC 36) and Parks ordinance (RCWC 53) regulate County streets, roads, the Ferry, and public parks for vehicular circulation and public recreational use.

Weed Ordinances

Wahkiakum County's Weed Control ordinance (RCWC 17) establishes the Noxious Weed Control Board, Districts, landowner responsibilities, and violation penalties to prevent the spread of non-native invasive plants. The County's Roadside Vegetation Management Policy (RCWC 92) regulates the biological, chemical, and mechanical control of roadside weeds and vegetation

Town Regulatory Programs

Zoning

The Town of Cathlamet Zoning Ordinance (1995) established land use districts under CMC Title 18 to determine allowed uses and related development standards. The Town's zoning map is included in the CMC Title 19 Comp Plan (see Appendix E Map 52.)

Critical Areas Regulations

Town of Cathlamet has adopted a Critical Areas Ordinance in 2002 (CMC Title 14.15)

Flood Ordinance

The Town of Cathlamet's Flood Damage Prevention ordinance (CMC 14.10) regulates development in special flood hazard areas. The ordinance includes minimum requirements of the National Flood Insurance Program regulation.

Subdivision Ordinance

The Town of Cathlamet's Urban Subdivision Code (CMC Title 17) similarly regulates subdivisions.

Wastewater Ordinance

The Town of Cathlamet's Public Utilities Chapter (CMC Title 13) regulates the use, development, and financing of the Town's water and sewer systems.

Transportation and Parks Ordinances

The Town of Cathlamet's Streets, Sidewalks, and Public Places ordinance (CMC Title 12) regulates the use of transportation systems and parks, including use of the Town Dock.

Weed Ordinances

Weeds and vegetation are regulated in the Town of Cathlamet under the Title 8 Health and Safety Code (CMC 8.20).

State and Federal Regulatory Programs

State and National Environmental Policy Acts (SEPA and NEPA)

SEPA and NEPA ensure some degree of mitigation for impacts to ecological functions, although they do not include substantive standards.

Coastal Zone Management Act (CZMA)

The Federal Coastal Zone Management Act requires that any project carried out by a federal agency, or private project licensed or permitted by a federal agency, or carried out with a federal grant, must be determined by Ecology to be consistent with the Washington Coastal Zone Management (CZM) Program. The State Shoreline Management Act, state implementing regulations, and approved local Shoreline Master Programs are part of the Washington Coastal Zone Management Program. Thus, projects in shoreline jurisdiction that have a federal nexus must be consistent with the County and Town Shoreline Master Program.

Oil Pollution Act (OPA)

The OPA requires certain facilities and vessels handling oil and other hazardous substances to carry insurance to cover at least some of the costs of a spill. The OPA also provides states with the authority to increase the amount of insurance that some facilities must carry.

Endangered Species Act (ESA)

The federal ESA addresses the protection and recovery of federally listed species. The ESA is administered by the National Oceanic and Atmospheric Administration National Marine Fisheries Service

and the United States Fish and Wildlife Service. Any project that requires a federal permit, occurs on federal land or uses federal funding must be reviewed to ensure that effects of the project will not result in a 'take' of listed species. Project proponents are required to implement conservation measures to ensure that listed species are not jeopardized.

Clean Water Act (CWA)

The federal CWA requires states to set standards for the protection of water quality, and regulates excavation and dredging in waters of the U.S., including lakes, streams, and wetlands. In-water work requires a permit from the U.S. Army Corps of Engineers (Corps) and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively. Aquaculture operations, construction of bulkheads, docks, launching ramps, beaches, and shoreline restoration projects all have the potential to require permits under Section 404 and Section 401. The permitting processes ensure mitigation of unavoidable adverse impacts.

The Clean Water Act's National Pollutant Discharge Elimination System (NPDES) requires Department of Ecology to regulate wastewater discharges to surface water from industrial facilities and municipal wastewater treatment plants, and stormwater discharges from industrial facilities and construction sites larger than one acre.

Rivers and Harbors Act Section 10

The federal Rivers and Harbors Act regulates obstructions and alterations in, over, or under navigable U.S. waters. Permits are issued by the Corps for construction and maintenance of docks, piers, pilings, bulkheads, and certain other in-water and over-water structures. Section 10 approvals determine construction techniques, materials, and size and bulk allowed for construction of docks, shoreline stabilization, and other in-water and over-water structures. The permitting process ensures mitigation of unavoidable adverse impacts.

Washington Hydraulic Code

The Washington Department of Fish and Wildlife regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state affecting fish habitat. This includes projects that might create a substantial change in stormwater runoff to fish bearing streams, construction of docks, bulkheads, culverts, other in-water structures, and other construction below the Ordinary High Water Mark. Hydraulic Code Rules will make an important contribution to achieving no net loss. SMP mitigation sequencing and SMP regulations for specific uses and modifications were intentionally created to complement Hydraulic Code Rules.

Non-Regulatory Programs

Wahkiakum County Marine Resources Committee

The Wahkiakum County Marine Resources Committee's mission is to address local marine issues; recommend remedial actions to local, state, tribal, and federal authorities; and build local awareness of the issues and support for remedies consistent with the interim "Benchmarks of Performance" as adopted by the Coastal MRC Work Group on January 7, 2009. The Wahkiakum MRC's primary contribution to ecological functions is in providing hands on environmental education to County residents. In 2017, the MRC's priority actions include the following among a longer list.

- Continue to partner with local agencies to meet their monitoring and restoration goals while providing important workforce skill development.
- Continue to support and fund opportunities for local students to experience hands-on marine education.
- Continue to provide support and funding for riparian enhancement projects.

The Wahkiakum Conservation District provides technical and financial assistance to landowners in the district boundaries who have natural resource concerns or problems. The Conservation District helps landowners access farm bill conservation funding opportunities among other resources, and coordinates projects across multiple properties that improve ecological functions while reducing flood risk and stream bank erosion.

Wahkiakum Diking District #5 has collaborated with landowners to complete habitat restoration projects that also reduce flood impacts.

Columbia Land Trust

Columbia Land Trust acquires fee and less than fee interests in private property, and completes habitat restoration projects. They have protected or improved over 2000 acres in the Grays River and Elochoman River watersheds.

US Army Corps of Engineers

USACE is in the process of completing a large habitat restoration project at Julia Butler Hansen Wildlife Refuge, as mitigation for Columbia River dredging.

Lower Columbia River Estuary Partnership

Lower Columbia River Estuary Partnership funds restoration projects, conducts environmental monitoring, and leads environmental education activities on the lower Columbia River. LCREP has funded sever restoration projects, and led several volunteer stewardship activities on Wahkiakum County shorelines.

Columbia River Estuary Study Taskforce

The Columbia River Estuary Study Taskforce manages estuary habitat restoration projects, and serves as an environmental planning coordinating body for jurisdictions in Wahkiakum County, Pacific County, and Clatsop Counties. CREST coordinated the Columbia River Estuary Regional Management Plan, 1979 and updates. The plan provided a foundation for City and County policy plans and regulatory programs including the original Wahkiakum County Shoreline Master Program.

6. Restoration Plan Summary

Restoration plan implementation would result in restored and enhanced ecological functions, such that cumulatively speaking, these would compensate for any unintended losses of ecological functions that will occur as a result of unintended impacts from violations, ongoing activities, and new development. The plan addresses restoration in all of the HUC 10 watersheds within the County. Most restoration projects seem to be occurring in the Grays River, Deep River, Skamokawa Creek, and Elochoman River basins. Types of restoration that are already actively occurring and that are recommended in the Restoration Plan include:

- Riparian Restoration and Non-native Vegetation Removal
- Floodplain Restoration and Enhancement
- Channel Complexity
- Bank Regrading and Stabilization
- Tributary Enhancement
- Side Channel Restoration and Enhancement
- Channel Migration Zone Easements
- Removal of Debris, Derelict Structures and Derelict Vessels

7. Cumulative Impacts Summary

The Town and County SMP, taken together with restoration actions and other regulatory and non-regulatory programs, will address the cumulative impacts of foreseeable shoreline development in a manner that achieves no net loss of ecological functions; while protecting private property rights and accommodating shoreline development and preferred SMA uses. The SMP regulations are designed to address threats to ecological functions from known sources, and are based on an inventory and assessment of shoreline conditions and ecological functions.

Existing land use patterns and trends will not be substantially changed by the SMP. Under the SMP, future development will mostly occur where it already occurs. Agricultural and rural residential land uses will continue to dominate the County's floodplains. Forest practices will predominate upstream from the floodplains. To the extent that agricultural land and forest land is converted to more intensive uses, and to the extent that existing developed land is redeveloped to more intensive uses, the SMP regulatory provisions will ensure that impacts to ecological functions are avoided, minimized and otherwise mitigated.

To the extent that the SMP represents a major change from the past in how future development will occur, it is in the size, location, and design of development at the site scale. Future non-water dependent development will typically occur further away from wetlands and riparian areas than it has in the past. Subdivisions will be designed so that all resulting lots have sufficient buildable areas outside of critical area buffers. All development subject to the critical areas regulations and mitigation sequencing will follow a set of fact finding, design, and review procedures intended to address all impacts to ecological functions, and to avoid incremental degradation over time.

At the landscape scale, the SMP affords more protection to a limited set of shoreline reaches designated Natural Environment than was afforded under the prior SMP. Because the Natural SED was only assigned to lands that have been protected by public agencies or non-profit land trusts, the expanded Natural SED is testament to how restoration can improve shoreline ecological functions over time, making up for unintended losses of ecological functions that may occur elsewhere. Furthermore at the landscape scale, the SMP gives preference to the SMA preferred uses, limiting the extent to which other uses will impact ecological functions, and limiting the extent to which preferred uses will need to be located in previously undeveloped areas.

Given modest development rates and declining populations in the Town and County, it is expected that replacement of existing development in conformance with the contemporary standards of this SMP will substantially balance most of the inadvertent impacts to ecological function from new uses and development that are not addressed by this SMP. New development and redevelopment is as likely to result in improved ecological functions as it is to result in unintended losses of ecological functions, because even though some unintended losses will occur, the result of critical areas reporting, signing critical areas, notices on title, and critical areas buffer tracts should result in improved critical area buffer functions over time. Other comprehensive regulatory schemes will also limit losses of ecological function.

8. No-Net Loss Report

This Cumulative Impacts Analysis evaluated the effects of reasonably foreseeable future development that may occur under the SMP. The accompanying Restoration Plan identified actions and opportunities to improve impaired ecological functions within the County and Town's shorelines. The identification of existing conditions, anticipated future impacts, and restoration opportunities within Wahkiakum County aided the development of regulations which directly and fully consider the preservation of ecological function; this means that this SMP update upholds the no-net loss of ecological function principle.

Major elements of the SMP that ensure no net loss of ecological function fall into three categories: 1) shoreline designations; 2) goals, policies, and regulations; and 3) the Restoration Plan. Shoreline designations recognize the shoreline areas most desirable for greatest protections and those areas that may withstand some degree of development without substantial or unmitigated ecological loss; the SMP applies standards appropriate to each designation, permitting and prohibiting uses as necessary to achieve no net loss. Provisions for all shoreline uses and modifications were subject to an analysis of potential ecological impacts and developed with the goal of achieving no net loss of function and improving shoreline function where the opportunity exists. Finally, the Shoreline Restoration Plan will inform and guide restoration efforts to ensure that projects with maximum potential for ecological lift are prioritized, and that restoration addresses impaired shoreline functions and processes.

Given the above provisions, implementation of the proposed SMP is anticipated to achieve **no net loss of ecological functions in Wahkiakum County's and the Town of Cathlamet's shorelines.**

References

- Bottom, D. L., C. A. Simenstad, A. M. Baptista, D. A. Jay, J. Burke, K. K. Jones, E. Casillas, M. H. Schiewe. 2001. Salmon at river's end: the role of the estuary in the decline and recovery of Columbia River salmon. Report to the U.S. Department of Energy, Bonneville Power Administration, Contract 98AI06603, 255 p. plus appendix.
- Carrasquero, J. 2001. White Paper: Overwater Structures: Freshwater Issues. Herrera Environmental Consultants.
- Castro, J.M. 1997. Stream classification in the Pacific Northwest: methodologies, regional analyses, and applications. Ph.D. thesis. Geography. Oregon State University. Corvallis, OR. 104 p.
- Church, M. 1983. Patterns of instability in a wandering gravel bed channel. Special Publications of the International Association of Sedimentologists. 6: 169-180.
- Cowlitz-Wahkiakum Council of Governments. 2008. Draft Comprehensive Plan for Wahkiakum County, Washington. Wahkiakum County, WA.
- CREST. 2002. Columbia River Estuary Dredged Material Management Plan. NOAA and Oregon DLCD.
- CREST. 2006. Wahkiakum County Shoreline Atlas. Dingman, S.L. 2002. Physical Hydrology. Prentice-Hall, Inc. Upper Saddle River New Jersey. p. 382.
- CREST. 2015. Wahkiakum County and Town of Cathlamet Shoreline Master Program Update Project Ecology Grant # G1400483, Final Shoreline Inventory and Characterization Report – Revised 2017.
- Economic and Engineering Services, Inc. 2002. Assessment of Key Issues and Existing Plans for Major Water Users. Technical Memorandum No. 1. WRIA 25/26.
- ESA PWA, Ltd and PC Trask. 2011. Design Guidelines for the Enhancement and Creation of Estuarine Habitats in the Middle Reaches of the Lower Columbia River. Phase 2 Report. Prepared for INCA Engineers.
- GeoEngineers. 2009. Geologic Services Landslide Evaluation Grays River Hatchery Intake Road, June 15, 2009.)
- Granger, T., T. Hruby, A. McMillan, D. Peters, J. Rubey, D. Sheldon, S. Stanley, E. Stockdale. April 2005. Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands. Washington State Department of Ecology. Publication #05-06-008. Olympia, WA.
- Interactive Biodiversity Information System (IBIS). 2003-5. Northwest Habitat Institute. Corvallis.
- Independent Scientific Advisory Board (ISAB). 2000. The Columbia River Estuary and the Columbia River Basin Fish and Wildlife Program. Northwest Power Planning Council and the National Marine Fisheries Service.

- Johnson, D.H. and T.A. O’Neil (Managing Directors). 2001. Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis. 736p.
- Johnson, G.E., R.M. Thom, A.H. Whiting, G.B. Sutherland, J.A. Southard, B.D. Ebberts, and J.D. Wilcox. 2003. An ecosystem based restoration plan with emphasis on salmonid habitats in the Columbia River Estuary. Prepared by Bonneville Power Administration, Columbia River Estuary Study Taskforce, Lower Columbia River Estuary Partnership, Pacific Northwest National Laboratory, and U.S. Army Corps of Engineers Portland District.
- Knight, K. 2009. Land Use Planning for Salmon, Steelhead and Trout: A land use planner’s guide to salmonid habitat protection and recovery. WDFW.
- Knutson, K. L., and V. L. Naef. 1997. Management recommendations for Washington’s priority habitats: riparian. WDFW, Olympia. 181pp.
- Kresch, D.L., 1998. Determination of Upstream Boundary Points on Northeastern Washington Streams and Rivers Under the Requirements of the Shoreline Management Act of 1971. U.S. Geological Survey Water-Resources Investigation Report 98-4160. Tacoma, Washington.
- Lower Columbia Fish Recovery Board. 2001. WRIA 25/26 Watershed Management Plan. #4-00-147.
- Lower Columbia Fish Recovery Board. 2003. Develop Strategies for Managing Flows (WRIA 25/26). Technical Memorandum No. 7 (Task 5).
- Lower Columbia Fish Recovery Board. 2010a. Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan. Volume II – Subbasin Plan, Chapter 3 – Grays River.
<http://www.lcfrb.gen.wa.us/#!/library/c1tqm>
- Lower Columbia Fish Recovery Board. 2010b. Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan. Volume II – Subbasin Plan, Chapter D – Elochoman Skamokawa, Mill, Abernathy and Germany. <http://www.lcfrb.gen.wa.us/#!/library/c1tqm>
- Lower Columbia Fish Recovery Board. 2010c. Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan. Volume II – Subbasin Plan, Chapter A – Lower Columbia Mainstem and Estuary.
<http://www.lcfrb.gen.wa.us/#!/library/c1tqm>
- Lower Columbia Fish Recovery Board. 2008. Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan. Volume II – Subbasin Plan, Chapter 3 – Grays River.
- Lower Columbia Fish Recovery Board. 2008. Habitat Work Schedule. Available at http://www.lcfrb.gen.wa.us/2008_percent20HWS.htm
- Lower Columbia River Port Communities. 2002. Problems and Solutions to Water Resource Problems on the Lower Columbia River. Pacific International Engineering Report.
- Manlow, S. and A. Andrews. 2008. Grays-Elochoman and Cowlitz Detailed Implementation Plan: WRIA 25 and 26. Washington Department of Ecology.

- May, C.W., K.E. McGrath, D.R. Geist., E.V. Amtzen, M.C. Richmond, R. Prasad, M.S. Wigmosta, T. Abbe, C. Barton, C. Brummer, and T. Phelps. 2007. Project Number 200301300. Grays River Watershed and Biological Assessment. Prepared for CREST, DOE, and BPA.
- Marriott, D. and many others. 2002. Draft Lower Columbia River and Columbia River Estuary Subbasin Summary. Prepared for the Northwest Power Planning Council.
- Morgan, L. 2005. Critical Aquifer Recharge Areas: Guidance Document. Washington Department of Ecology. #05-10-028.
- Montgomery, D. R., and J.M. Buffington, 1993. Channel classification, prediction of channel response, and assessment of channel condition. Washington State Department of Natural Resources Report TFW-SH10-93-002, Olympia Washington.
- National Marine Fisheries Service (NMFS). 1995. Making Endangered Species Act determinations of effect for individual or grouped actions at the watershed scale. Draft Non Federal Version November 2, 1995. The National Marine Fisheries Service Environmental and Technical Services Division Habitat Conservation Branch. 28 pp.
- Office of Financial Management. 2012. Washington State Growth Management Population Projections for Counties: 2010 to 2040. 2012 High, Medium and Low County Projections, Five-Year Intervals. Available: <http://www.ofm.wa.gov/pop/gma/projections12/projections12.asp>. Accessed July 30th, 2015.
- Pacific Water Resources, Inc. 2004. Hydrologic Modeling of Effects of Land Use Changes (WRIA 25/26). Technical Memorandum No. 6.
- Pacific Water Resources, Inc. 2004b. Hydrologic Modeling of Effects of Land Use Changes (WRIA 25/26). Technical Memorandum No. 8.
- Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. March 2005. Wetlands in Washington State - Volume 1: A Synthesis of the Science. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA.
- Simenstad, C.A., D. Jay, C.D. McIntire, W.Nehlsen, C.R. Sherwood, and L.F. Small. 1984. The Dynamics of the Columbia River Estuarine Ecosystem, Vol. I and II. Columbia River Estuary Data Development Program, Astoria, OR.
- Scott, M.G. 2001. *Forest Clearing in the Gray's River Watershed: 1905-1996*. Master's thesis, Portland State University, Portland, Oregon.
- Smith, C.J. 1999. Salmon and Steelhead Habitat Limiting Factors in the Willapa Basin. Washington State Conservation Commission.
- Stanley, S., J. Brown, S. Grigsby, T. Hruby. 2008. Protecting Aquatic Ecosystems by Understanding Watershed Processes: A Guide for Planners. Ecology publication #05-06-027.

Streamfix. 2004. Grays River Assessment and Rehabilitation Plan. Prepared for the Grays River Habitat Enhancement District.

Tetra Tech, Inc., Entrix, Inc., Waterfall Engineering, LLC. 2009. Grays River Habitat Restoration Technical Report.

Thomas, D. W. 1983. Changes in the Columbia River estuary habitat types over the past century. Columbia River Estuary Data Development Program, Columbia River Estuary Task Force, Astoria, Oregon. 51p.

U.S. Army Corps of Engineers (USACE). December 28, 2001. Biological assessment, Columbia River channel improvements project.

United States Army Corps of Engineers (USACE). 2012. Lower Columbia River Estuary Section 536 Studies: Steamboat Slough Study Report.

United States Army Corps of Engineers (USACE). 2013. Steamboat Slough Wetland Restoration Project.

US Census Bureau. 2015. Decennial Census Population Estimates for Town of Cathlamet and Wahkiakum County. Available: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed July 30th, 2015.

Wade, G. 2002. Salmon and steelhead habitat limiting factors, WRIA 25. Washington State Conservation Commission.

Washington Department of Ecology (Ecology).
<http://www.ecy.wa.gov/programs/sea/shorelines/smp/toolbox/process/task3.4.1.html>

WDFW. 1990.

WDFW. 2011. Salmon Conservation Reporting Engine. Accessed at:
https://fortress.wa.gov/dfw/score/score/maps/map_details.jsp?geocode=county&geoarea=Wahkiakum

WDFW. 2011. Salmonscape. <http://apps.wdfw.wa.gov/salmonscape/map.html>

WDFW. 2015. White Island Unit.
http://wdfw.wa.gov/lands/wildlife_areas/mount_saint_helens/White%20Island/

The Willapa Alliance. 1998. The Willapa salmon recovery toolbox. The Willapa Alliance, South Bend, Washington.