1.0 INTRODUCTION

The intent of this document is to summarize the evaluation of potential cumulative impacts to shoreline ecological functions that may occur as a result of implementing the City of Battle Ground locally-approved Shoreline Master Program (SMP) (February 2012) as it is currently proposed. This summary is based on the Clark County Coalition Draft Cumulative Impact Analysis (Coalition Analysis), dated February 2012 and is integral to understanding this analysis.

This report first introduces the shorelines of the state that are located in Battle Ground and its Urban Growth Area (UGA). Based on existing conditions, as documented in the Clark County Coalition Shoreline Inventory and Characterization Report (Coalition ICR) (ESA Adolfson, 2010), the ecological functions most at risk are described. As part of this analysis “reasonable foreseeable development” is projected for Battle Ground and its UGA using assumptions from the Coalition Analysis. The conclusion discusses potential cumulative impacts, if any, of the City’s SMP on shoreline ecological functions.

2.0 INVENTORY AND CHARACTERIZATION

The Coalition ICR (ESA Adolfson, 2010) identifies existing conditions and assesses the ecological functions and processes in the City’s shoreline jurisdiction to determine a baseline from which to measure the SMP’s effectiveness in maintaining existing functions. The inventory includes all shoreline areas within the City of Battle Ground and its designated UGA.

2.1 Shorelines of the State

Two shorelines of the state are located within the city limits and UGA: Salmon Creek, and a tributary, Morgan Creek.

2.2 Ecological Functions

Based on the findings of the Coalition ICR (ESA Adolfson, 2010), ecological functions most at risk as a result of future development in shorelines include:

- Riparian habitat;
- Floodplain connectivity;
- Salmonid habitat;
- Water quality and quantity; and
- Associated wetlands.

2.3 Management Recommendations

During the development of the Coalition ICR, an initial set of general management recommendations were generated in response to the findings on shoreline functions for each of the SMA waterbodies in the County. These management recommendations were developed to provide guidance to the Coalition as they moved forward in developing goals, policies, and regulations as part of their SMP update process. For Battle Ground, these general
recommendations for Salmon and Morgan Creeks are summarized below. For additional discussion and detail please refer to the Coalition ICR.

### 2.3.1 Vegetation Management

- Riparian areas and vegetation conservation zones should be restored to remove non-native and invasive plant species. Native trees and shrubs should then be planted. Salmon habitat is supported by riparian zones that contain native trees and shrubs, which provide food sources, shading and large woody debris to lakes, rivers and streams.

- Vegetation conservation measures and setbacks and buffers from the ordinary high water mark should be required for all future development along shorelines.

- Prevent the introduction of non-native invasive species and encourage rapid eradication. Develop an invasive plant inventory to track changes and prioritize areas for eradication.

### 2.3.2 Program Considerations

- Regulatory language should be written in a manner that is easy to understand and provides options for compliance.

- Develop an implementation, monitoring and adaptive management plan at the county level in order to track changes in the shoreline jurisdiction and determine successes, failures and corrective actions.

- Consider improving the shoreline permitting process to ensure adequate review of impacts, public noticing, compliance with regulations and agency coordination.

- Consider developing an inventory of archaeological sites that contribute to the history and understanding of past human activities in Clark County.

### 2.3.3 Development Regulations – Hard Armoring

- Consider regulations that encourage and facilitate levee setback projects (e.g., pulling back an existing levee to allow for a larger floodplain area contiguous to a waterbody) and other shoreline enhancement projects.

- Consider requirements for soft-shore bioengineering techniques where new armoring or retrofits cannot be avoided.

- Consider alternatives to new armoring such as setbacks and vegetated riparian zones. New developments should be located on the property in such a manner as to not require shoreline armoring in order to protect the house and other structures.

### 2.3.4 Development Regulations – Overwater Structures

- Consider size limitations for overwater structures, including new docks, piers or floats.

- Consider joint-use docks prior to construction of single-use residential docks to minimize dock proliferation and shading impacts.
2.3.5 Development Regulations – Mitigation

- Consider requirements for new development to provide an analysis during permit approval of existing and newly proposed impacts to the site-specific ecological functions and values in order to focus and improve the effectiveness of any required mitigation.

- Require mitigation sequencing as per the shoreline guidelines. Project designs should demonstrate avoidance and minimization, prior to compensatory mitigation or replacement of functions.

- The goal of mitigation is no net loss of shoreline ecological functions from the baseline condition established in the ICR.

- Consider requiring public access that is commensurate with the scale and character of future development and avoids adverse effects on the natural shoreline character and functions.

2.4 Shoreline Use Analysis

2.4.1 Salmon Creek

Land uses along Salmon Creek are predominately recreation (76 percent) associated with The Cedars on Salmon Creek Golf Course. Other uses include residential development at suburban densities (7 percent of total shoreline planning area) and vacant lands (14 percent of total shoreline planning area). Vacant lands are typically in forested condition, while residential lands have a mix of structures, lawn and forested areas. There are no known water-oriented uses along this creek.

2.4.2 Morgan Creek

Existing uses along Morgan Creek are almost entirely composed of vacant, forested land and pasture land. There are no known water-oriented uses along Morgan Creek.

3.0 SHORELINE DESIGNATIONS

Shoreline Designations (SDs) were developed based on a review of the Coalition ICR, biological and physical characteristics of the shoreline, existing development patterns, and goals and aspirations of the community as expressed through the City’s Comprehensive Plan. The City was also directed by the definitions in Washington State’s Shoreline Guidelines (WAC 173-26-211). The specific methodology by which the designations were established is described in the Coalition Analysis and Shoreline Designation Rationale Memo.

The two designations that are proposed in the the City’s SMP include the following:

1. Aquatic – The purpose of this designation is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high water mark (OHWM). This designation is applied to all lands waterward of the OHWM.

2. Urban Conservancy – The purpose of this designation is to protect and restore ecological functions of open space, floodplains, and other sensitive lands, where they exist in urban and developed settings, while allowing a variety of compatible uses. This
designation is applied to the entire shoreline jurisdiction above the ordinary high water mark (OHWM) within the City of Battle Ground and its UGA.

4.0 SHORELINE MASTER PROGRAM

4.1 Goals and Policies

The Battle Ground locally-approved SMP has goal statements and policies for general and specific shoreline developments, modifications and uses (see Chapter 3 of the SMP). Goals and policies were developed based on the state’s shoreline guidelines, the Coalition ICR, Clark County Coalition SMP Update Management Strategy, input from the general public, and the City’s Comprehensive Plan. New policies were developed that are unique to the SMP. Policies that were included based on the Coalition ICR are intended to address the management recommendations and to ensure no net loss from baseline conditions.

4.2 Regulations

The SMP establishes regulations for general and specific shoreline developments, modifications and uses. The regulations are generally designed to improve protection of shoreline ecological functions and management of the resources identified in the Coalition ICR. Protective regulations in the SMP include, but are not limited to:

4.2.1 Critical Areas

- The critical area regulations from BMC 18.270 – 18.310 have been appended to the SMP (see AppendixB).
- Reasonable use exceptions must be processed as a shoreline variance.
- If shoreline critical area impacts cannot be avoided, then mitigation must occur such that no net loss of shoreline ecological function is achieved.

4.2.2 Water Quality

- New development must meet current stormwater management standards, BMPs must be used to control treatment and release of surface runoff and erosion control methods must be used during construction and operation.
- Other regulations prohibit the use of herbicides, fungicides, fertilizers, and pesticides within 25 feet of a waterbody, except by a qualified professional in accordance with state and federal laws. In-water structures must be constructed of materials that will not adversely affect water quality or aquatic plants and animals over the long term.

4.2.3 Vegetation Conservation

- Existing vegetation within shoreline jurisdiction must be retained in the riparian area between the OHWM of waters to the one-hundred-year floodplain or the following distances if greater:
Salmon Creek Critical Area buffer of 250’
Morgan Creek Critical Area Buffer of 100’.

- Removal of native vegetation must be avoided.
- Where removal of vegetation cannot be avoided, it must be minimized and mitigated at a minimum ratio of 1:1. Lost functions may be replaced by enhancing other functions provided that no net loss in overall functions is demonstrated and habitat connectivity is maintained.
- Topping trees is allowed only to remove a hazard and pruning is only allowed in limited amounts.
- Vegetation that cannot be replaced or restored within 20 years must be preserved.
- When restoring or enhancing vegetation, native species must be used.

### 4.2.4 Structural Shoreline Stabilization

- New hard armoring must obtain a conditional use permit and prove that soft-shore stabilization is not feasible.
- Naturally regenerating systems for the prevention and control of shoreline erosion must be used instead of structural solutions where (1) the length and configuration of shoreline will accommodate such systems; (2) such protection is a reasonable solution to the needs of the specific site; and (3) the project will:
  - Recreate or enhance natural shoreline conditions;
  - Create or enhance natural habitat;
  - Reverse otherwise erosional conditions; or
  - Enhance access to the shoreline, especially to public shorelines.

### 5.0 RESTORATION PLAN

The Clark County Coalition Draft Shoreline Restoration Plan was developed as part of the SMP update process (ESA Adolfson, 2011). Restoration opportunities were identified for Salmon Creek and Morgan Creek and are summarized below.

#### 5.1 Salmon Creek

Restoration opportunities that would be implemented at a programmatic level include reconnecting, restoring, and protecting cold-water side channels; managing forest practices, agriculture, and development to minimize impacts to sediment supply, runoff, and water quality; removing or limiting ponds to improve water temperatures; continuing to build on reforestation projects being undertaken by Clark County in the Salmon Creek Greenway; controlling reed canarygrass and planting native vegetation in wetlands associated with lower Salmon Creek, and investigating the possibility of acquiring large parcels for creation or enhancement of wetlands.
The site-specific restoration opportunities identified for Salmon Creek in the Coalition Restoration Plan include:

- Protect headwaters above 182nd Avenue for coho and steelhead spawning.
- Revegetate the mainstem particularly within the Greenway.
- Plant conifers and hardwood tree in riparian areas of RM 21.4 to 22.3 to increase large wood availability.
- Stabilize the streambank and enhance in-stream habitat between I-5 and Highway 99 where the mainstem avulsed into streamside gravel mining ponds in 1996.
- Reestablish floodplain connectivity and protect floodplain wetlands in the lower and middle reaches of Salmon Creek.
- Limit intensive use of stream channel at Salmon Creek County Park during fall Chinook and chum salmon spawning, egg incubation, and early rearing periods.
- Enhance wetlands along lower Salmon Creek floodplain.
- Acquire parcels near Salmon Creek treatment plant for wetland enhancement (Clark County Legacy Lands potential acquisition project).
- Control invasive vegetation at numerous locations noted in Stormwater Needs Assessment Program reports.

5.2 Morgan Creek

Restoration opportunities that would be implemented at a programmatic level include acquiring parcels that contain intact habitat, disconnecting or providing shade to ponds that affect stream water temperature, and investigating the possibility of acquiring large parcels for creation or enhancement of wetlands.

The site-specific restoration opportunities identified for Morgan Creek include:

- Restore riparian forest canopy along 1-mile reach downstream of NE 182nd Avenue;
- Control invasive vegetation at numerous locations noted in 2009 Stormwater Needs Assessment Program report;
- Upgrade stormwater facilities and outfalls at numerous locations noted in 2009 Stormwater Needs Assessment Program report;
- Preserve mature forest near confluence of Morgan and Salmon Creeks; and
- Investigate acquisition of parcels for habitat preservation, wetland creation, and additional stormwater control facilities, at locations noted in 2009 Stormwater Needs Assessment Program report.
6.0 CUMULATIVE IMPACTS ASSESSMENT

A cumulative impact assessment was prepared on the March 2011 version of the Clark County Coalition Draft SMP and on the June 2011 versions of the individual Coalition member Draft SMPs. In March a preliminary finding of potential net loss was determined. In response, the Coalition staff, with input from citizens and advised by the Shoreline Stakeholder Advisory Committee, Technical Advisory Committee and Independent Science Review Panel, re-examined and changed several of the designations placed on specific shoreline reaches, revised regulations associated with specific uses, dimensional standards, such as structure setbacks, and vegetation conservation provisions. The June 2011 Coalition Cumulative Impacts Analysis identified several areas with the potential for impacts and provided four concepts for re-evaluation to help offset the potential for impacts. The City of Battle Ground SMP (locally adopted February 21, 2012) addressed each of these key concepts.

The revised Clark County Coalition Draft Cumulative Impacts Analysis (February 2012) provides additional detail by waterbody as to which regulations in the City’s SMP serve to protect ecological functions.

6.1 Reasonably Foreseeable Future Development

The table below shows the amount of shoreline properties (both in acres and percent) located in the city of Battle Ground and its UGA. Most shoreline properties are classified as public lands, residential built, and residential vacant. There are no properties classified as commercial, industrial or tax exempt. The numbers in acres and percentages presented in Table 6-1 have been revised from the June 2011 version of this report due to changes in the City’s UGA and other more current information.

Table 6-1. Distribution of Shoreline Properties in the City of Battle Ground and UGA

<table>
<thead>
<tr>
<th>Cumulative Impact Analysis Categories</th>
<th>Acres</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Commercial</td>
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<tr>
<td>Built</td>
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<tr>
<td>Underutilized</td>
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<td>Vacant</td>
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</table>
According to the density allowed by the underlying zoning, residential vacant lands have the potential to develop with an additional 29 units in Battle Ground and its urban growth area. 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 potential future residential units is higher than would likely occur. The purpose of overestimating development on vacant lands in this manner is to determine impact on ecological functions under a high-impact scenario.

7.0 CONCLUSION

The baseline conditions of ecological functions and processes in the ICR were used as the basis for decisions made throughout the City’s SMP update process. The inventory was integral to the development of the shoreline designations, informed goal and policy development, led to the establishment of protective regulations, and shaped the conclusions of this cumulative impacts analysis. All components of the Coalition’s Cumulative Impacts Analysis (February 2012) are also applicable to this analysis of the City of Battle Ground’s locally-approved SMP unless otherwise stated in this report.

Based upon the anticipated low levels of foreseeable future development in Battle Ground’s shorelines, the existing shoreline ecological functions of Salmon and Morgan Creeks, cumulative impacts on shoreline ecological functions are not likely under the City’s program. However, new impervious surface affecting hydrology and the potential for riparian vegetation loss for both Salmon and Morgan Creeks, warrant monitoring.

To continue the trend toward improvement of shoreline ecological, to address the concerns described above, and to ensure that potential incremental impacts of exempt activities, illegal actions, and ongoing degradation do not lead to loss of shoreline ecological functions the following action is recommended:
Consider city-wide shoreline restoration to restore degraded habitats in the shoreline. Use of restoration measures sponsored by the City to offset cumulative impacts is allowed and encouraged by the shoreline guidelines. Incorporate opportunities identified in the Coalition Restoration Plan specifically focused on the following:

- Revegetation of degraded riparian zones;
- Enhancement of degraded wetlands; and
- Preservation of associated wetlands and floodplains through purchase of lands.