CLARK COUNTY COALITION SMP UPDATE

BATTLE GROUND | CAMAS | CLARK COUNTY | LA CENTER

RIDGEFIELD | VANCOUVER | WASHOUGAL | YACOLT

Draft

CLARK COUNTY COALITION SHORELINE MASTER PROGRAM UPDATE

Draft Cumulative Impacts Analysis

Prepared for

Clark County Coalition

June 2011

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City of Vancouver

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Clark County Coalition
Draft Cumulative Impact Analysis

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Phase 4: Restoration Planning; Revisiting Phase 3 Products; Cumulative Impacts Analysis

Product 4.20 Revisit Draft SMP and Cumulative Impacts Analysis; Finalize Jurisdiction Maps

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CHAPTER 1 INTRODUCTION

1.1 Purpose of the Report

Clark County and its cities are updating their Shoreline Master Programs (SMPs) in accordance with the Shoreline Management Act (SMA) and implementing regulations. In order to better understand shoreline ecological functions in the context of the watersheds in which they are located, and to obtain the best value for limited state grant funds, Clark County and its cities have formed a coalition to jointly update their SMPs. The Clark County SMP Update Coalition (Coalition) consists of Clark County and the local governments within it, the Cities of: Battle Ground, Camas, La Center, Ridgefield, Vancouver, and Washougal, and the Town of Yacolt. The Coalition staff, referred to as the Project Management Team (PMT), are cooperatively managing the SMP update process.

As part of this SMP Update effort, the local governments are required to evaluate the cumulative impacts of "reasonably foreseeable future development" to verify that proposed policies and regulations for shoreline management are adequate to ensure "no net loss" of shoreline ecological functions. WAC 173-26-186(8) directs that master programs "include policies and regulations designed to achieve no net loss of those ecological functions." The proposed Draft SMPs of the individual member Coalition governments provide standards and procedures to review, through their established permitting processes, subsequent use or development proposals for their potential to impact shoreline resources. The purpose of this report is to determine whether or not impacts to shoreline ecological functions are likely to result from the aggregate of activities and developments in the county shorelines, through a collective analysis of the Coalition member governments' draft SMPs. This report is prepared as a requirement of the Clark County Coalition grant agreement with the state funding agency, Washington Department of Ecology (SMA Grant No. G1000058). This report is based upon guidance provided in Ecology's SMP Handbook (accessed at: http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/index.html), specifically Chapter 4 – No Net Loss of Shoreline Ecological Functions and Chapter 17 – Cumulative Impacts Analysis.

The cumulative impacts to be addressed in this report are those that will result from future development and uses within the SMA shoreline jurisdiction and regulated by the newly updated Draft SMPs of Coalition member governments. Cumulative impacts that may result from development outside the shoreline jurisdiction are not considered in this report.

This Draft Cumulative Impacts Analysis (Analysis) assesses the collective impacts of individual Draft SMPs, dated June 2011, of Clark County and the following six cities: Battle Ground, Camas, La Center, Ridgefield, Vancouver, and Washougal . The Draft SMPs are being distributed along with this Analysis for additional public review and comment and will also be reviewed by elected and appointed officials and the Department of Ecology. Accordingly, this draft analysis will need to be revised if substantial revisions are made to the policies and regulations proposed in Draft SMPs of the identified local governments.

1.2 State Requirements

According to the state shoreline guidelines outlined in WAC 173-26, Part III, the Clark County Coalition is required to evaluate and consider cumulative impacts of 'reasonably foreseeable future development' on the shorelines of the state as follows[1]:

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 among development opportunities. Evaluation of such cumulative impacts should consider:

- current circumstances affecting the shorelines and relevant natural processes;
- reasonably foreseeable future development and use of the shoreline; and
- (iii) beneficial effects of any established regulatory programs under other local, state, and federal laws.

This Cumulative Impacts Analysis uses these three considerations as a framework for evaluating the potential long-term impacts on shoreline ecological functions and processes that may result from development or activities under the proposed draft SMPs over a twenty-year time frame for consistency with local government Growth Management Act comprehensive plans.

The term "cumulative impact" is not defined in the Ecology guidelines. However, it is defined under the National Environmental Policy Act as:

> *…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

1.3 Report Contents

This draft report provides a planning-level assessment of the potential cumulative impacts that can be expected to occur if the proposed local government Draft SMPs (dated June 2011) are adopted and implemented. The assessment is limited to cumulative impacts of reasonably foreseeable future development in areas subject to SMA jurisdiction. There are nearly 370 miles of regulated shoreline in Clark County. There are a total of 60 waterbodies: 42 rivers and streams and 18 lakes. There are about 33,000 acres landward of the ordinary high water mark (OHWM) that potentially may be regulated by the Draft SMPs. In-water work, such as construction of docks, is also regulated by the SMP. Information on the number of developed, under-utilized, and vacant properties potentially affected by the SMPs is provided in Chapter 4.

The analysis is focused on those uses or developments that have the greatest potential for adverse impacts when considered collectively over a long-range planning horizon. Signs are regulated

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[1] WAC 173-26-186(8)(d))

under the SMP but are not considered in this context based on their limited size and effect on shoreline ecological functions.

According to the shoreline guidelines, the assessment of cumulative impacts occurs at both the **planning stage** (when an SMP is being developed) and at the **permitting stage** or the time individual development proposals are reviewed (once an SMP is adopted and implemented). The guidelines suggest that impacts of 'commonly occurring and planned development' be assessed at the planning stage 'without reliance on an individualized cumulative impacts analysis.' In contrast, developments that have unforeseeable or uncommon impacts, which cannot be reasonably identified at the time of SMP development should be evaluated via the shoreline substantial development and conditional use permit processes to ensure that all impacts are addressed and that there is no net loss of ecological function after mitigation.[2]

The objective of this Analysis is to evaluate whether commonly occurring shoreline uses and developments within the county will result in cumulative impacts to shoreline ecological functions. The Analysis assists in determining whether county-wide the Draft SMPs will result in a *net* loss of shoreline ecological functions compared to 'baseline' conditions or *no net* loss. No net loss assumes that impacts will occur, but adequate measures are in place within the overall shoreline program to mitigate them such that the post development conditions are no worse *overall* than pre-development conditions. For this analysis, the baseline conditions are the conditions that are generally identified and described in the Shoreline Inventory and Characterization Report (ESA Adolfson, 2010).

Standards and procedures are at the core of any SMP. These are essential for evaluating the effects of specific development actions on a case-by-case basis at the time individual shoreline development proposals are reviewed. These project-level analyses will allow site-scale factors to be considered in the assessment of baseline conditions to supplement the inventory information available for the County and its Cities as a whole. To achieve no net loss, the SMP requires each project to mitigate impacts by avoiding, then minimizing adverse effects, then replacing impacted resources through compensatory mitigation efforts. This report assumes that avoidance, minimization and compensatory mitigation would be required during the standard permit process and would result in no net loss of ecological functions on a site-by-site basis.

Appendix A has a series of tables that cite specific provisions in the Coalition Draft SMPs (dated June 2011) and the Draft Restoration Plan (ESA Adolfson, 2011) that have the potential to affect shoreline ecological functions. The tables are organized such that a brief overview of: 1) current conditions; 2) likely future changes; 3) shoreline processes and functions potentially affected; 4) the effects of proposed SMP provisions; 5) existing regulatory controls; and 6) expected future performance is provided for each SMA waterbody's by shoreline designation. Additional details of Appendix A are included in Chapter 2 Methodology.

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[2] WAC 173-26-201(3)(d)(iii)

CHAPTER 2 METHODOLOGY

Determining whether the Coalition Draft SMPs collectively result in net loss or no net loss of shoreline ecological function over time was a multi-step process that was undertaken in the manner described below:

Step 1: Identifying existing shoreline ecological functions. Identifying shoreline ecological functions is a requirement of the Ecology guidelines (WAC 173-26) and is defined as:

> *The concept of ecological functions recognizes that any ecological system is composed of a wide variety of interacting physical, chemical and biological components, that are interdependent in varying degrees and scales, and that produce the landscape and habitats as they exists at any time. Ecological functions are the work performed or role played individually or collectively within ecosystems by these components.* (WAC 173-26-201)

Existing ecological functions in the county are documented by waterbody in the Inventory and Characterization report (ESA Adolfson, 2010). Representative indicators of principal ecological functions were summarized for each waterbody in Appendix A and include the following:

1. Salmon Recovery Plan priorities and Ecosystem Diagnosis and Treatment Model;
2. Potential channel migration zone, geologic hazards, critical aquifer recharge areas;
3. Associated wetlands and high value wetlands;
4. Water quality;
5. Priority Habitat and Species Use;
6. Riparian habitat quality;
7. Shoreline modifications; and
8. Land cover.

Step 2: Determining reasonably foreseeable future development. A parcel-based lands analysis was conducted to determine the number of parcels that have the potential to develop, and the type of uses and extent of development that would be allowed to occur based on zoning districts. A full build-out scenario as allowed by the applicable zoning district was used to assess the worst-case scenario of future development. Additional information on the methodology used in this step is included in Chapter 4 below.

Step 3: Determining potential impacts associated with foreseeable development. Step 2 established the types of development the county is likely to see along its shorelines. Step 3 examined the typical impacts that could result from such development.

Step 4: Determining if impacts will be adequately avoided or mitigated. This step examines the proposed SMPs and describes the regulations in the SMPs that would serve to mitigate potential impacts associated with foreseeable development. This involved addressing the following:

- Does the proposed shoreline designation adequately protect existing ecological functions?
- Are the allowed and conditionally allowed uses appropriate for each shoreline designation?
- Are the structure setbacks and critical area buffers protective of existing ecological functions?
- What other regulations in the SMP serve to protect ecological functions and are they adequate to address all potential impacts?

Step 5: Determine if the Restoration Plan would mitigate potential impacts not adequately addressed by the proposed SMP. According to Ecology's SMP Handbook, restoration activities included in the Restoration Plan should be considered in determining whether the SMP will address cumulative impacts and achieve no net loss. Programmatic restoration measures were identified for each waterbody in Appendix A and considered when determining the overall impact of foreseeable development on existing shoreline ecological functions.

Step 6: Describe beneficial effects of existing regulatory programs and determine if they would address potential impacts not adequately addressed by the proposed SMP. Various existing local, state and federal plans and programs were reviewed to determine if ecological functions and processes would be protected when new development occurs.

Step 7: Assess future performance of ecological functions by waterbody and shoreline designation based on findings of the previous six steps.

CHAPTER 3 SUMMARY OF COUNTY EXISTING CONDITIONS

The Shoreline Inventory and Characterization (ESA Adolfson, 2010) report identifies existing conditions and evaluates the ecological functions and processes in Clark County and its cities' shoreline jurisdiction. A total of 60 waterbodies were identified as shorelines of the state: 42 rivers and streams and 18 lakes representing nearly 370 miles of shoreline in the county. Approximately 158 of those total miles (County-wide) are Shorelines of Statewide Significance: the Columbia and Lewis Rivers; portions of the East Fork Lewis and Washougal Rivers; and Merwin, Vancouver and Yale Lakes. Shorelines of Statewide Significance are defined as rivers where the mean annual flow is measured at 1,000 cubic feet per second or more and lakes with a surface acreage of 1,000 acres or more measured at the ordinary high water mark. The SMA establishes the following use preference for Shorelines of Statewide Significance:

> *The legislature declares that the interest of all of the people shall be paramount in the management of shorelines of statewide significance. The department, in adopting guidelines for shorelines of statewide significance, and local government, in developing master programs for shorelines of statewide significance, shall give preference to uses in the following order of preference which:*
>
> 1. *Recognize and protect the statewide interest over local interest;*
> 2. *Preserve the natural character of the shoreline;*
> 3. *Result in long term over short term benefit;*
> 4. *Protect the resources and ecology of the shoreline;*
> 5. *Increase public access to publicly owned areas of the shorelines;*
> 6. *Increase recreational opportunities for the public in the shoreline;*
> 7. *Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary* (RCW 90.58.020)

The county is divided into two Water Resource Inventory Areas, or WRIAs: the Lewis River watershed (WRIA 27) and the Salmon-Washougal River watershed (WRIA 28). The land forms, other landscape features, and the flow of water affect the function of shorelines in each watershed. Upper watershed areas of WRIA 27 were considered important due to the presence of snow and water storage in the higher elevations, as were areas along the East Fork Lewis River, due to highly permeable soils. The majority of WRIA 28 was considered of importance to hydrologic processes due to relatively high levels of precipitation and the ability of the upper terrace plains to retain surface water with its many wetland areas.

This report focuses on ecological functions of SMA shorelines and ties the watershed characterization to the present-day condition of 96 shoreline reaches. In addition to hydrologic functions, the characterization examines shoreline vegetation, habitat, and hyporheic functions as required by the Ecology's shoreline guidelines. A variety of characteristics were analyzed by waterbody to better understand the condition of these functions: flood hazards, priority habitat and species use, instream and riparian habitats, water quality, existing and proposed land use patterns and zoning, and historical and cultural resources. Several of these parameters are summarized at a county-wide scale below.

3.1 Water Quantity

Critical aquifer recharge areas are located throughout both WRIAs 27 and 28. Water withdrawals in many areas contribute to low instream flow conditions and impaired water quality (temperature exceedance). Withdrawals of groundwater through municipal wells have lowered groundwater levels throughout the western portion of WRIA 28, and larger declines have occurred in the aquifers within the Burnt Bridge and Salmon Creek drainages. These reductions in groundwater levels signal that use of groundwater has affected the natural recharge abilities of the aquifers.

3.2 Water Quality

According to the Ecology's Water Quality Assessment 303(d) list, waterbodies in WRIA 27 generally have fair to good water quality with the exception of East Fork Lewis River, which exceeds temperature standards. The waterbodies in the western portion of WRIA 28 have poor to good water quality. Lacamas Creek, Lacamas Lake, Burnt Bridge Creek, Lake River, Whipple Creek, and Salmon Creek are waterbodies known to be particularly poor. However, water quality in the Washougal River is generally good. The most common factors that cause water quality to exceed acceptable levels in the county are fecal coliform bacteria and stream temperature, usually due to agricultural practices, failing septic systems and stormwater runoff. Chemical contamination in sediments contributes to degradation of water quality in the lower Columbia River and Vancouver Lake.

3.3 Floodplain and Wetland Areas

Loss of floodplain and wetland areas is a significant impairment in Clark County, reducing shoreline functions for surface water filtration and retention, increasing the potential for urban flooding, and contributing to water quality degradation. Levees and dikes have disconnected the rivers from their historic floodplain and wetland areas associated with the Lower Columbia River and other tributaries such as Salmon, Morgan, Lacamas and Fifth Plain Creeks. Floodplains and wetlands have been filled to accommodate development. Existing floodplain and wetland areas within the channel migration zones on the East Fork Lewis River and those in the urban growth areas of Battle Ground and Vancouver in particular, have been identified as at-risk. Channel migration zones are discussed in more detail below.

3.4 Channel Migration Zones

The channel migration zone (CMZ) is the area where the active channel of a stream is prone to lateral movement over time. Channel migration is a natural process associated with all sizes of flowing waterbodies. Patricia Olsen, Hydrogeologist, Washington State Department of Ecology, has identified potential channel migration areas throughout Clark County (Olsen, 2009; Olsen, 2010). Stream and river reaches are identified as having a Moderate-Low (ML), Moderate (M), Moderate-High (MH), and High (H) potential for channel migration based on review of existing data. The streams that include predominantly High rankings include: Cedar Creek, East Fork Lewis River, North Fork Lewis River, Salmon Creek, and Little Washougal River. See Appendix A for more details related to channel migration zones.

3.5 Riparian Areas

Riparian areas are the transitional zones between aquatic and terrestrial environments. These areas are important for protection of streams, lakes and other aquatic habitats. When well vegetated and not degraded, riparian areas provide a broad suite of ecological functions. These include:

- water quality improvement (filtering and processing pollutants from urban runoff);
- fine sediment control (trapping sediments before reaching aquatic habitats or water);
- inputs of large woody debris (providing in-stream habitat for salmonids);
- shade and microclimate (regulating temperature, keeping stream waters cool for fish);
- litter fall/organic matter input (providing organic material for decomposers and soil);
- hydrology and flood retention; (managing stormwater runoff and reducing flooding) ; and
- fish and wildlife habitats (supports habitat elements).

Land use and development resulting in diking, draining, introduction of contaminants and non-native invasive species, loss of woody vegetation, and the isolation of side-channel habitats has impaired the ability of these riparian areas to provide the full range of functions originally available. Impairment of these functions affects water quality and quantity, wildlife habitat, slope stability, and in-stream habitat. Protection and restoration of riparian zones is important for improvement of water quality and maintenance of cool water for salmon recovery.

3.6 Priority Habitats and Fish Species

Six species of fish in the Columbia River system have been listed as Threatened under federal laws and more are proposed for listing. The Threatened species include Columbia River bull trout, Columbia River chum salmon, Lower Columbia River coho Salmon, Lower Columbia River Chinook salmon, Lower Columbia River steelhead, and Pacific eulachon. The decline in fish populations has occurred over decades. Despite dramatic habitat alterations, numerous federally listed species of salmonid and other fish use the lower Columbia River for passage and rearing. The Washington Department of Fish and Wildlife priority habitat database identifies important anadromous fish populations in Cedar Creek, East Fork Lewis River, Salmon Creek and the Washougal River. In addition to fish, numerous priority wildlife species are found along the Columbia River and within its floodplains: Stellar sea lion, California sea lion, bald eagle, Columbia white-tailed deer, purple martin, cavity-nesting ducks, Caspian tern, osprey, numerous waterfowl concentrations, great blue heron, and sandhill crane. Priority habitats and species are also particularly associated with Vancouver Lake, Lancaster Lake, Canvasback Lake, Lacamas Creek, Lake River, and Salmon Creek. Significant use of shoreline areas by priority species occurs in the Lower Columbia floodplain area from Vancouver Lake north to Lancaster Lake, and especially the Ridgefield National Wildlife Refuge. See Appendix A for more details related to existing priority habitats and fish species.

3.7 Land and Shoreline Use and Modifications

Existing dams block natural passage of anadromous fish, alter natural flow regime, and disrupt the natural delivery of upstream sediments. Major dams and hydroelectric facilities are located on the Lewis River and upstream on the Columbia River. Dams are considered permanent facilities in this shoreline inventory, and they are recognized as a significant impairment affecting water quality, water temperature, sediment transport, fish habitat, flood flow and natural hydrology, and anadromous fish populations. However, improvement to anadromous fish habitat is expected along the Lewis River as part of the reintroduction program required by federal licensing of the hydroelectric dams.

Banks along the lower Columbia River and other shoreline streams are diked, leveed, armored, protected with riprap or otherwise modified. This is especially true at bridge abutments, in marinas, within Port properties, at docks, or surrounding other in-water structures. There are a total of 155 mapped docks/piers and 30 bridges crossing shorelines in Clark County.

Water-dependent commercial, industrial, and recreational waterfront uses were evaluated in *An Assessment of Water-dependent Commercial, Industrial, and Recreational Uses for Clark County Coalition SMP Update Final Draft Report,* prepared by BST Associates in May 2010. BST assessed supply and demand for marine terminals, boat/ship yards, and recreational boating facilities and upland support activities. According to the report, a wide variety of water-dependent uses such as cargo terminals, marinas, private moorages, parks, industrial and mixed use developments are currently located or are being planned on the Columbia River in Clark County. The existing supply of marina moorage in Clark County is approximately 650 slips, spread between four marinas: McCuddy's Marina in Ridgefield, Kadow's Marina between Vancouver and Ridgefield, Steamboat Landing Marina in east Vancouver, and the Port of Camas-Washougal Marina. See Appendix A for more details related to existing land and shoreline use and modifications along Clark County shorelines.

3.8 Cultural and Historical Resources

Numerous recorded pre-contact materials, village sites, and camp sites are among the cultural resources of the Chinookan-speaking people located within the shoreline planning areas. There is a significant chance of finding unknown pre-historic and historic artifacts throughout the shoreline planning areas. See Appendix A for more details related to existing cultural and historic resources along county shorelines.

3.9 Restoration Opportunities

Riparian and instream habitat is generally degraded within the incorporated areas of the county from residential and industrial development and in some unincorporated areas from resource-based land uses. In addition to evaluating the ecological functions of county shorelines, the inventory and characterization also identifies restoration opportunity areas and provides management recommendations. These are discussed by sub-basin in the inventory report. See Appendix A for more details related to restoration opportunities along county shorelines.

CHAPTER 4 REASONABLY FORESEEABLE FUTURE DEVELOPMENT

Ecology guidelines require the inclusion of reasonably foreseeable development as part of the cumulative impacts analysis: *Local master programs shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions fostered by the policy goals of the Act* (WAC 173-26-186). According to the Ecology Handbook (Chapter 17 Cumulative Impacts Analysis), reasonably foreseeable development is development that is likely to occur during the next 20 years based on the proposed shoreline environment designations, proposed land use density and bulk standards, and current shoreline development patterns.

The purpose of this chapter is to describe the methodology used to determine reasonably foreseeable development for Clark County Coalition SMA shorelines and to summarize the results of the analysis.

4.1 Methodology for Reasonably Foreseeable Future Development

A GIS-based lands analysis was conducted to document the foreseeable development that may occur along shorelines in the county. The analysis is based on the 2010 Clark County Vacant Buildable Lands Model (VBLM) (see Appendix B for Clark County model methodology). The County's VBLM is a planning tool developed to analyze residential, commercial and industrial lands within urban growth areas for use during updates to the Clark County 20-year Comprehensive Growth Management Plan. It is also used for monitoring growth patterns during interim periods. The VBLM categorized properties within urban growth areas based on Comprehensive Plan designations, Clark County Assessors' parcel data, and mapped critical lands.

Since the VBLM only applied to urban growth areas, Clark County staff ran a simplified version of the model for lands outside urban growth areas within shoreline jurisdiction as part of this Cumulative Impacts Analysis effort. This would ensure the Analysis also addressed potential development on rural properties. The categories in the GIS dataset provided by County staff per the VBLM model for both inside and outside urban growth areas are shown in the table below.

Table 4-1. VBLM Model Categories

VBLM Categories in Urban Growth Areas	VBLM Categories outside Urban Growth Areas
Commercial Built	Commercial Built
Commercial Built with Critical	Commercial Underutilized
Commercial Underutilized	Commercial Vacant
Commercial Underutilized with Critical	Industrial Built
Commercial Vacant	Industrial Underutilized
Commercial Vacant with Critical	Industrial Vacant
Industrial Built	Residential Built
Industrial Built with Critical	Residential Underutilized
Industrial Underutilized	Residential Vacant
Industrial Underutilized with Critical	Tax Exempt
Industrial Vacant	Blank (properties not categorized but generally considered to be protected forest lands)
Industrial Vacant with Critical	
Residential Built	
Residential Built with Critical	
Residential Underutilized	
Residential Underutilized with Critical	
Residential Vacant	
Residential Vacant with Critical	
Public Facilities	
Parks and Open Space	
Parks and Open Space with Critical	
Roads and Easements	
Tax Exempt	

ESA made several changes to the VBLM GIS dataset to facilitate this analysis:

1. ESA added a public lands dataset (Clark County, 1995) to the VBLM GIS dataset. This dataset identifies state and federally owned lands including those lands owned by the Department of Natural Resources, Washington Department of Fish and Wildlife, Washington Parks, Washington State University, U.S. Forest Service, U.S. Fish & Wildlife, U.S. Park Service, and the U.S. military. This was done because properties outside the urban growth areas were not categorized to include public facilities or other properties under public ownership as had been done for properties within urban growth areas.

2. In order to provide data that was consistent between rural properties and urban properties, the categories for the urban growth areas were grouped to match those for rural properties. For example, *commercial built* and *commercial built with critical* were categorized into one category called *commercial built*. Therefore, properties that were considered constrained per mapped critical lands are not in their own separate category for this analysis. *Public facilities* were grouped with *parks and open space, open space with critical,* and *roads and easements*.

3. ESA grouped the *blank* category for the properties located outside urban growth areas with the *tax exempt* category.

4. Port properties, although considered to be part of the *tax exempt* category in the VBLM, were distributed into the various *industrial* categories.

The final set of categories developed for this Analysis is:

1. Commercial Built
2. Commercial Underutilized
3. Commercial Vacant
4. Industrial Built
5. Industrial Underutilized
6. Industrial Vacant
7. Public Lands
8. Residential Built
9. Residential Underutilized
10. Residential Vacant
11. Tax Exempt Lands

Discussion of each category is included in more detail in sections below. Once the properties were categorized according to the above list, the categories were 'intersected' in GIS with the proposed Shoreline Designations so that the data results are specific to the shoreline jurisdiction only. This produced tabular data that displayed the number of acres located in each of the eleven categories, organized by shoreline designation and associated waterbody. The data described in this chapter excludes the Aquatic designation since potential development has been assessed only for upland properties.

There is development potential associated with properties located in each of the eleven categories; however, vacant properties have the most potential to develop. Since there is minimal commercial and industrial vacant properties (see Section 4.2.1) ESA focused on quantifying the development potential of residential vacant properties. Development potential for residential vacant lands was assumed to occur under a full build-out scenario as allowed by the underlying zoning district. Appendix C includes a list of density allowances by zoning district used in the analysis.

4.2 Types of Future Development that are Likely to Occur

4.2.1 Summary Results

The table below shows the amount of shoreline properties (in acres and percent) located in each of the 11 Analysis categories in incorporated and unincorporated areas of the County. Most shoreline properties are classified as *residential vacant*, *public lands*, *residential built* and *tax exempt*. Very few properties are classified as commercial or industrial.

Table 4-2. Distribution of Shoreline Properties in Clark County Coalition

Cumulative Impact Analysis Categories		Acres	Percentage
Commercial	Built	53	0%
	Underutilized	49	0%
	Vacant	54	0%
Industrial	Built	440	1%
	Underutilized	133	0%
	Vacant	1,472	5%
Residential	Built	5,116	17%
	Underutilized	1,881	6%
	Vacant	8,223	28%
Public lands		7,847	26%
Tax Exempt lands		4,506	15%
Total properties in shoreline jurisdiction		29,774	100%

Vacant lands in Coalition shorelines are predominantly residential, with over 8,000 acres, accounting for nearly one third of the redevelopment potential. According to the underlying zoning density allowances, *residential vacant* lands have the potential to develop an additional 1,916 units county-wide (See Table 4.4). This value does not take into account the percent of land that would be constrained by critical areas, the percent of land necessary to build supporting infrastructure (roads, stormwater ponds, septic drain fields), and the likelihood of actual development in the next 20 years (typically referred to as the market factor). Therefore, the number of future residential units are likely higher than would occur. The purpose of overestimating development on vacant lands in this manner is to approximate impact on ecological functions under a worst-case scenario.

The sections below describe *tax exempt* lands, *public lands*, *vacant lands* and *underutilized lands* in more detail. Tables in Appendix A provide the acre and percent values of each of these four categories, organized by waterbody and shoreline designation. See the *Foreseeable Development* column.

4.2.2 Tax Exempt Lands

Tax exempt lands are a mix of properties that are exempt from state taxes such as public schools, non-government-owned dedicated open space, and non-state-owned protected forest lands. Although publically-owned properties are also tax exempt, all city and county-owned land within urban growth areas, and state-owned, such as Washington State University, federally-owned and lands both inside and outside of urban growth areas have been categorized as Public Lands.

The table below indicates the amount and percentage of *tax exempt* lands located in each SD in the county. The percentage values are calculated by dividing the total amount of *tax exempt* land located in a particular SD by the total amount of properties in that same SD. For example, 34 percent of all properties in the Natural designation are classified as *tax exempt*.

Table 4-3. Amount of Properties Classified As Tax Exempt

Shoreline Designation	Exempt Properties	
	Acres	Percentage
Natural	896	34%
Urban Conservancy	9	0%
Medium Intensity	46	7%
High Intensity	0	0%
Rural Conservancy Residential	663	12%
Rural Conservancy Resource Land	2,891	20%

Tax exempt lands are concentrated in the Natural and Rural Conservancy-Resource Land designations. *Tax exempt* lands have the potential to redevelop (such as public school expansions) or convert from forested lands to other types of development. Lands that have been set-aside as open space are not likely to develop in the future.

4.2.3 Vacant Properties

The Clark County VBLM model classified commercial and industrial lands as vacant according to the following criteria:

- Building value less than $67,500
- Not assessed with other parcels. These parcels are often parking lots, or multiple parcels comprising a single development. All assessed with parcels are considered built.
- Not an easement or right-of-way

- Parcel greater than 5,000 square feet

Residential lands were classified as vacant according to the following criteria:

- Building value less than $13,000
- Not a mobile home park

The following table shows the amount of vacant properties that are located in the shoreline jurisdiction, organized by shoreline designations. The percentage values are calculated by dividing the total amount of vacant land located in a particular SD by the total amount of properties in that same SD. For example, 24 percent of all properties in the Natural designation are classified as residential vacant.

Table 4-4. Vacant Properties by Shoreline Designation

Shoreline Designation	Vacant Commercial Properties (acres / %)		Vacant Industrial Properties (acres / %)		Vacant Residential Properties (acres / %)	
Natural	0	0%	2	0%	629	24%
Urban Conservancy	25	1%	70	2%	268	6%
Medium Intensity	7	1%	7	1%	89	13%
High Intensity	21	1%	1,386	61%	0	0%
Rural Conservancy Residential	0	0%	7	0%	2,018	38%
Rural Conservancy Resource Land	0	0%	0	0%	5,220	37%

The highest number of vacant properties is located in the Rural Conservancy-Resource Land designation, with residential vacant properties totaling 5,220 acres. Over half of the High Intensity designated areas are classified as *industrial vacant*, with most of those being properties owned by port districts. While the term "vacant" may not always accurately reflect current conditions (such as parking lots or outdoor storage areas), the classification generally indicates that no structural improvements have been made or assessed for taxes on the property. There is also a large percentage of properties in the Rural Conservancy-Residential designation classified as *residential vacant*. Commercial vacant properties are very limited in the shoreline.

As mentioned earlier, properties that are vacant have the most potential to develop. Based on the underlying zoning allowance for units per acre, residential vacant lands have the potential to develop with the following number of residential units.

Table 4-5. Potential Residential Units on Vacant Lands

Shoreline Designation	Residential Vacant Properties	
	Number of Potential Units	Percentage of Total Residential Units
Natural	33	2%
Urban Conservancy	1,069	56%
Medium Intensity	422	22%
High Intensity	0	0%
Rural Conservancy Residential	252	13%
Rural Conservancy Resource Land	140	7%
Total	**1,916**	**100%**

There is the potential for 1,916 additional residential units to be developed along county-wide SMA shorelines. The percentage of residential units is calculated by dividing the number of units in each shoreline designation by the total number of new units. The purpose of this calculation is to indicate the distribution of new residential units across the shoreline designation. A majority of residential units would likely occur in the Urban Conservancy designation followed by the Medium Intensity designation.

4.2.4 Underutilized Properties

The following table shows the amount of underutilized properties that are located in the county shoreline jurisdiction, organized by shoreline designation. Underutilized residential properties are those properties with a building value per acre of land that is below the 20th percentile of building value per acre of all residential parcels. Underutilized commercial and industrial properties are those properties that have a building value per acre of less than $50,000. See Appendix B for more detail.

Table 4-6. Underutilized Properties by Shoreline Designation

Shoreline Designation	Under-utilized Commercial Properties (acres / %)		Under-utilized Industrial Properties (acres / %)		Under-utilized Residential Properties (acres / %)	
Natural	0	0%	0	0%	11	0%
Urban Conservancy	39	1%	16	0%	248	5%
Medium Intensity	6	1%	0	0%	119	18%
High Intensity	0	0%	117	5%	0	0%
Rural Conservancy Residential	2	0%	0	0%	456	8%
Rural Conservancy Resource Land	3	0%	0	0%	1,046	7%

As shown in the tables above, overall there are fewer underutilized properties in the shoreline jurisdiction than vacant properties in unincorporated Clark County. Similar to the vacant properties, most underutilized properties are residential properties concentrated in the Rural Conservancy-Resource Land designation. The highest percentage of properties considered under-utilized are residential properties in the Medium Intensity designation. In total, only a very small percentage of the shoreline jurisdiction is considered underutilized.

Underutilized properties are considered to have potential for redevelopment. Redevelopment of existing residential structures typically involves construction of a larger house. Commercial and industrial redevelopment would likely result in larger structures and increased impervious surfaces. Redevelopment may also involve vegetation removal.

4.2.5 Public Lands

The following table shows the amount of lands in public ownership located in the shoreline jurisdiction, organized by shoreline designation. Publicly-owned lands means those properties that are city and county-owned land within urban growth areas, and state- or federally-owned both inside and outside of urban growth areas. While port districts are public entities, their properties are not classified as public lands in this analysis.

Table 4-7. Publicly-owned Lands by Shoreline Designation

Shoreline Designation	Public Lands	
	Acres	Percentage
Natural	942	35%
Urban Conservancy	3,609	80%
Medium Intensity	149	22%
High Intensity	138	6%
Rural Conservancy Residential	32	1%
Rural Conservancy Resource Land	2,896	20%

Most publicly-owned lands are concentrated in the Urban Conservancy and Rural Conservancy-Resource Land designations.

Development on the majority of public lands is anticipated to be minimal, largely due to their intended purpose being reserved for open space or public recreation uses. Future development may increase recreational opportunities on those lands; while other properties may be developed for transportation and utility facilities. Restoration activities may occur on public lands. State-owned lands that are in forestry use would likely remain in forestry. Roads and stream crossings to support forestry use may be built on such lands.

4.3 Water-dependent Uses and Market Trends

According to *An Assessment of Water-dependent Commercial, Industrial, and Recreational Uses for Clark County Coalition SMP Update Final Draft Report* (BST Associates, 2010), BST assessed supply and demand for marine terminals, boat/ship yards, and recreational boating facilities and upland support activities. For cargo storage along the Lower Columbia (including Oregon jurisdiction) there appear to be adequate space for most projected demand within existing port facilities, but some specific shortages may occur if demand for auto, drybulk (potash, clay, bentonite) and breakbulk (agriculture and forest products) facilities increase beyond normal trends.

Forecasting the demand for water-dependent recreational boat ramp space is difficult because usage data is not available. However, generalizations on the need for space were based on the growth in boat ownership. BST forecasts an addition of more than 1,000 boats that fit in the trailerable boat size range (boats in the 16 to 20-foot range and a portion of the boats in the under 16-foot and 21 to 30 foot ranges). The BST forecast suggests that there will be demand for an additional 410 wet moorage slips by 2030, or approximately two-thirds more than currently exist. Hand-launch and boat ramp facilities are also in demand but with no public records of such ownership no forecast of demand was provided.

Development of over-water moorage would likely occur along the following waterbodies due to their size and proximity to developed areas:

1. Columbia River
2. Lake River
3. Vancouver Lake
4. Lacamas Lake
5. Round Lake
6. Fallen Leaf Lake

CHAPTER 5 POTENTIAL IMPACTS OF FORESEEABLE DEVELOPMENT

5.1 Ecological Functions at Risk

This section describes the shoreline ecological functions most at risk from development, based on the findings of the Shoreline Inventory and Characterization (ESA Adolfson, 2010) report. It also describes how development would affect intact ecological functions.

5.1.1 Upland Habitat

General upland areas provide habitat for a variety of amphibians, reptiles, birds, small and large mammals, and other wildlife native to Washington. Upland areas along shorelines serve as migration corridors for animals like deer and elk that move between suitable habitats. Forested upland areas provide structure and cover for birds and wildlife for resting, breeding and rearing of young. Native vegetation in upland areas provides food and forage to native birds and wildlife. While wetlands and critical habitats are specifically protected, upland habitat within the shoreline jurisdiction outside of critical areas is not specifically protected.

Upland habitat resources within Clark County include forests (including old growth), canyons, riparian areas, and grasslands. These habitats provide breeding, feeding, and migration areas for vertebrate and invertebrate grazers and seed eaters, omnivores, carnivores, and scavengers (Kruckeberg, 1991). Many of these terrestrial species rely on shoreline habitats (lakes and rivers) for some of their life stage requirements. Aquatic species such as salamanders rely on the terrestrial upland habitats for breeding and rearing.

Development within the shoreline jurisdiction will adversely affect general upland and riparian habitat. Clearing, removal of vegetation, soil disturbance and replacement with impervious surfaces and structures will reduce general habitat area and value in the county. Habitat area could be reduced over time and habitat fragmented for amphibians, birds and wildlife. Disturbance to shoreline habitats degrade the value of the habitats and increase the likelihood that invasive plants, non-native landscaping and grass will replace native vegetation. Habitat is impacted by development due to disruption of migration corridors, alteration or removal of habitat resources, presence of human activity.

5.1.2 Vegetation Retention

Riparian areas along freshwater shorelines provide a broad suite of ecological function. These include water quality improvement (filtration and processing of contaminants); fine sediment control; inputs of large woody debris (LWD); shade and microclimate; litter fall/organic matter input; hydrology and slope stability; and fish and wildlife habitat. Other functions provided by riparian areas include recreation, cultural and aesthetic resources, and providing protection from threats of coastal hazards.

Development of shoreline properties typically involves the removal of existing vegetation to make room for new structures, expansions, and remodels; new impervious surfaces, such as parking lots, driveways and roadways; and new or expanded hard armoring. Land use and development introduce contaminants and non-native invasive species, result in loss of woody vegetation, and the isolation of side-channel habitats. Development impairs the ability of riparian areas to provide the full range of functions originally available.

5.1.3 Wetlands

Wetlands include swamps, marshes, bogs, and seasonally wet areas. Extensive associated wetlands in the county are found in the Lower Columbia River floodplain near Vancouver Lake and Ridgefield National Wildlife Refuge, along Lacamas Creek and Fifth Plain Creek, and in the lower sections of East Fork Lewis River. Ecological functions performed by wetlands include:

- Biogeochemical functions related to trapping and transforming chemicals and pollutants, and improving water quality;
- Hydrologic functions related to maintaining the water regime and reducing flooding and peak flow rates;
- Maintenance of stream base flows by releasing water to streams during dry summer months;
- Sediment trapping; and
- Food web and habitat functions (Granger et al., 2005).

Wetlands provide a variety of habitats for specific wetland-adapted species such as amphibians (i.e., frogs and salamanders), waterfowl, beaver, great blue heron and others. Many of these are priority species such as sand hill crane.

Urban development results in alteration to wetlands across the landscape through direct impacts (wetland fill) and indirect impacts (alterations to hydrology, noise, and lighting). In urban areas, wetlands are affected by re-routing of natural surface waters, causing these habitats to become drier. In rural areas, wetlands are affected by agricultural, where these areas often ditched and drained, or timber harvest, when trees are logged.

5.1.4 Hydrology

Water moves within the watershed as surface water in rivers and streams, infiltrates and becomes groundwater, or is stored in wetlands, lakes, and floodplains. Hyporheic flow occurs as surface flow becomes shallow subsurface flow, moving down valley through alluvial sediments. Water can also flow in the subsurface as groundwater. Ground and surface waters can interact as surface water infiltrates (recharge), or as groundwater reaches the surface (discharge).

Alterations to natural hydrologic processes are generally associated with changes in land use and land cover, but also include direct structural changes to streams and wetlands.

Removal of forest cover to accommodate urban land uses significantly reduces evapo-transpiration rates, and installation of impervious surface significantly reduces groundwater recharge. The conversion from forest to pasture or urban uses directs more water into stream channels. The increased flows result in altered stream channel geometry, compromising instream and riparian habitat functions.

5.1.5 Floodplains

Ecological functions related to floodplains are numerous. Floodplains can provide storage area for water, which ensures flood flow retention and peak flow reductions. Once water enters a storage area, there is potential for recharge to an aquifer. Groundwater recharge is a key ecosystem function that: (1) reduces the amount of surface water flowing in channels, (2) supports groundwater resources, and (3) supports baseflow in streams lower in the system. Groundwater recharge areas are focused within floodplain deposits.

Loss of floodplain area and connectivity occurs as a result of installing levees and dikes which disconnect historical floodplain areas. Floodplain is filled to accommodate development, urban uses and industrial facilities.

5.2 Types of Development that May Impact Ecological Functions

This section describes the types of development that may negatively affect ecological functions most at risk.

5.2.1 Residential Development

Construction of a single-family residence, carefully sited outside of critical areas and buffers, does not typically result in major adverse effects on shoreline resources. However, residential development across the county shorelines as a whole can cause cumulative effects on shoreline resources. Most of the effects are caused by uses commonly associated with residential development including construction of bulkheads, removal of shoreline vegetation, use of fertilizers and other chemicals, alteration of natural drainage pathways, construction of docks/piers, boating activities and the like. These actions typically cause a variety of impacts that affect physical processes and can cause cumulative damage to fish and wildlife species and their habitats.

Shoreline armoring is a concern with many types of shoreline development but is especially common with residential development. Shoreline property owners, especially on rivers, often feel compelled to armor their land against the erosive effects of wind, waves and currents using conventional concrete or riprap structures. However, bulkheads can disrupt sediment generation and adversely affect shoreline morphology and habitat function. Other consequences are habitat fragmentation, loss of migratory corridors, and degradation of foraging habitat. Bulkheads and other types of fills can also force juvenile salmon into deeper water, where the risk of predation may be significantly higher.

Removal of shoreline vegetation, which often accompanies residential development, reduces shade and large woody debris recruitment potential, which impacts the supply of prey resources for juvenile and resident salmon and decreases in-stream habitat complexity in river systems. [B1]

Residential and associated recreational uses of the shorelines pose additional threats to shoreline functions. Potential impacts on shorelines include noise impacts to fish and wildlife, lighting impacts, spreading invasive and exotic species of plants, and disruption to habitat from domestic animals and human presence. Additional potential impacts to shorelines where motorized water craft are allowed include increased wave energy and shoreline erosion, re-suspension of contaminated sediments and/or increased turbidity caused by propeller scour, and possible introduction of chemical pollutants from boat emissions.

5.2.2 Commercial and Industrial Development

Impervious surfaces associated with commercial development can increase the rate of runoff to freshwater aquatic environments, affecting water quality and quantity downstream. Waterfront commercial development can include docks and other structures that impact sediment transport and tidal processes. Similar to residential development, vegetation removal reduces shade and large woody debris recruitment potential. Industrial development has similar impacts but may also include channel dredging, bank armoring for port activities, and a higher intensity of uses both in-water and in the shorelands.

5.2.3 Mining

Mining within floodplains can alter channel morphology and decrease habitat functions. Sediment input to shorelines can increase as a result of mining, decreasing water quality.

5.2.4 In-water Development

Overwater structures including docks, piers, mooring buoys, and marinas primarily affect aquatic processes, species, and habitats by changing light conditions, wave energy, substrate size and type, and water quality (Nightingale and Simenstad 2001). Overwater structures affect the following processes and functions:

1. Reduced light levels can affect photosynthesis and therefore growth and reproduction of phytoplankton and benthic vegetation;

2. Changes in plant species composition and abundance affect aquatic food webs, for example;

3. Reduced light levels, and particularly sharp boundaries between light and shade, affect fish feeding, predator avoidance, schooling, and migration behaviors;

4. Overwater structures can alter wave energy and sediment transport dynamics (e.g., scour areas), changing substrate size and stability, which in turn can affect communities of benthic animals and forage fish spawning;

5. The close placement of pilings diminishes wave energy, causing finer sediments to fall out of suspension where they normally would remain in transport. Reduced wave energy associated with pilings can also prevent transport of larger sediments that require higher wave energy for transport;

6. Construction of structures can disturb the substrate and increase turbidity;

7. Some construction materials (e.g., creosote piles) leach contaminants into the sediments and water column, and marinas may contribute to water quality problems resulting from boat engine exhaust, sewage discharge, fuel spills, and stormwater runoff from adjacent parking lots;

8. Increase in artificial nighttime lighting can attract predators, alter movement and migratory behavior of juvenile fish, including salmonids, and affect reproductive behavior of night-spawning forage fish.

Artificial lighting during the night, from marinas, docks, and buildings or roads adjacent to the bank, can interfere with migration of juvenile fish, including salmonids, and can affect predator-prey interactions (Simenstad et al. 1999, Rich and Longcore 2005). Bright lights at night can be an attractant, potentially exposing juvenile fish to greater levels of predation, and also have the potential to affect spawning behavior of forage fish (Simenstad et al. 1999).

5.2.5 Transportation Facilities

Roads can constrict river and/or stream channels, limit channel migration, disrupt wildlife migratory corridors, contribute pollutants to riverine aquatic environments, and increase sediment deposition in shoreline waters. Surface water runoff from roads specifically results in pollutant loading of heavy metals and oils/grease to nearby waters.

5.2.6 Exempt Activities

There are several developments or activities that would be exempt from obtaining a shoreline substantial development permit under the SMP, although in some cases, a conditional use permit may be required. Some of the most common developments and activities that are considered exempt include: single-family development and appurtenances, normal protective bulkheads associated with single-family development, agricultural practices, docks below the threshold criteria for fair market value, and restoration projects. Even before the increased emphasis in the 2003 Ecology Shoreline Guidelines, exempt activities are required to comply with the SMP goals, policies, and conservation measures even though a permit is not required. The lack of a formal shoreline permit review process for exemptions could potentially create confusion during building permit review and result in less scrutiny for shoreline compliance. By their very nature exempt activities represent a potential for cumulative impacts because of the lack of a formal permit process.

Impacts associated with single-family development, bulkheads, and docks are described in the section above. Agriculture practices such as grading for cultivation removes riparian vegetation, affecting water quality functions (e.g., temperature) and nutrient inputs to aquatic environment (e.g., excessive nutrients from fertilizers; lack of nutrients from lost large woody debris (LWD) recruitment). Irrigation facilities (e.g., diversions, channels, pumps) would alter hydrologic processes (timing and volume of flows) and drainage patterns. Irrigation systems would divert water, reducing water quantity downstream. Restoration projects would benefit shoreline processes such as channel migration and LWD recruitment.

5.2.7 Uses Requiring a Conditional Use Permit or Variance Process

Developments that have impacts that cannot be anticipated or are considered uncommon, which cannot be reasonably identified during the SMP planning process, are typically allowed only with approval of a conditional use permit. Evaluation under the conditional use permit process ensures that all impacts are addressed and that there is no net loss of ecological function after mitigation. Local governments make decisions on Shoreline Conditional Uses, but these decisions need review and approval by Ecology and provide opportunities for all citizens of the state to provide input into Ecology's decision and provides for the opportunity to appeal final decisions to the State Shorelines Hearing Board.

Developments that cannot comply with bulk and dimensional standards in the SMP, or cannot adhere to the standards in the SMP including the provisions to protect critical areas could only be allowed if a shoreline variance permit is approved. Evaluation under the variance process must ensure that all impacts are addressed through mitigation. The shoreline variance process also elevates final decision-making to Ecology with statewide opportunity to for involvement in hearings and appeals.

5.2.8 Illegal Activity

Illegal actions or violations that may or may not be known or remedied via enforcement can have a significant impact on ecological functions and processes. A dock built illegally, vegetation removed from a buffer, or unreported spills of pollutants could adversely affect shoreline ecological functions. On a larger scale, illegal grading or construction of bulkheads, or construction of structures without permits or mitigation, can cause significant harm to shoreline resources. Without enforcement, impacts from such activities would not likely be mitigated. Once identified by the local government, these actions should be mitigated through enforcement and after-the-fact mitigation required.

CHAPTER 6 EFFECTS OF CLARK COALITION DRAFT SMP

6.1 Shoreline Designations

6.1.1 Methodology

The Project Management Team (PMT) assigned shoreline designations by first reviewing stream and lake reaches within the shoreline planning area. The next step involved a review of Ecology's criteria for shoreline designations (SD) which the PMT refined with the goal of drawing more distinctions between each designation. Designation criteria were developed which are provided below under each SD.

Using the criteria, the PMT then assigned SDs to each reach based on:

- the information from the Shoreline Inventory and Characterization report regarding the presence of ecological functions by reach and the performance ranking of ecological functions based on level of alteration ("low", "moderate", and "high");
- comprehensive plans and local zoning;
- current land uses; and
- knowledge of land use plans and proposed projects.

In several cases the PMT divided reaches into several shoreline designations based on land use characteristics. The PMT applied the above-described criteria, and applied the shoreline designation based on general on-the-ground knowledge with assistance from the Technical Advisory Committee and Shoreline Stakeholder Advisory Committee.

Final decisions on the shoreline designations reflected in the most recent versions of the Draft SMPs were based on an iterative process as more specific use policies and regulations were drafted. The PMT revisited a number of designations, in response to comments received on the March 2011 Clark County Coalition Draft SMP from the public. Several shoreline areas were re-designated based on a preliminary cumulative impacts assessment prepared on the March 2011 Coalition Draft SMP.

The criteria included below are from Chapter 4 of each of the Coalition Draft SMPs and would also be used to apply shoreline designations to future shorelines:

Aquatic - SD for lands and waters waterward of the OHWM throughout the county.

The following criteria should be considered in assigning a **Natural** shoreline designation:

- Substantially ecologically intact and have a high opportunity for preservation and low opportunity for restoration;
- Generally in public or conservancy ownership;
- Little or no development;

- Few active agriculture, forestry or mining uses;
- A high potential for passive public recreation;
- Are planned for park or open space uses; or
- Represent ecosystems and geologic types that have high scientific or educational value.

Examples include: Lake River between Vancouver and Ridgefield Urban Growth Area (UGA) boundaries; Columbia River alongside the Ridgefield and Steigerwald Lake National Wildlife Refuges; Canvasback Lake; East Fork Lewis River just west of La Center in a large floodplain expanse; Campbell Lake; and Green Lake.

The following criteria are used to consider an **Urban Conservancy** shoreline designation:

- Located within incorporated municipalities and designated urban growth areas;
- Moderate to high ecological function with moderate to high opportunity for preservation and low to moderate opportunity for restoration;
- Low to moderate ecological function with moderate to high opportunity for restoration;
- Open space or critical areas that should not be more intensively developed;
- Not highly developed and in recreational use;
- Potential for development that is compatible with ecological restoration;
- Planned for a park, open space, or for a Master Planned Resort;
- Moderate to high potential for public passive or active water-oriented recreation where ecological functions can be maintained or restored; or
- Shorelines with moderate to high scientific or educational value.

Examples include Lake River in Ridgefield and Vancouver UGAs, Burnt Bridge Creek in Vancouver near the stream mouth and generally within the Burnt Bridge Creek greenway, and Lacamas Lake in Camas.

The following criteria are used to consider a **Medium Intensity** shoreline:

- Located within incorporated municipalities and designated urban growth areas;
- The shoreline has low to moderate ecological function with low to moderate opportunity for restoration;
- The shoreline contains mostly residential development at urban densities and does not contain resource industries (forestry, mining and farming);
- The shoreline is planned or platted for residential uses in the comprehensive plan; or
- The shoreline has low to moderate potential for public passive or active water-oriented recreation where ecological functions can be restored.

Examples include Gee Creek in Ridgefield, Salmon Creek in Vancouver's UGA and Horseshoe Lake within Woodland's UGA.

The following criteria are used to consider a **High Intensity** shoreline designation:

- Located within incorporated municipalities and designated urban growth areas;
- Low to moderate ecological function with low to moderate opportunity for ecological restoration or preservation;
- Mostly industrial, commercial, port facility, mixed-use, or multi-family residential development at high urban densities and may contain industries that are not designated agriculture, forestry, or mineral resource lands in the comprehensive plan;
- Identified as part of a state or federal environmental remediation program;
- Planned or platted for high intensity uses in the comprehensive plan; or
- May support public passive or active water-oriented recreation where ecological functions can be restored.

Examples include the Port of Vancouver along the Columbia River, Port of Camas-Washougal along the Columbia River, Washougal River stream mouth, and the Port of Ridgefield along Lake River.

The following criteria are used to consider a **Rural Conservancy – Residential** shoreline designation:

- Located outside of incorporated municipalities and designated urban growth areas;
- Moderate to high ecological function with moderate to high opportunity for preservation and low to moderate opportunity for restoration;
- Low to moderate ecological function with moderate to high opportunity for restoration;
- Not highly developed and most development is low-density residential;
- Planned or platted for Rural Center, Rural, or Master Planned Resort in the comprehensive plan;
- Moderate to high potential for public water-oriented recreation where ecological functions can be maintained or restored; or
- High scientific or educational value or unique historic or cultural resources value.

Examples include Salmon Creek between Vancouver and Battle Ground UGAs, Little Washougal River, portions of East Fork Lewis River and Cedar Creek, and Lewis River, downstream of Cedar Creek.

The following criteria are used to consider a **Rural Conservancy – Resource Lands** shoreline designation:

- Located outside of incorporated municipalities and designated urban growth areas;
- Not highly developed, but consists primarily of resource operations (farming, forestry, mining) and recreation, but may contain Master Planned Resorts;

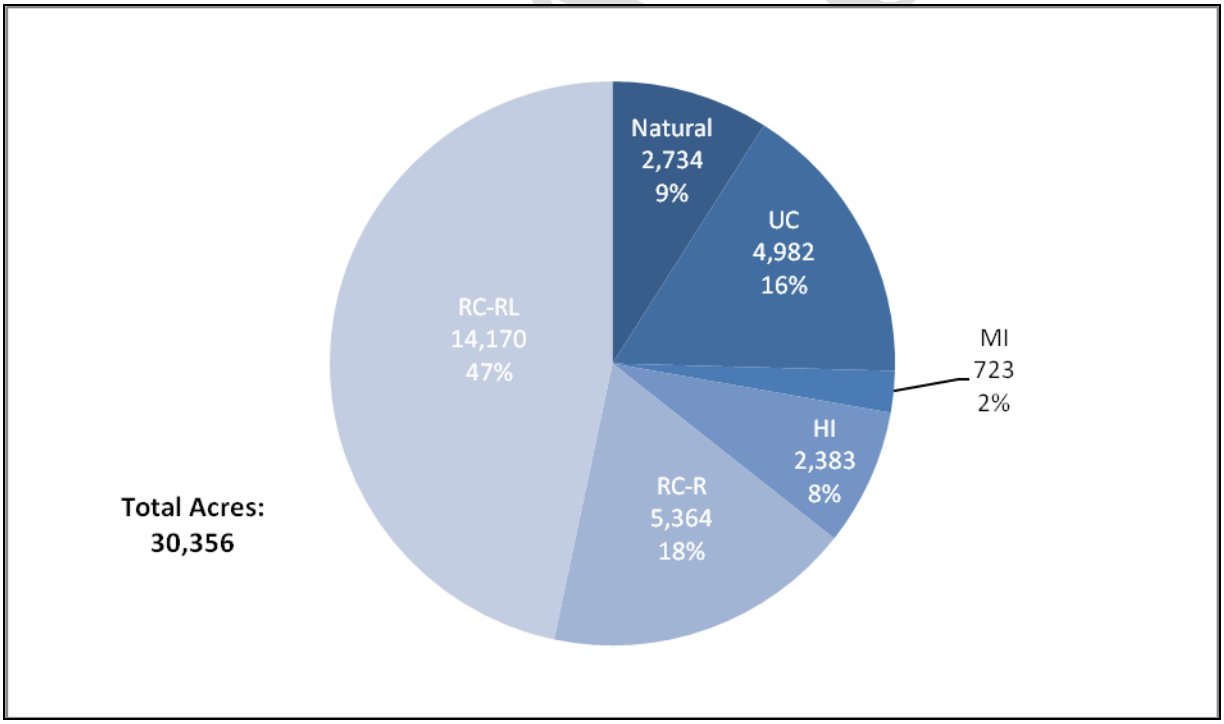
- The shoreline is planned or platted Rural Industrial, Forest, Agriculture, Agri-Wildlife, or has a surface mining overlay in the comprehensive plan;
- The shoreline has a moderate to high potential for passive or low intensity water-oriented recreation where resource industry-related safety concerns are minimal or mitigated and ecological functions can be maintained or restored; or
- The shoreline has moderate to high scientific or educational value or unique historic or cultural resources value.

Examples include shorelines in the upper watershed such as upper reaches of Cedar Creek, Lewis River, East Fork Lewis River, Washougal River, and Lacamas Creek. Lake Merwin and Yale Lake are also designated RC-RL.

6.1.2 Proposed Shoreline Designations

Overall, most shoreline areas in Clark County have been designated RC-RL (47 percent). Figure 6-1 indicates the shoreline designations that were assigned to the County's shorelines by percentage of total shoreland acreage. The Aquatic designation is not represented in these acreage totals.

Figure 6-1. Percentage and Acres of Shoreland by Proposed Shoreline Designation



The SD system is designed so that the uses allowed on each shore segment are generally appropriate considering the ecological condition and sensitivity of the land and water. The type and intensity of uses allowed in areas designated Natural, Aquatic, and Urban Conservancy are limited since these areas are the most sensitive to future development and the most important to protect.

For each SD, the Clark County Coalition SMP identifies:

- Permitted uses and developments – These are uses and developments that are consistent with the SMA. Such uses/developments require a shoreline substantial development permit, a shoreline conditional use permit, a shoreline variance, and/or a statement that the use/development is exempt from a shoreline substantial development permit.
- Prohibited uses and developments – These are uses and developments that are inconsistent with the SMA and which cannot be allowed through any permit or variance.

6.1.3 Uses and Modifications Allowed and Prohibited by Shoreline Designation

The types of future development allowed on County shorelines will vary with the Shoreline Designation (SD). The following tables are organized by shoreline designation and are based on the generally-agreed upon Coalition Use and Modification Tables in Chapter 6 of each government's individual SMP.

Table 6-1. Uses Allowed and Prohibited - Aquatic Shoreline Designation

Permitted	Conditional	Prohibited
Aquaculture *(general)*	**Breakwaters, Jetties, Groins, and Weirs**	**Agriculture**
Boat Launches (*Motorized, Non Motorized)*	**Commercial** (*water-dependent)*	**Commercial** (*water-related, water enjoyment, non water-oriented)*
Covered Moorage	**Dredging and Dredge Material Disposal** (*non-maintenance dredging)*	**Forestry** (*timber harvest)*
Dredging and Dredge Material Disposal (*maintenance dredging, as part of ecological restoration/enhancement)*	**Flood Control Works and In-stream Structures** (*dams, dikes, & levees, instream structures)*	**Industrial** (*water-related, non water-orientated)*
Ecological Restoration	**Forestry** (*log storage)*	**Institutional/Educational Facilities** (*water-related, non water-oriented)*
Industrial (*water-dependent*)	**Institutional/Educational Facilities** (*water-dependent)*	**Mining** (*gravel mining, hard rock mining)*
Marinas	**Shoreline Stabilization** (*structural)*	**Parking** (*primary use, accessory use)*
Recreational Development *(water-dependent)*	**Transportation** (*bridges)*	**Recreational Development** (*water-related/enjoyment, non water-oriented)*
Shoreline Stabilization (*bioengineered*)	**Unclassified Uses**	***Residential Development*** *(single family, floating homes, multifamily)*
Signs (*interpretive/educational)*	**Utilities** (*above ground, electrical transmission lines, underground utilities parallel and perpendicular to shoreline)*	**Transportation** (*highways, arterials, railroads, secondary/public access roads)*

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-2. Uses Allowed and Prohibited - Natural Shoreline Designation

Permitted	Conditional	Prohibited
Clearing, Fill and Excavation *(above OHWM)*	**Boating Facilities (non-motorized)**	**Agriculture**
Ecological Restoration *(ecological restoration/enchantment/ mitigation)*	**Recreational Development** *(water-related/enjoyment)*	**Aquaculture**
Recreational Development *(water-dependent)*	**Transportation** *(bridges)*	**Boating Facilities** *(motorized)*
Shoreline Stabilization *(bioengineered)*	**Unclassified Uses**	**Breakwaters, Jetties, Groins, and Weirs**
Signs *(interpretive/educational)*	**Utilities** *(above ground, electrical transmission lines, underground utilities)*	**Commercial Uses** *(water-dependent, water related, water enjoyment, non water-oriented)*
		Dredge Material Disposal
		Flood Control and In-stream Structures
		Forestry *(log storage, timber harvest)*
		Industrial Uses *(water-dependent, water-related, non water-oriented)*
		Institutional/Educational Facilities *(water-dependent, water-related, non water-oriented)*
		Parking *(primary use, accessory use)*
		Marinas
		Mining *(gravel mining, hard rock mining)*
		Moorage Facilities *(docks, piers, wharves)*
		Recreational Development *(no water-oriented)*
		Residential Development *(single family, multifamily)*
		Shoreline Stabilization *(structural)*
		Transportation *(highways, arterials, railroads, secondary/public access)*

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-3. Uses Allowed and Prohibited - Urban Conservancy Shoreline Designation

Permitted	Conditional	Prohibited
Boating Facilities *(non-motorized)*	**Agriculture**	**Breakwaters, Jetties, Groins, and Weirs**
Clearing, Fill and Excavations *(above OHWM)*	**Aquaculture** *(general)*	**Commercial Uses** *(water-dependent, water-related, water-enjoyment, non water-oriented)*
Ecological Restoration *(ecological restoration/enhancement/ mitigation*	**Boating Facilities** *(motorized)*	**Dredging Material Disposal**
Moorage Facilities *(docks, piers, wharves)*	**Forestry** *(timber harvest)*	**Forestry** *(log storage)*
Recreational Development *(water-dependent, water-related/enjoyment)*	**Flood Control Works and In-stream Structures** *(dams, dikes, & levees)*	**Industrial Uses** *(water-dependent, water-related, non water-oriented)*
Residential Development *(single family)*	**Institutional/Educational Facilities** *(water-dependent)*	**Institutional/Educational Facilities** *(water-related, non water-oriented)*
Shoreline Stabilization *(bioengineered)*	**Recreational Development** *(non water-oriented)*	**Marinas**
Signs *(interpretive/educational)*	**Shoreline Stabilization** *(structural)*	**Mining** *(gravel mining, hard rock mining)*
Transportation *(highways, arterials, railroads, secondary/public access roads)*	**Transportation** *(bridges)*	**Parking** *(primary use, accessory use)*
Utilities *(above ground utilities, underground utilities)*	**Unclassified Uses**	**Residential Development** *(multifamily)*
	Utilities *(electrical transmission lines, underground utilities perpendicular to shoreline)*	

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-4. Uses Allowed and Prohibited - Medium Intensity Shoreline Designation

Permitted	Conditional	Prohibited
Agriculture	**Aquaculture** *(general)*	**Forestry** *(log storage)*
Boating Facilities *(non-motorized)*	**Boating Facilities** *(motorized)*	**Industrial Uses** *(water-dependent, water-related, non water-oriented)*
Commercial Uses *(water-dependent, water-related, water-enjoyment)*	**Commercial Uses** *(non water-oriented)*	**Mining** *(gravel mining, hard rock mining)*
Clearing, Fill and Excavation *(above OHWM)*	**Dredge material Disposal**	**Parking** *(primary use)*
Ecological Restoration *(ecological restoration/enhancement/ mitigation)*	**Flood Control Works and In-stream structures** *(dams, dikes, & levees)*	
Forestry *(timber harvest)*	**Industrial/Educational Facilities** *(non water-oriented)*	
Industrial/Educational Facilities *(water-dependent, water-related)*	**Marinas**	
Moorage Facilities *(docks, piers, wharves)*	**Recreational Development** *(non water-oriented)*	
Parking *(accessory use)*	**Shoreline Stabilization** *(structural)*	
Recreational Development (water-dependent, water-related/enjoyment)	**Unclassified Uses**	
Residential Development *(single family, multifamily)*	**Utilities** *(electrical transmission lines, underground utilities perpendicular to shoreline)*	
Shoreline Stabilization *(bioengineered)*		
Signs *(interpretive/educational)*		
Transportation *(highways, arterials, railroads, secondary/public access roads, bridges)*		
Utilities *(above ground utilities, underground utilities)*		

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-5. Uses Allowed and Prohibited - High Intensity Shoreline Designation

Permitted	Conditional	Prohibited
Agriculture	**Aquaculture** *(general)*	**Parking** *(primary use)*
Boating Facilities *(motorized, non-motorized)*	**Breakwaters, Jetties, Groins and Weirs**	**Residential Development** *(single family)*
Clearing, Fill and Excavation *(above OHWM)*	**Commercial Uses** *(non water-oriented)*	
Commercial Uses *(water-dependent, water-related, water-enjoyment)*	**Institutional/Educational Facilities** *(non water-oriented)*	
Dredge Material Disposal	**Mining** *(gravel mining, hard rock mining)*	
Ecological Restoration *(ecological restoration/enhancement/ mitigation*	**Shoreline Stabilization** *(structural)*	
Flood Control Works and In-stream Structures *(dams, dikes, & levees)*	**Unclassified Uses**	
Forestry *(log storage, timber harvest)*	**Utilities** *(electrical transmission lines, underground utilities perpendicular to shoreline)*	
Industrial Uses *(water-dependent, water-related, non water-oriented)*		
Institutional/Educational Facilities *(water-dependent, water-related)*		
Marinas		
Moorage Facilities *(docks, piers, wharves)*		
Parking *(accessory use)*		
Recreational Development *(water-dependent, water-related/enjoyment, non water-oriented)*		
Residential Development *(multifamily)*		
Shoreline Stabilization *(bioengineered)*		
Signs *(interpretive/educational)*		
Transportation *(highways, arterials, railroads, secondary/public access roads, bridges)*		
Utilities *(above ground utilities, underground utilities)*		

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-6. Uses Allowed and Prohibited- Rural Conservancy - Residential Shoreline Designation

Permitted	Conditional	Prohibited
Agriculture	**Aquiculture** *(general)*	**Commercial Uses** *(non water-oriented)*
Boating Facilities *(motorized, non-motorized)*	**Commercial Uses** *(water-dependent, water-related, water-enjoyment)*	**Forestry** *(log storage)*
Ecological Restoration *(ecological restoration/enhancement/ mitigation)*	**Dredge Material Disposal**	**Industrial Uses** *(water-dependent, water related, non water-oriented)*
Forestry *(timber harvest)*	**Flood Control Works and In-stream Structures** *(dams, dikes, & levees)*	**Institutional/Educational Facilities** *(water-related, non water-oriented)*
Moorage Facilities *(docks, piers, wharves)*	**Institutional/Educational Facilities** *(water-dependent)*	**Parking** *(primary use)*
Parking *(accessory use)*	**Marinas**	**Residential Development** *(multifamily)*
Recreational Development *(water-dependent, water-related/enjoyment)*	**Mining** *(gravel mining, hard rock mining)*	
Residential Development *(single family)*	**Recreational Development** *(non water-oriented)*	
Shoreline Stabilization *(bioengineered)*	**Shoreline Stabilization** *(structural)*	
Signs *(interpretive/educational)*	**Transportation** *(bridges)*	
Transportation *(highways, arterials, railroads, secondary/public access roads)*	**Unclassified Uses**	
Utilities *(above ground, underground)*	**Utilities** *(electrical transmission lines, underground utilities perpendicular to shoreline)*	

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

Table 6-7. Uses Allowed and Prohibited - Rural Conservancy - Resource Lands Shoreline Designation

Permitted	Conditional	Prohibited
Agriculture	**Aquaculture** general)	**Commercial Uses** *(non water-oriented)*
Boating Facilities *(motorized, non-motorized)*	**Breakwaters, Jetties, Groins and Weirs**	**Industrial Uses** *(water-dependent, water-related, non water-oriented)*
Ecological Restoration *(ecological restoration/enhancement/ mitigation)*	**Commercial Uses** *(water-dependent, water-related, water-enjoyment)*	**Institutional/Educational Facilities** *(non water-oriented)*
Forestry *(log storage, timber harvest)*	**Dredge Material Disposal**	**Parking** *(primary use)*
Moorage Facilities *(docks, piers, wharves)*	**Flood Control Works and In-stream Structures** *(dams, dikes, & levees)*	**Recreational Development** *(non water-oriented)*
Parking *(accessory use)*	**Institutional/Educational Facilities** *(water-dependent, water-related)*	**Residential Development** *(multifamily)*
Recreational Development *(water-dependent, water-related/enjoyment)*	**Marinas**	
Residential Development *(single family)*	**Mining** *(gravel mining, hard rock mining)*	
Shoreline Stabilization *(bioengineered)*	**Shoreline Stabilization** *(structural)*	
Signs *(interpretive/educational)*	**Transportation** *(bridges)*	
Transportation *(highways, arterials, railroads, secondary/public access roads)*	**Unclassified Uses**	
Utilities *(above-ground utilities, under-ground utilities)*	**Utilities** *(electrical transmission lines, underground utilities perpendicular to shoreline)*	

For a complete list of uses and activities allowed for each shoreline designation in each Coalition member's individual Draft SMP, Table 6-1.

6.1.4 Impacts Addressed

Permitted, conditional, and prohibited uses are established for each shoreline designation in a manner that limits impacts to ecological functions while allowing for appropriate development in the shorelines of Clark County.

There are several land uses or activities that have been prohibited in certain shoreline designations due to their potential to have a substantial impact to shoreline ecological functions or public health and safety. For example, mining activities (gravel mining and hard rock mining) are prohibited in Medium Intensity, Urban Conservancy, Natural and Aquatic shoreline designations. There are several immediate and long term impacts associated with mining including the removal of riparian vegetation that provides shading, habitat, and regulation of water temperature; increased rates of sedimentation from the disruption of top soils; leaching of pollutants from equipment; and degradation of water quality and quantity.

Conditional land uses are activities that may be considered or allowed in specific instances as long as the impacts of the use do not result in an overall degradation of the quality or health of the shoreline environment. Many of the shoreline designations outline a variety of conditional uses including but not limited to recreational development, utilities, unclassified uses, boat facilities, transportation (bridges), dredging and dredge material disposal, and flood control works and in-stream structures. These uses warrant a higher level of scrutiny due to variations in project proposals, location, and their potential for impacts to shoreline ecological functions, public health, and safety.

6.2 General SMP Provisions

According to the Ecology Guidelines, SMPs are required to establish general provisions for all uses, developments, and activities without regard to the specific environment designation. These general requirements center around five criteria: archaeological and historic resources; critical areas; flood hazard reduction; public access; shoreline vegetation conservation; and water quality. stormwater, and non-point pollution. Because this Analysis is focused on identifying cumulative impacts to shoreline ecological functions, the following discussion centers around how the critical areas, vegetation conservation, and water quality requirements in the individual Coalition SMPs (found in Chapter 5 General Use and Development) address the guideline requirements.

6.2.1 Critical Areas Regulations

Critical area protections must be included in the SMP per Ecology Guidelines. SMPs are required to incorporate protections for critical areas that assure no net loss of shoreline ecological functions necessary to sustain shoreline natural resources. [B2]Critical area regulations can be found in Chapter 5.3 of each individual Coalition government SMP.

All Clark County Coalition jurisdictions have recognized the importance of shorelines of the state and have designated them as critical areas (Type S waters). Critical area buffers are required to protect critical areas such as wetlands, flood hazard and fish and wildlife habitat conservation areas. While the regulations vary from government to government, they all have identified that any alteration or development within those critical areas and their buffers requires an extra level of review to protect sensitive resources. As an overview, critical area protections for streams and Class 1 Wetlands of the individual governments are shown in the table below:

Table 6-8. Critical Area Protections

City/County	Fish and Wildlife Habitat Conservation Areas		Wetland Buffers	
	Type	Buffer or Riparian Habitat Area	Type	Buffer
Battle Ground (BGMC18.280.050)	Priority Habitats (*Salmon Crk & East Fork*)	250’	Category I	100’
Camas (CMC 16.61.040)	Type S Streams (*Columbia R., Washougal R., Lacamas Cr., Lacamas Lk., Round Lk., Falling Leaf Lk.*)	Type S =150’	Category I	50-100’
Clark County (CCC 40.440.010)	Type S Waters Type F Waters	Type S= 250’ or 100 yr floodplain Type F = 200’ or 100 yr floodplain	Category I	50-100’
La Center (LCMC18.300.090.2.)	Type S Waters (*East Fork)*	250’ riparian ecosystem area	Category I	50-100’
Ridgefield (RMC18.280.110)	Type S & F Streams; (*Gee Cr., Lake R.*)	175’ riparian buffer	Category I	50-250’
Vancouver (VMC20.740.110)	Type S & F Streams; (*Fifth Plain Cr, Lacamas Cr, BBridge Cr, Columbia R, Vancouver Lk; Unnamed Cr*)	100’ mngmt area tgw/ a 75’ riparian buffer	Category I	50-300’
Washougal (WMC16.04.055)	Type S Streams (*Columbia R., Washougal R.)* *Type F Streams (Gibbons Cr.*)	Type S = 250’ Type F = 200’	Category I	See WMC 160.04.055

6.2.1.1 Activities Allowed in Buffers and Structure Setbacks

Each jurisdiction applies their critical areas regulations to development proposals a little differently. All require the buffer or riparian habitat area to be generally undisturbed, but allow some exceptions for *disturbance* in these areas for certain projects and activities and also if the buffer is interrupted by permanently established infrastructure, like a road or railroad. Several of the jurisdictions require an additional 15-foot building setback from the landward edge of the buffer with prohibitions on clearing, grading and installation of impervious surfaces. Reductions for larger development proposals are discouraged but are allowed if a critical areas report is prepared demonstrating that adequate protection of habitat functions and values, based on best available science, can be provided through mitigation.

The Draft SMPs re-emphasize these protections in shoreline areas with minimum building setbacks for nonwater-oriented uses; clarifying the need for retaining existing vegetation and replacing with native vegetation if that cannot be avoided or minimized. There is also a renewed focus on avoiding structured shoreline stabilization, like bulkheads, in favor of bioengineered solutions when stabilization is proven to be necessary. Because the SMA has the goal of encouraging the types of uses that need a water location, such as boating facilities, allowances are provided for those types of uses to *encroach* into this buffer area with adequate mitigation to achieve no net loss of shoreline functions.

6.2.1.2 Relationship of Structure Setbacks to Critical Area Buffers

The Coalition Draft SMPs establish structure setbacks for all uses (see Chapter 6, Table 6-1). Vegetation conservation standards (see Chapter 5) establish requirements to protect existing vegetated areas. Appendix A provides the required structure setback for each use and activity as well as the minimum critical area buffer in each jurisdiction.

The intent of establishing structure setbacks for each use and activity allowed in shoreline jurisdiction is to ensure that structures are placed a suitable distance from the OHWM in the shoreline area to protect existing ecological functions, views, and public safety. Critical area buffers, where applicable, are intended to protect aquatic habitats and priority species as well as protect water quality. The two requirements work concurrently to ensure that ecological functions are maintained while achieving the other SMA goals of encouraging public access and water-dependent uses.

Generally speaking, the more protective the shoreline designation, the larger the structure setback provided. For example, the structure setback for residential development in Urban Conservancy, Rural Conservancy-Residential Development, and Rural Conservancy-Resource Lands is 100 feet. Medium Intensity has a smaller residential structure setback: 50 feet. Structure setbacks also vary between water-dependent, water-related/water-enjoyment, and non-water-oriented uses. For example, in Medium Intensity a commercial water-dependent structure has no minimum setback requirement, a water-related/water-enjoyment structure must meet a 25-foot setback, and a non-water-oriented structure must meet a 100-foot setback.

6.2.1.3 Adequacy of Structure Setbacks and Critical Area Regulations

The adequacy of structure setbacks and critical area regulations were reviewed for each shoreline designation, waterbody, and type of use in each of the Coaltion SMPs. As documented in Appendix A (see Future Performance column) setbacks for forestry, residential, industrial, and recreational uses have been identified as potentially inadequate for certain waterbodies and certain shoreline designations. For example, structure setbacks for recreational uses may be as close as 20 feet to a shoreline river. While appropriate in some shorelines, this was noted to be potentially inadequate in areas with priority habitats or in Natural, Urban Conservancy or Rural Conservancy –Resource Lands, depending on the specific recreation facility proposal. Also, where the critical area buffer is greater than the structure setback then critical area setback would apply, since it is the more restrictive standard. The adequacy of structure setbacks and critical area regulations in the shoreline jurisdiction have been evaluated at a broad planning level to support the review of the Draft SMPs for cumulative impacts.

6.2.1.4 Impacts Addressed

Six species of fish in the Columbia River system have been listed as Threatened under federal laws and more are proposed for listing. The Washington Department of Fish and Wildlife priority habitat database identifies important anadromous fish populations in Cedar Creek, East Fork Lewis River, Salmon Creek and the Washougal River. In addition to fish, numerous priority wildlife species are found along the Columbia River and within its floodplains. Priority habitats and species are also particularly associated with Vancouver Lake, Lancaster Lake, Canvasback Lake, Lacamas Creek, Lake River, and Salmon Creek. Buffers, setbacks and vegetation conservation areas serve to protect aquatic habitats, maintain water quality, and provide overall protection for fish and wildlife. Riparian areas are the transitional zones between aquatic and terrestrial environments. These areas are provide physical separation from the river, stream or lake and proposed development so that urban runoff is minimized and functions associated with riparian vegetation is retained. Improving the conditions of degraded buffers can enhance fragile aquatic areas and improve ecological functions.

6.2.1.5 Mitigation Sequencing

Mitigation sequencing is a common hierarchical protocol for avoiding and minimizing environmental impacts. Mitigation sequencing is a requirement per WAC 173-26-201(2)(e) that directs all proposed uses and developments to avoid environmental impacts of a proposal and where unavoidable, include measures to minimize and mitigate those impacts in compliance with the Shoreline Master Program and other applicable regulations. Mitigation sequencing is a requirement in all Coalition Draft SMPs and can be found in Chapter 5, Section 5.3.

6.2.1.6 Impacts Addressed

In instances where impacts to ecological functions have the potential to occur all reasonable efforts must be taken to avoid, and where unavoidable, minimize and mitigate impacts such that no net loss of shoreline ecological functions is achieved.

In mitigation sequencing, possible adverse impacts should be avoided altogether by not taking a certain action or parts of an action, or by moving the action. For example, a development project that may impact a wetland habitat might be required to avoid construction activities that will directly impact (vegetation removal or draining) or indirectly impact (increased sedimentation or runoff) the wetland habitat. By simply avoiding critical areas no future compensatory mitigation will be required.

When adverse impacts to ecological functions are unavoidable, the magnitude or severity of the impact resulting from an activity should be minimized. This may include reducing or eliminating the adverse impact by preservation and maintenance operations that occur during the life of the action. Minimizing impacts to a project location would include implementing silt fences, straw waddles, and other BMPs to reduce soil erosion and retain water quality in or adjacent to a critical area, in addition to replanting cleared areas to ultimately reduce or abate the severity of the development action.

When avoiding or minimizing impacts is unfeasible, compensation for the impact through mitigation actions must be pursued. This requires monitoring both the impact and mitigation project and taking appropriate corrective measures to ensure that impacts are abated to ensure no net loss. This includes reseeding or replanting impacted areas, restoring water quality and quantity, or otherwise restoring the ecological function. An example of mitigation may include wetland banking or complete restoration of an affected area (i.e. vegetation planting). Mitigated areas should be monitored until they have recovered to a state of no net loss.

6.3 Vegetation Conservation

According to Ecology Guidelines, master programs must include "planning provisions that address vegetation conservation and restoration, and regulatory provisions that address conservation of vegetation; as necessary to assure no net loss of shoreline ecological functions and ecosystem-wide processes, to avoid adverse impacts to soil hydrology, and to reduce the hazard of slope failures or accelerated erosion" (WAC 173-26-221(5)(b)).

Each of the Coalition SMPs include provisions for vegetation conservation in their General Use and Development Regulations (at Chapter 5.7). These provisions must be met by any use, development or activity regardless if a shoreline permit is required or not. The focus of these provisions is to ensure that existing vegetation, especially native vegetation, within the SMA shoreline jurisdiction is retained. If removal is necessary it is to be minimized and mitigated through an approved vegetation enhancement plan. Pruning vegetation is also subject to specific standards.

6.3.1.1 **Impacts Addressed**

As noted in Chapter 5 of this Analysis, riparian areas along freshwater shorelines provide a broad suite of ecological function. In addition to wildlife habitat, riparian are essential to maintaining water quality (filtration and processing of contaminants); fine sediment control by reducing the speed and force of runoff; inputs of large woody debris (LWD); shade and microclimate to reduce water temperature; litter fall/organic matter inputs, including insects; hydrology and slope stability; and fish and wildlife habitat. Other functions provided by riparian areas include recreation, cultural and aesthetic resources, and providing protection from threats of flood hazards.

Land use and development resulting in diking, draining, introduction of contaminants and non-native invasive species, loss of woody vegetation, and the isolation of side-channel habitats has impaired the ability of these riparian areas to provide the full range of functions originally available. Impairment of these functions affects water quality and quantity, wildlife habitat, slope stability, and in-stream habitat. Protection and restoration of riparian zones is important for improvement of water quality and maintenance of cool water for salmon recovery Protection of existing native vegetation and enhancement of degraded riparian areas is a key component in protecting water quality and improving in-stream habitat for listed salmon to support salmon recovery.

6.3.2 Water Quality, Stormwater, and Non-point Pollution

Shoreline Master Programs are required to protect against adverse impacts to public health as well as fish, wildlife and to the waters of the state and their aquatic life by preventing impacts to water quality and stormwater quality that would result in a net loss of shoreline functions.

The Coalition SMPs have incorporated protections in their General Use and Development Regulations (Chapter 5.10) applicable to all uses, development and activities which emphasize the need to comply with stormwater regulations; state-of-the-art installation and maintenance of septic systems, use of best management practices during construction; and avoiding the use of chemically-treated construction materials, and chemicals in general among others.

6.3.2.1 Impacts Addressed

According to the Ecology's Water Quality Assessment 303(d) list, waterbodies in WRIA 27 generally have fair to good water quality with the exception of East Fork Lewis River, which exceeds temperature standards. The waterbodies in the western portion of WRIA 28 have poor to good water quality. Lacamas Creek, Lacamas Lake, Burnt Bridge Creek, Lake River, Whipple Creek, and Salmon Creek are waterbodies known to be particularly poor. However, water quality in the Washougal River is generally good. The most common factors that cause water quality to exceed acceptable levels in the county are fecal coliform bacteria and stream temperature, usually due to agricultural practices, failing septic systems and stormwater runoff. Chemical contamination in sediments contributes to degradation of water quality in the lower Columbia River and Vancouver Lake.

CHAPTER 7 BENEFICIAL EFFECTS OF RESTORATION PLAN

7.1 Restoration Projects

The Final Draft Shoreline Restoration Plan (June, 2011) provides a planning-level framework for understanding how and where shoreline ecological functions can be restored in the Coalition SMA jurisdictions. The plan also describes how future restoration activities can be integrated with existing and ongoing restoration efforts including: the region-wide effort to restore the lower Columbia River (implemented by various groups such as the Lower Columbia River Estuary Partnership, Lower Columbia Fish Recovery Board, the Bonneville Power Administration, and Northwest Power and Conservation Council); the work of the Clark County Environmental Services Clean Water Program and Vancouver Lake Watershed Partnership Technical Group; and the diversity of other restoration efforts being implemented by federal, state and local agencies, tribes, non-governmental organizations, and private citizens.

Programmatic restoration opportunities and site-specific restoration opportunities were documented in Appendices C and D of the Restoration Plan. These opportunities were identified based on Clark County Coalition Shoreline Inventory and Characterization report findings, ongoing projects, planned projects, and opportunities identified in WRIA and through the Technical Advisory Committee. Major programmatic restoration opportunities identified in the Restoration Plan have been included for each shoreline waterbody in Appendix A of this report.

7.2 Impacts Addressed

According to Ecology's SMP Handbook, restoration activities included in the Restoration Plan should be considered in determining whether the SMP will address cumulative impacts and achieve no net loss. Restoration activities can be considered to offset incremental impacts; however, it is difficult to accurately measure how well they do so. There are various impacts to ecological functions that a SMP is not expected to address. For example, project applicants are not required to mitigate for ongoing impacts of existing development. Illegal actions that may or may not be known or remedied via enforcement would have impacts on ecological functions that are left unmitigated. Unintended impacts on ecological functions from exempt activities may also not be addressed during implementation of an SMP. Opportunities identified in the Restoration Plan, when implemented, would improve degraded ecological functions and ensure that the SMPs do not result in a net loss of ecological function over time.

The Restoration Plan identifies the following degraded ecological functions and processes as priorities for restoration:

- Water quality in rivers and lakes;
- Floodplains;
- Wetlands;
- Lake, river and stream riparian zones.
- Stream flow and salmonid habitat;
- Hydrologic functions;
- Habitats for key salmonid species;

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CHAPTER 8 BENEFICIAL EFFECTS OF ESTABLISHED PROGRAMS

A variety of other regulatory programs, plans, and policies work in concert with the Coalition SMPs to manage shoreline resources and regulate development near the shoreline.

8.1 Local Plans and Regulations

8.1.1 Long Range Plans

8.1.1.1 Clark County Comprehensive Plan

The *Clark County 20-year Comprehensive Growth Management Plan, 2004-2024* was adopted in September 2007 and last amended in January 2011. It contains goals, policies, and strategies for protection of the County's environmental resources. Twelve "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for Clark County are as follows:

- Urban Lands
- *Residential Designations*: Urban low density residential, urban medium density residential, and urban high density residential
- *Commercial Designations*: Neighborhood Commercial, community commercial, and general commercial
- Mixed Use Designations: Mixed use
- *Industrial Designations*: Light and heavy industrial
- *Other Designations*: Employment center, public facilities, airport, and open space
- Rural and Resource Lands
- *Rural Designations*: Rural, rural center residential, and rural commercial
- *Agriculture Designations*: Agriculture lands and agriculture/wildlife
- *Forest Designations*: Forest tier I and forest tier II
- *Industrial Designations*: Rural industrial and railroad industrial
- Other Designations: Urban Reserve

8.1.1.2 City of Battle Ground Comprehensive Plan

The City of Battle Ground *Comprehensive Plan 2004-2024* was adopted December 6, 2004, and contains goals and policies to guide land use decisions and the management of environmentally sensitive areas. Twelve "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for the City of Battle Ground are as follows:

- *Residential Designations*: Urban low density, urban medium density and urban high density
- *Commercial Designations*: Regional center, community commercial and downtown
- *Mixed Use Designations*: Mixed use employment and mixed use residential
- *Industrial Designations:* Light industrial and employment campus
- *Other Designations:* Park overlay and airpark

8.1.1.3 **City of Camas Comprehensive Plan**

The current City of Camas *Comprehensive Plan* was adopted in 1991, and outlines general growth management goals over the next 20 years. Chapter VI Environmental Element of the Comprehensive Plan contains goals and policies for management of the City's shoreline areas, including the goals and policies contained in the *Camas Shoreline Master Program*. Fifteen "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories in the City of Camas are as follows:

- Single-family Residential Designations: Low density, medium density, and high density
- Multi-family Residential Designations: Low density and high density
- Commercial Designation
- Industrial Designations: Light industrial and heavy industrial
- Light Industrial/Business Park Designation
- Park Designation
- Green Space Designation
- Public Facility Designation

8.1.1.4 **City of La Center Comprehensive Plan**

The *La Center Urban Area Comprehensive Plan* was adopted May 14, 2008, and contains goals and policies to guide land use decisions and the management of environmentally significant areas. Six "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for the City of La Center are as follows:

- Low Density Residential Designation
- Medium Density Residential Designation
- Mixed Use Designations
- Commercial Designations
- Industrial Designations
- Urban Public Facilities Designation

8.1.1.5 City of Ridgefield Comprehensive Plan

The City of Ridgefield Comprehensive Plan 2005 Update, adopted September 2008, contains goals and policies to guide land use decisions and the management of environmentally significant areas. Seventeen "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for the City of Ridgefield are as follows:

- Agriculture Designations: Agri-Wildlife and Agriculture
- City Center Designation
- Employment Center Designation
- Commercial Designations: General Commercial, Neighborhood Commercial and Rural Commercial Designation
- Light Industrial Designation
- Mixed Use Designation
- Office Park/Business Park Designation
- Parks/Open Space Designation
- Public Facility Designation
- Residential Designations: Rural-5, Rural-10, Rural-20, Urban Low Density Residential, Urban Medium Density Residential

8.1.1.6 City of Vancouver Comprehensive Plan

The Vancouver Comprehensive Plan 2003-2023 was effective on May 3, 2004 and replaced the City's Comprehensive Plan adopted in 1994. The comprehensive plan outlines general growth management goals over the next 20 years. Appendix B contains the long-range shoreline management goals for the City. Thirteen "land use categories" are described in the Comprehensive Plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for the City of Vancouver are as follows:

- Residential Designations: Urban low density, urban medium density, and urban high density
- Commercial Designations: Neighborhood commercial, community commercial, general commercial, city center, and mixed use
- Industrial Designations: Light industrial, heavy industrial and office/commercial industrial
- Other Designations: Public facilities and open space

8.1.1.7 City of Washougal Comprehensive Plan

The City of Washougal *Updated Comprehensive Plan* 1991 outlines general growth management goals over the next 20 years. The plan includes goals and policies for shoreline management, land use, and the environment. It identifies shorelines as having natural, scenic and recreational value. Fifteen "land use categories" are described in the plan. These categories serve as the basis for more detailed zoning code designations. Land use categories for the City of Washougal are as follows:

- Single-family Residential Districts: Single-family 5,000 square foot lots, single-family 7,000 square foot lots, single-family 10,000 square foot lots, and single-family 15,000 square foot lots
- Multi-family Residential Districts: AR 16-units/acre and AR 22-units/acre
- Commercial Designations: Convenience commercial, community commercial, highway commercial, and central business district
- Business/Industrial Designations: Light industrial and heavy industrial
- Public Facility Designation
- Park/Open Space Designation
- Urban Reserve Designation

8.1.1.8 Pacific Corps Shoreline Management Plan

PacifiCorp, a utility company that manages the reservoir dams along the Lewis River, adopted a shoreline management plan in 2008. The *Lewis River Hydroelectric Projects Shoreline Management Plan* is applied to the *shoreline areas* on, under, and abutting the reservoirs of the Lewis River Hydroelectric Projects (Merwin, Yale, and Swift No. 11). In this context, *shoreline areas* are defined as lands within the elevation contour 10 feet above the Ordinary High Water Line for each reservoir. PacifiCorp owns parts of the shoreline areas and holds flowage easements in the remaining parts. The plan established the following shoreline management classifications:

- Integrated Use - shoreline areas with no known significant environmental/cultural resources or associated resource management goals that would preclude existing uses or would deny permitting allowable shoreline uses in the future;
- Resource Management - shoreline areas designated for specific resource management, species protection, and environmental purposes; and
- Project Works - those infrastructures that are essential to project operations or those facilities, structures and sites required by the Federal Energy Regulatory Commission (FERC) licenses.

Each shoreline management classification has a corresponding list of allowed and prohibited uses. The plan also provides best management practices that address shoreline buffer zones, vegetation management, and erosion control. The plan also provides enforcement provisions and outlines the permit process. The *Shoreline Use Permitting Information & Application Handbook* describes the permit process in more detail.

8.1.1.9 Impacts Addressed

During the development of shoreline designations as part of this SMP update process, comprehensive plan designations were examined to determine planned future uses and whether they would be in general alignment with existing shoreline ecological functions. Generally speaking, the comprehensive plan designations generally aligned with the findings of the Shoreline Inventory and Characterization report findings. Regulating the type and location of land uses in Clark County ensures that development occurs in areas that would result in minimal impacts to existing shoreline ecological functions.

8.1.2 Local Regulations

8.1.2.1 Stormwater Management

All jurisdictions in the Clark County Coalition have stormwater regulations in their codes that establish standards to ensure prevention of surface and ground water degradation; and erosion and sedimentation of creeks, streams, ponds, lakes, wetlands, and other water bodies while protecting public health and property. Requirements for pollution prevention during construction, control of pollutant sources, treatment of runoff, control of water volumes, long-term stormwater operation and maintenance, and protection of sensitive habitat areas including wetlands can be found in each jurisdiction's codes. The methods to meet the requirements is through best management practices (BMPs) for construction and long-term operation, as well as procedures for determining which BMP protocol are appropriate for specific construction methods.

Impacts Addressed

Stormwater regulations are designed to sustain water quality, quantity, and habitat in water bodies (i.e. creeks, streams, ponds, lakes, wetlands) in perpetuity. The SMP requires that developments, utilities, or landscape clearing activities are done in a sustainable manner and comply with the applicable requirements of the stormwater code and/or provisions for each distinct jurisdiction. Stormwater regulations require best management practices (BMPs) (including but not limited to, silt fences, straw waddles, check dams, mulching, sediment traps, and channel lining) to prevent or reduce the movement of sediments, nutrients, or other pollutants from the land to surface or ground water. BMPs also protect water quality from potential adverse effects resulting from increased runoff rates. For example, straw waddles may be implemented on the down slope sides of a roadway project and will serve to impound water and sediments during a rainfall event until natural vegetation can be reestablished.

The goal of these regulations is to provide safe standards and protocol for the capture, storage, and the safe and beneficial release of stormwater runoff resulting from anthropogenic development activities.

8.1.2.2 Clearing and Grading

Grading and clearing regulations for all jurisdictions in the Clark County Coalition provide minimum guidelines and standards regarding the alteration of land for the construction and development of properties. These regulations aid in controlling erosion incident to clearing and grading activities and protect public health, safety and welfare. These provisions are designed to minimize adverse impacts associated with clearing and grading of land; protect water quality and sedimentation; ensure prompt development, restoration, replanting and effective erosion control; require erosion control practices to be implemented during and after grading activities, and establish administrative procedures for the issuance of permits, approval of plans, and inspection of grading operations. These regulations provide specific federal, state, county, and city standards and specifications for slope grade, fill placement and setback from property boundaries.

Impacts Addressed

Clearing and grading activities are required to be done in a manner that will not alter surface water drainage patterns and/or impact water quality, water quantity, or habitat on or adjacent to the project location. BMPs which serve to prevent or reduce the movement of sediments, nutrients, or other pollutants from the land to surface or ground water; or to otherwise protect water quality from potential adverse effects must be implemented to preserve or protect critical areas and reduce erosive potential from near or adjacent projects. For example, silt fences must be placed between the grading and clearing activity and a critical area to capture and store water and sediment runoff.

Clearing and grading activities must avoid clearing multi story plant communities so that habitat connectivity is retained. After construction is completed the remaining cleared areas must be replanted with native vegetation contained in the Clark County-approved plant list and maintained such that within three years time the vegetation is fully re-established.

Clearing, filling, or excavation cannot be conducted where shoreline stabilization would be necessary to protect materials placed or removed. Disturbed areas must be stabilized immediately and re-vegetated with native vegetation. Fill activities must be designed in a way to allow the infiltration of surface water into groundwater reservoirs, where such conditions existed prior to filling.

The goal of these regulations is to provide safe standards for the excavation, fill, and storage of materials that will result in minimal impacts to soils, water quality, or native vegetation.

8.2 State and Federal Regulations

A number of state and federal agencies may have jurisdiction over land or natural elements in shoreline jurisdiction. Local development proposals most commonly trigger requirements for state or federal permits when they propose work in or over waters of the state; impact wetlands or streams; potentially affect fish and wildlife listed under the federal Endangered Species Act (ESA); result in over one acre of clearing and grading; or affect the floodplain or floodway. As with local requirements, state and federal regulations may apply throughout the jurisdiction, but regulated resources are common within the City's shoreline jurisdiction. The most commonly applied state and federal regulations affecting shoreline-related resources are described briefly below:

<u>*Endangered Species Act*</u>: The federal ESA addresses the protection and recovery of federally listed species. The ESA is jointly administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries (formerly referred to as the National Marine Fisheries Service), and the United States Fish and Wildlife Service (USFWS).

<u>*Clean Water Act (CWA)*</u>: The federal CWA requires states to set standards for the protection of water quality for various parameters, and it regulates fill, excavation, and dredging in waters of the U.S., including wetlands. Certain activities affecting wetlands in shoreline jurisdiction or work in the adjacent rivers may require a permit from the U.S. Army Corps of Engineers and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively.

<u>*Federal Emergency Management Agency (FEMA) National Flood Insurance Program:*</u> Communities that participate in the National Flood Insurance Program receive federally backed flood insurance. In order to participate, a community must adopt and enforce floodplain management regulations to reduce future flood damage. The Federal Emergency Management Agency is responsible for mapping the country's flood hazard areas.

<u>*Hydraulic Project Approval (HPA)*</u>: The Washington Department of Fish and Wildlife (WDFW) regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state and which may affect fish habitat. Projects in the shoreline jurisdiction requiring construction below the ordinary high water mark could require an HPA from WDFW. Projects creating new impervious surface that could substantially increase stormwater runoff to waters of the state may also require approval.

<u>*Rivers and Harbors Act:*</u> Any work or project that may affect or obstruct navigable waters requires a Section 10 permit under the Rivers and Harbors Appropriation Act of 1899. The U.S. Army Corps of Engineers reviews and authorizes projects with either a standard individual permit, letter-of-permission, nationwide permit, or regional permit.

<u>*National Pollutant Discharge Elimination System (NPDES)*</u>: Ecology regulates activities that result in wastewater discharges to surface water from industrial facilities or municipal wastewater treatment plants. NPDES permits are also required for stormwater discharges from industrial facilities, construction sites of one or more acres, and municipal stormwater systems that serve census-defined Urbanized Areas (more than 50,000 people and population densities greater than 1,000 per square mile).

8.2.1 Impacts Addressed

Regulations focused on preserving in-stream water quality, quantity, and habitat integrity include the Clean Waters Act, the Hydraulic Project Approval, the Rivers and Harbors Act, and the National Pollutant Discharge Elimination System. These regulations require that any development or redevelopment must comply with protocol for avoiding or mitigating impacts to streams, creeks, rivers, lakes, wetlands, or other water bodies. For example, projects that will require in-channel work must comply with the protocol of the Hydraulic Project Approval process in addition to the Clean Waters Act. In addition, the Endangered Species Act provides a framework for the preservation of endangered or threatened flora, fauna, or fish species and their associated habitat areas. This overarching regulation must be considered for any project that may adversely impact priority species habitat.

The Federal Emergency Management Agency National Flood Insurance Program and Rivers and Harbors Act address the removal of materials that may exacerbate flood conditions, and/or provide assistance in development or redevelopment in areas subjected to flooding. In addition to protecting public health and property these measures also assist in promoting preservation and restoration of floodplain habitat.

8.3 Restoration Efforts

Steps are being taken to restore habitats for the benefit of fish and wildlife. Several entities are currently supporting preservation and restoration of shorelines within Clark County:

- Lower Columbia Fish Recovery Board;
- Lower Columbia River Estuary Partnership;
- Lower Columbia Fish Enhancement Group;
- Columbia River Estuary Study Taskforce;
- Clark Public Utilities;
- Vancouver-Clark County Parks;
- Clark County Environmental Services Legacy Lands Program;
- Clark County Water Resources and Clean Water Program;
- Clark County Vegetation Management Program;
- Cowlitz Indian Tribe;
- Columbia Land Trust;
- Fish First;
- Friends of the Ridgefield National Wildlife Refuge;
- Northwest Power and Conservation Council;
- Salmon Creek Watershed Council;
- Watersheds Stewards Program;
- Washington State Department of Fish and Wildlife; and
- Vancouver Lake Watershed Partnership Technical Group.

Many of the habitat restoration projects currently underway target listed salmonid species and are designed specifically to benefit fish habitat.

CHAPTER 9 DRAFT CONCLUSIONS

The 2003 Ecology Shoreline Guidelines require that SMP updates incorporate goals, policies and regulations managing growth and development in a manner that protects watershed processes and habitat conditions. This approach is necessary to achieve the goal of "no net loss," of shoreline ecological functions. The test of no net loss is a concept required in the shoreline guidelines to maintain existing functions and processes while providing opportunities for public access and for the development of water-dependent uses (WAC 173-26, Part III). Each jurisdiction updating its SMP must prepare a cumulative impacts analysis to determine whether or not their specific program meets the test of "no net loss" of ecological functions.

The Clark County Coalition individual government Draft SMPs (June 2011) provide a new system of shoreline environment designations that establish more uniform management of the SMA shorelines, on a countywide basis. For the most part, the new shoreline designation system is tied to the conclusions from the Clark County Coalition Shoreline Inventory and Characterization Report (ESA Adolfson, June 2010). In addition, the Coalitions' Draft SMPs complement other city, county, state, federal, individual citizen and group efforts to protect shoreline functions and values. The Clark County Coalition Shoreline Restoration Plan (ESA Adolfson, June 2011) identifies opportunities to improve or restore ecological functions that have been impaired as a result of past development activities.

This analysis was guided by the three factors identified in the Ecology guidelines for evaluating cumulative impacts:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws.

The tables in Appendix A provide a broad evaluation of the potential effect future development may have on existing shoreline ecological functions. The tables are organized in a manner similar to the Coalition Inventory and Characterization Report. Waterbodies are grouped by state-designated Water Resource Inventory Areas (WRIA). WRIA 27 is associated with the Lewis River system and is located in the northern part of the County. WRIA 28, represents the southern part of the County, and is associated with the Salmon Creek and Washougal River basins. Waterbodies listed in the tables are generally in geographic order, moving upstream. Proposed shoreline designations are listed under each waterbody. The following elements are described for each waterbody, organized by the proposed shoreline designation:

- Existing performance of shoreline ecological functions, as documented in the Coalition Shoreline Inventory and Characterization Report;
- The current performance of shoreline ecological functions (ranked low, moderate and high);
- Foreseeable future development, based on the buildable lands analysis described in Chapter 4 of this report; and

- Protective measures collectively assessed from the individual Coalition government's Draft SMPs (June 2011, goals, policies and regulations) together with the restorative provisions from the Coalition Draft Restoration Plan (June 2011, programmatic measures).

Future performance was assessed for each waterbody under each shoreline designation based on the above elements. Conclusions on whether "no loss", meaning no loss of shoreline function, was achieved for each waterbody were made based on the existing performance of ecological functions from the Inventory Report, the projected residential development that may occur based on the analysis described in Chapter 4, the shoreline designation, and the level of protection that the regulations in the Draft SMPs would provide for existing ecological functions. Future performance is ranked as Potential for Loss of shoreline function and No Loss of shoreline function.

If it appears that shoreline functions would be adequately protected, through a combination of applying an appropriate shoreline designation, allowing appropriate uses and modifications, establishing adequate shoreline setbacks and CAO buffers, applying vegetation conservation measures, then the "Future Performance" column will state No Loss. If development potential was likely and existing ecological functions appear not to be adequately protected, then the Future Performance column will state Potential for Loss. The Potential for Loss statement is generally associated with the need to evaluate the appropriateness of the shoreline designation and/or additional protections within the shoreline designation or regulatory framework.

To offset the potential for loss, it may be helpful to re-evaluate several concepts: 1) vegetation conservation; 2) consistency between proposed shoreline designations and the findings of the Inventory & Characterization Report for high functioning shorelines; 3) recognition of regional significance of shorelines of statewide significance; and 4) refinement of shoreline use and modification standards in a few instances.

1. **Vegetation conservation**. The WAC section 173-26-221 (5) requires conservation and restoration of vegetation in the shoreline jurisdiction. Conservation of vegetation includes activities to protect and restore vegetation along freshwater shorelines that contribute to the ecological functions of shoreline areas. Vegetation conservation provisions include the prevention or restriction of plant clearing and earth grading, vegetation restoration and the control of invasive weeds and non-native plant species.**:** While the CAO and Vegetation Conservation provisions seem to be adequately protective, the key to ensure those provisions do not result in cumulative impacts, especially with those uses, development, and activities that are exempt from a shoreline permit, is to have adequate administration and enforcement of the Program. This requires adequate staffing of both review of permit applications and enforcement during and after construction.
2. **Shoreline designations**. Proposed shoreline designations for Lancaster Lake and Fowler Lake appear inconsistent with the Inventory & Characterization Report, resulting in potential loss of shoreline functions over time. The Clark County zoning designations for the Lancaster and Fowler Lakes were reviewed and appear to be mostly in Parks and Open Space with some areas in Forestry and Agriculture zones. These zoning districts appear to provide adequate protection of shoreline ecological functions. Proposals to

change the underlying zoning for the lakes should be reviewed to ensure shoreline ecological functions continue to be protected.

3. **Shorelines of statewide significance**. The Columbia and Lewis Rivers; portions of the East Fork Lewis and Washougal Rivers; and Merwin, Vancouver and Yale Lakes are considered shorelines of statewide significance. Columbia River, East Fork Lewis River, Washougal River, and Lewis River are considered to have high ecological functions and are ranked as high priority restoration and protection areas. Merwin, Vancouver and Yale Lakes are ranked as high protection areas. This is based on an analysis of ecological functions in the Shoreline Inventory and Characterization (ESA Adolfson, 2010) (see Chapter 10). In instances where the shoreline designations do not appear to adequately protect existing shoreline ecological functions along these waterbodies, a potential for loss has been identified.
4. **Specific Standards**. The cumulative impacts of the following uses, modifications, and standards may contribute to loss of shoreline functions over time and should be reconsidered:
    a. Single-use piers and docks. Further limit where and under what circumstances they may be permitted.

    b. Commercial development in Rural Conservancy – Resource Land. The allowance for commercial development in the Rural Conservancy – Resource Lands shoreline designation seems inconsistent with the underlying zoning since there appears to be no commercial zoning districts in this designation. If kept as an allowed use, the commercial development structure setback of 25 feet for water-related and water-enjoyment uses would be inadequate for most waterbodies. Impacts to Lancaster Lake and East Fork Lewis River or other highly functioning shorelines are of particular concern. The likelihood of commercial development should be re-evaluated.

    c. Forestry setback in Rural Conservancy – Resource Lands. A 50 foot setback is inadequate for most waterbodies. Impacts to Hagen Creek, Cougar Creek, and Boulder Creek are of particular concern. Since vegetation must be retained or mitigated within 150 feet of Type S waterbodies in rural areas, a 50 foot setback for timber harvest seems to create an unintended inconsistency within the Program.

    d. Recreational setback for all SDs is 20 feet for water-related and water-enjoyment uses. This setback is inadequate for the Natural and Rural Conservancy – Resource Land designations. Impacts to habitat due to recreational use of trails parallel along Battle Ground Lake, Green Lake, Canvasback Lake and East Fork Lewis River are of particular concern.

e. Protection for National Wildlife Refuges. Additional protection for the Ridgefield and Steigerwald National Wildlife Refuges from shoreline development on abutting properties may be warranted.

Development under the Coalition's proposed SMPs along the majority of shoreline waterbodies would likely result in "no loss" of shoreline ecological function. There are only 12 areas in which "potential loss" of function may occur. Therefore, cumulative impacts on shoreline functions resulting from the limited amount of foreseeable future development countywide and the protective measures in the Coalition SMPs are considered to be minimal to moderate. These impacts can be mitigated with the minor adjustments in the Program identified above and commitment to opportunities identified in the Coaltion Restoration Plan, along with other plans, programs, regulations and projects in place to protect ecological functions. Opportunities identified in the Coalition Restoration Plan specifically focused on the following, are recommended:

1. Revegetation of degraded riparian zones;

2. Enhancement of degraded wetlands; and

3. Preservation of associated wetlands through purchase of lands.

CHAPTER 10 REFERENCES

Granger, T., T. Hruby, A. McMillan, D. Peters, J. Rubey, D. Sheldon, S. Stanley, and E.

Stockdale. 2005. *Wetlands in Washington State - Volume 2: Guidance for Protecting and Managing Wetlands*. Ecology Publication #05-06-008. April 2005. Washington State Department of Ecology, Olympia, Washington.

Kruckeberg, A.R. 1991. The Natural History of Puget Sound Country. University of Washington Press, Seattle.

Nightingale, B., and C. Simenstad. 2001. Executive Summary-Over-water Structures: Marine Issues, White paper, Prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation, Olympia, Washington.

Olson, Patricia. 2009. DRAFT. SMP Master Program Update: Identifying Potential Channel Migration Reaches. Department of Ecology, Shorelands and Environmental Assistance. October 9, 2009.

Olson, Patricia. 2010. Potential Channel Migration Zones in Clark County GIS shapefiles.

Rich, C, and Longcore, T (Eds.). 2005. Ecological consequences of artificial night lighting. Island Press, Washington,D.C

Simenstad, C. A., R. J. Garono, R. R. Robinson and P. A. Frost. 1999. Landscape analysis of eelgrass (Zostera marina) habitat structure using remote sensing: application to assessing impacts of shoreline modifications. Second Joint Meeting of the Coastal Environment Science and Technology (CEST) Panel of the United States- Japan Cooperative Program in Natural Resources (UNJR), 25-29 October 1999, Silver Spring, MD and Charleston, NC, USA.