

Table A-3 – Camano Island: Current and Future Performance of Shoreline Ecological Functions – February 2013

The following table describes the existing performance of shoreline ecological functions, the ecological functions at risk and the level of alteration along Island County shorelines as described in the Shoreline Inventory and Characterization Report. Regulations from the Island County Shoreline Master Program (Dec. 27, 2012) that protect ecological functions are identified along with programmatic opportunities from the Restoration Plan (Dec. 27, 2012). The future performance is then assessed based on the type and amount of expected development (*foreseeable development*) in the shoreline, the level of protection the proposed SMP regulations provide, and restoration opportunities. Specific opportunities for restoration are outlined in the Restoration Plan. Current performance of nearshore processes are ranked “least,” “less,” “moderate,” and “most” depending on the level of degradation along the shoreline (PSNERP, 2010). Future performance is ranked “No Cumulative Impacts” and “Potential for Cumulative Impacts” to shoreline ecological functions depending on the expected changes from existing conditions with implementation of the SMP over the next twenty years.

Existing Conditions by Reach <i>Shoreline Inventory and Characterization Report</i>	Current Performance <i>PSNERP, 2010 and Shoreline Alterations Impacting Processes and Functions</i>	Foreseeable Development <i>See Chapter 3 of report for methodology</i>	Ecological Functions at Risk	SMP Provisions Protection SMP regulations (with reference to SMP section number) Restoration Plan	Anticipated Future Performance
Aquatic					
<p>Summary of Conditions:</p> <p>Aquatic areas and associated shorelines provide habitat for waterfowl, forage fish, Dungeness crab, hard shell clams, pandalid shrimp, Pacific herring, harbor seals, and gray whale, as well as bald eagle nesting sites. Coastal lagoons also provide significant aquatic habitats.</p> <p>Skagit Bay and Port Susan generally face east, facing two significant estuaries draining mainland Skagit County and Snohomish County. The eastern Camano shorelines importance for outmigrating and rearing juvenile salmonids, including anadromous bull trout populations, is significant due to the proximity of both estuary areas.</p> <p>The marine shorelines along Saratoga Passage provide juvenile rearing habitat for anadromous salmonids including Chinook salmon.</p> <p>Numerous short, coastal drainages flow on both sides of Camano Island to the marine shorelines; most do not support documented salmon use, except for the stream draining to Triangle Cove from Kristoferson Lake and the stream draining Carp Lake which suggests that these areas provides significant juvenile rearing habitat.</p> <p>Indicators: See below.</p> <p>Reaches: All areas waterward of the ordinary high water mark are designated Aquatic.</p>	<p>PSNERP Degradation Scores:</p> <p>No degradation: 0%</p> <p>Least degraded: 14%</p> <p>Less degraded: 80%</p> <p>Moderately degraded: 0%</p> <p>More degraded: 6%</p> <p>Alterations associated with agricultural activity (land clearing and ditching of streams) occur at Livingston Bay and at coastal lagoon south of Bay. Residential and agricultural land cover alterations in surrounding areas of Elger Bay. Boat ramp, public access facilities, and land clearing at S end of Camano Island State Park.</p>	<p>Potential for new docks based on infill or redevelopment . Future shellfish aquaculture may locate on the east shore of Camano Island in Port Susan waters, although there are no applications currently under consideration by the County.</p>	<p>Water Quality: Low risk due to existing limited physical alteration within aquatic areas, as well as protections provided contiguous wetland areas (coastal lagoons). Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction. Increased sedimentation may occur below aquaculture facilities in areas of weak currents. Temporary increases in turbidity may occur from clam and geoduck harvesting.</p> <p>Water and Sediment Movement: Moderate risk due to additional shoreline armoring and changes in contributing basin due to increased impervious cover.</p> <p>Habitat: Direct impacts limited due to minimal extent of permitted and foreseeable in-water and over-water uses. Aquatic habitat degradation susceptible to water quality inputs from contributing basin, especially in enclosed aquatic areas which receive inputs from residential and/or agricultural areas. Aquatic (subtidal and intertidal) and lagoon habitats susceptible to sea level rise (SLR). Some habitat reduction due to reduced light levels from short and long term increases in turbidity. Aquaculture activities may</p>	<p>Protection Allowed uses and modifications: <u>Residential Uses:</u> Accessory beach access structures on private lots, subdivision of tidelands for public acquisition or preservation purposes only. <u>Beach access structures:</u> shoreline conditional use permit (CUP) <u>Industrial Uses:</u> Port facilities, water-dependent industry, water-related industry, log storage (only where permitted in adjoining shoreland SED) <u>Boating and Related Facilities:</u> Boat launches, private and public piers, floats and docks, mooring buoys, float plane bases and docks, marinas (except where upland is designated Natural) CUP <u>Scientific, educational, historic, or archaeological uses:</u> Water-dependent or –related uses (CUP) <u>Resource Management and Extraction:</u> Aquaculture, in-water, including mechanical or hydraulic harvest of shellfish subject to CUP <u>Transportation:</u> Ferry terminals and bridges and culverts (CUP) <u>Utilities:</u> Production facilities, tidal and wave energy production facilities, accessory utilities, and below and above ground transmission <u>Recreational Uses:</u> Marine campgrounds, marine trails, undeveloped natural reserves/parks, unpaved non-vehicular trails and paths, passive recreation, and public parks <u>Breakwaters:</u> Limited to support of water-dependent uses, public access, or other public use <u>Shoreline stabilization:</u> Structural and non-structural and shoreline restoration/beach enhancement <u>Dikes:</u> CUP <u>Grading :</u> CUP <u>Dredging:</u> CUP; permitted for restoration/enhancement projects <u>Groins and jetties:</u> for restoration or enhancement of natural resources only or as part of an approved marina or for navigational purposes <u>Dolphins :</u>as part of a water-dependent use</p> <p>Prohibited uses and modifications: <u>Residential Uses:</u> Single-family, accessory dwelling units, mobile home parks, multi-family uses, floating homes and houseboats, and accessory structures <u>Commercial Uses:</u> All types <u>Industrial Uses:</u> Non-water-dependent industry <u>Boating & Related Facilities:</u> Marinas (where upland is designated Natural) <u>Scientific, educational, historic, or archaeological uses:</u> Non-water–related uses <u>Resource Management and Extraction:</u> Forest practices and mining <u>Transportation:</u> Parking lots, railroads, new and existing vehicular routes and facilities <u>Recreational Uses:</u> Campgrounds, scenic overlooks, & RV parks (i.e. private uses) <u>Tourist Accommodations:</u> Hotels, motels and inns <u>Groins and jetties</u> (except as permitted above) <u>Dolphins</u> (except as permitted above)</p> <p>Additional standards ICC 17.05A.090.N.6: Dock and pier components that may come into contact with the water must consist of non-toxic materials. <i>Hydrology</i> ICC 17.05A.100.J: Subdivisions and individual residential structures must be designed to ensure that surface runoff does not pollute adjacent waters or cause soil or beach erosion either during</p>	<p>No Cumulative Impacts No cumulative impacts due to limited extent of area where in-water and/or overwater use is permitted and anticipated, as well as use restrictions and development standards that ensure development and shoreline modification will only occur where appropriate, and in a fashion that impacts to adjacent aquatic areas will be mitigated. In the event aquaculture with overwater structures are installed, required grating and other mitigation measures would mitigate impacts to result in no net loss. Floating structures for aquaculture viewed by some as aesthetically offensive.</p>

Existing Conditions by Reach <i>Shoreline Inventory and Characterization Report</i>	Current Performance <i>PSNERP, 2010 and Shoreline Alterations Impacting Processes and Functions</i>	Foreseeable Development <i>See Chapter 3 of report for methodology</i>	Ecological Functions at Risk	SMP Provisions Protection SMP regulations (with reference to SMP section number) Restoration Plan	Anticipated Future Performance
			<p>fragment shoreline habitat in combination with docks and other overwater structures and in confined embayments result in creating the conditions for potentially harmful algal blooms. Habitat conversion would be precipitated by the accumulation of shell hash below floating or suspended structures.</p> <p>Shoreline Vegetation: Low risk. Limited development potential due to existing and foreseeable use within aquatic areas. Long term risk of SLR resulting in ecological changes, especially threatening subtidal, intertidal aquatic vegetation and lagoon communities.</p> <p>Hydrology (Water Quantity): Low risk due to existing limited physical alteration within aquatic areas, as well as protections provided contiguous wetland areas (coastal lagoons). Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction.</p>	<p>or after the construction phase. <i>Hydrology</i> ICC 17.05A.090.A: The use of chemicals to control invasive aquatic weeds is prohibited, except when applied by a licensed pesticide applicator and approved for aquatic use. <i>Shoreline Vegetation</i> ICC 17.05A.090.C.13. i: Critical saltwater habitat protections. <i>Habitat</i> ICC 17.05A.100.C. 6: Beach access structures that extend waterward of the OHWM are limited to a small pier or pile-supported pedestrian landing platform of 25 sq.ft. or less. <i>Habitat</i> ICC 17.05A.100.B: Aquaculture must avoid impacts to eelgrass and macroalgae. Floating aquaculture limited to 40 surface acres. Fish net pens may only include native species. Salmon net pens must not be located closer than 12 statute miles from the mouth of Skagit, Stillaguamish and Snohomish Rivers. Geoduck may not result in significant clearing and grading. Aquatic habitat must be minimized or mitigated. <i>Habitat</i> ICC 17.05A.100.D.4: Mooring buoys must avoid critical saltwater habitats. Buoys must use state-approved designs that have minimal adverse effects on aquatic ecosystem and fish. See standards for docks, piers, floats, and boat launches below. <i>Habitat</i></p> <p>Restoration Opportunities include: CAM03 Remove intertidal spartina CAM04 Remove bulkheads from intertidal beach as possible with failure or redevelopment (2400') CAM04 Remove fill and boathouses. Examine tidal flow under wooden bridge and alter bridge if tidal flow is impeded into marsh. CAM06 Remove or move landward pile bulkhead that extends well waterward of surrounding bulkheads onto intertidal beach. CAM07 Remove failed and failing pile bulkheads on upper intertidal immediately north of large intertidal fill south of Mabana. CAM07 Remove failed pile bulkhead over upper intertidal beach. CAM07 Remove large fill area and pile bulkhead that extends over the intertidal beach. CAM07 Remove large upper intertidal pile bulkhead and fill area near "Camp Diana" that contains 2 stairway landings and extends well into intertidal. CAM08 Remove upper intertidal/ backshore bulkheads at northern Saratoga Shores to uncover potential forage fish spawning and backshore vegetation areas. CAM09 Remove rock and large debris from upper half of intertidal, from failed bulkhead, to remove impediment to net shore-drift and uncover potential forage fish spawning habitat CAM11 Remove 40-50 piles on upper intertidal beach east of Utsalady boat ramp that remain from an old failed bulkhead in potential forage fish spawning area. CAM11 Remove failed pier and pilings at Camp Grande south of Rocky Point CAM11 Remove rock groins crossing intertidal at Rocky Pt. to reduce disturbance to littoral drift and potential forage fish spawning habitat. Potential impacts to existing bulkheads may have to be analyzed. CAM12 Remove 2 pile bulkheads (failed) on upper intertidal within potential forage fish spawning band. CAM12 Remove derelict boat ramps and marine railways on beach. A number of failed structures cross potential forage fish spawning areas. CAM12 Remove failed bulkhead rock from intertidal beach and backshore. Rock is covering substantial portion of potential forage fish spawning band.</p>	

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Natural					
<p>Summary of Conditions:</p> <p>Reach 1 is heavily influenced by the Skagit River and Stillaguamish River deltas, providing sediment and organic input to the aquatic environment. A long, north-trending drift cell, feeding accretion areas to the north, primarily influences reaches 3, 4, 5, 8, 10 and 11 geomorphic shoreline processes. More than 90 percent of Reach 5 is mapped with steep slopes, with similar extensive mapping of steep slopes extending back 400-600 feet from the shoreline. Reaches 2, 6 and 7 geomorphic shoreline processes are influenced by the convergence of two drift cells at Livingston Bay for Reach 2, a barrier beach for Reach 6 and Elger Bay for Reach 7. Mapped feeder bluffs are also present in reaches 1 and 5.</p> <p>Reach 2 and Reach 7 have coastal lagoons that provide significant aquatic habitats.</p> <p>All reaches include grey whale seasonal feeding habitats. Aquatic habitats in Reaches 1 and 2 include a harbor seal haulout site and waterfowl concentrations. Reaches 1, 3, 10 and 11 aquatic areas provide mapped Dungeness Crab and forage fish. Reaches 4, 5, 6, 7 and 8 aquatic areas provide mapped pandalid shrimp and Dungeness Crab and reaches 6, 7 and 8 provide mapped forage fish. Reaches 4, 5, 10 and 11 aquatic areas also provide mapped Pacific herring. Reach 8 and 10 aquatic areas provided mapped hardshell clam.</p> <p>The shoreline is generally unmodified and without overwater or in-water structures. Primary land uses within the shoreline area of Reach 2 include shoreline residential development, agriculture and open space. Most of the undeveloped open space area is mapped as wetland associated with the marine shoreline. Reaches 3, 4, 10 and 11 include shoreline residential development generally landward of the shoreline jurisdiction. Reach 5 is characterized by rural residential development generally set back 500 or more feet from the shoreline. Reach 8 consists primarily of Camano Island State Park and Camano Beach State Park.</p> <p>Indicators: Armoring (% of shoreline): 0.4 (3%) Eelgrass: 9 occurrences and one large, contiguous eelgrass bed extending from the northern tip of Camano Island north to Dugualla Bay Culverts: 1 Coastal Floodplain: 178 ac (42%) Forest Cover: 194 ac (45%) Impervious: 55 ac (13%) Overwater Structures: None mapped WDFW PHS – Priority Bird Species: Bald eagle (10 occurrences including one concentration) and 2 Purple martin colonies Protected Lands: 101 ac (24%) Riparian Vegetation: 79% Road Lengths: 0.1 mi Wetlands: 150 ac (35%)</p> <p>Reaches: Reach 1 (35 acres) Reach 2 (134 acres) Reach 3 (19 acres) Reach 4 (15 acres) Reach 5 (68 acres) Reach 6 (6 acres) Reach 7 (42 acres)</p>	<p>PSNERP Degradation Scores:</p> <p>No degradation: 0%</p> <p>Least degraded: 14%</p> <p>Less degraded: 80%</p> <p>Moderately degraded: 0%</p> <p>More degraded: 6%</p> <p>Alterations associated with agricultural activity (land clearing and ditching of streams) occur at Livingston Bay and at coastal lagoon south of Bay. Residential and agricultural land cover alterations in surrounding areas of Elger Bay. Boat ramp, public access facilities, and land clearing at S end of Camano Island State Park.</p>	<p>Vacant: 11 ac (3%) Subdividable lands: 39 ac (9%) Potential residential units: 106</p>	<p>Water Quality: Low risk due to existing limited physical alteration within aquatic areas, as well as protections provided contiguous wetland areas (coastal lagoons). Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction.</p> <p>Water and Sediment Movement: Moderate risk due to additional shoreline armoring and changes in contributing basin due to increased impervious cover.</p> <p>Habitat: Aquatic habitat degradation susceptible to water quality inputs from contributing basin, especially in low-lying Natural areas which receive inputs from residential and agricultural areas. Intact areas of riparian habitat protected, as large majority of associated wetland and riparian areas are protected as public open space. Lagoon, bluff, backshore, beach, nearshore, and subtidal habitats susceptible to SLR.</p> <p>Shoreline Vegetation: Low risk. Limited development potential due to existing use and protection as public open space; associated wetland areas and required buffers further limit development that could impact shoreline vegetation. Long term risk of SLR resulting in ecological changes, especially threatening aquatic and lagoon / wetland vegetation in low-lying Natural areas.</p> <p>Hydrology (Water Quantity): Low risk within transport and feeder bluff Natural marine shorelines, including segments in Reaches 5 and 8. Limited</p>	<p>Protection Allowed uses and modifications: <u>Residential Uses:</u> Single-family uses, accessory dwelling units (CUP), accessory structures, accessory beach access structures (CUP) on private lots, and subdivisions <u>Boating and Related Facilities:</u> Public boat launches, private and public piers, floats and docks (CUP) <u>Scientific, educational, historic, or archaeological uses:</u> Water-dependent or –related uses <u>Resource Management and Extraction:</u> Low-intensity agriculture and forest practices <u>Transportation:</u> Parking lots associated with water-dependent uses, existing public vehicular routes and facilities, bridges, and culverts <u>Utilities:</u> Production facilities, tidal and wave energy production facilities, accessory utilities, and below and above ground transmission (CUP) <u>Recreational Uses:</u> Marine campgrounds, marine trails, undeveloped natural reserves/parks, unpaved non-vehicular trails and paths, passive recreation, and public parks (CUP) <u>Tourist Accommodations:</u> Bed and breakfast inns, country inns <u>Shoreline stabilization:</u> Structural (for existing residential structures at risk from erosion) and non-structural and shoreline restoration/beach enhancement (CUP) <u>Grading:</u> (CUP) <u>Dredging:</u> Restoration or enhancement of natural resources only (CUP) <u>Groins and jetties</u> as part of an ecological restoration project (CUP)</p> <p>Prohibited uses and modifications: <u>Residential Uses:</u> Mobile home parks and multi-family uses <u>Commercial Uses:</u> Water-oriented and non-water-oriented uses <u>Industrial Uses:</u> Port facilities, water-oriented industry, log storage, and non-water-dependent industry <u>Boating & Related Facilities:</u> Float plane bases, float plane docks, and marinas <u>Scientific, educational, historic, or archaeological uses:</u> Non-water–related uses <u>Resource Management and Extraction:</u> Mining and aquaculture on-land activities/structures/processing <u>Transportation:</u> Parking lots (except as permitted above), ferry terminals, new public vehicular routes and facilities, and railroads <u>Recreational Uses:</u> Campgrounds, scenic overlooks, & RV parks (i.e. private uses) <u>Tourist Accommodations:</u> Hotels and motels</p> <p>Shoreline buffers, setbacks, maximum impervious surface and critical areas protection: <u>Shoreline Marine Buffer:</u> 125 feet <u>Steep Slope Buffer:</u> 50 feet <u>Shoreline Setback:</u> 25 feet <u>Maximum Impervious Surface:</u> 10 percent <u>Critical Area Buffers:</u> Landslide Hazard Area or Steep Slope (50-100 foot setback); Streams (50-150 foot buffer); Wetlands (20-300 foot buffer); Nesting sites and territory (200-1000 foot buffers); Washington Natural Heritage Program Areas (50 foot buffers)</p> <p>Additional standards ICC 11.03 (Stormwater and Surface Water) <i>Hydrologic</i> ICC 17.05A.090A: General Shoreline Development standards limiting alteration of natural drainage features and prohibiting release of solid and liquid waste. <i>Hydrologic</i> ICC 17.05A.100.J: New residential development and subdivisions must be designed and built in a manner that avoids the need for structural shore armoring. <i>Hydrologic</i> ICC 17.05A.100.C: Beach access structures are prohibited on exceptional marine feeder bluffs. Beach access structures are not allowed if public beach access is available within 500 feet. <i>Hydrologic</i> ICC 17.05A.100.J.22: Joint use beach access is preferred in areas near unstable slopes, feeder bluffs or other geologically hazardous areas. Must be located in a manner that does not require shoreline stabilization. <i>Hydrologic</i></p>	<p>No Cumulative Impacts</p> <p>No cumulative impacts due to low potential for development within majority of SED, marine shoreline and critical areas buffers, limited allowed uses and detailed standards to ensure only limited and appropriate development and use would occur. Protections extending outside of shoreline jurisdiction, including stormwater and surface water standards, will provide protection against cumulative impacts to hydrologic and habitat functions.</p>

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Reach 8 (52 acres) Reach 10 (29 acres) Reach 11 (28 acres)			development potential due to existing use and protection as public open space throughout the majority of Natural designated areas. Associated wetland areas and required buffers further limit development that could impact shoreline vegetation. Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction, and impacts of SLR; these result in moderate risk within accretion shoreform areas, including those within Livingston and Elger Bays. Potential for saltwater intrusion of groundwater.	ICC 17.05A.100.J: Subdivisions containing marshes, swamps, lagoons, portions of floodplains, or similar wetlands must use those areas only for the purposes of parks, open space, or recreation facilities. <i>Hydrologic and Habitat</i> ICC 17.05A.090.D: Native vegetation within shoreline buffers must be maintained or, where lacking, enhanced. As a general guideline, the percentage of buffer to be enhanced should equal the percentage increase in impervious lot coverage on the site. <i>Shoreline Vegetation</i> ICC 17.05A.090.N: Low impact development techniques must be considered, materials that come into contact with water must be composed of non-toxic materials. <i>Habitat</i> Restoration Opportunities include: CAM02 Connect and restore channels to saltmarsh to re-establish tidal flow and fish access to saltmarsh. May require dyke extensions. CAM02 Remove portions of dyke to re-establish better tidal flow and fish access into old saltmarsh (1800') CAM08 Remove creosote pile beach access stairway bulkhead at north-central portion of Camano Island State Park. CAM08 Remove creosote pile beach access stairway bulkhead at northern portion of Camano Island State Park.	

Existing Conditions by Reach <i>Shoreline Inventory and Characterization Report</i>	Current Performance <i>PSNERP, 2010 and Shoreline Alterations Impacting Processes and Functions</i>	Foreseeable Development <i>See Chapter 3 of report for methodology</i>	Ecological Functions at Risk	SMP Provisions Protection SMP regulations (with reference to SMP section number) Restoration Plan	Anticipated Future Performance
Rural Conservancy					
<p>Summary of Conditions:</p> <p>The Skagit / Stillaguamish Estuaries and Port Susan shorelines of Camano Island are predominantly comprised of delta with bluff backed beaches and barrier beaches farther to the north and south of the delta influence. Key physical processes are dominated by the influence of the river deltas and two relatively short drift cells on the north and south ends of the area.</p> <p>Skagit Bay and Port Susan generally face east, facing two significant estuaries draining mainland Skagit County and Snohomish County. The eastern Camano shorelines importance for outmigrating and rearing juvenile salmonids, including anadromous bull trout populations, is significant due to the proximity of both estuary areas. Significant portions of estuary wetland areas have been modified by agricultural land uses.</p> <p>Saratoga Passage is comprised primarily of bluff backed beaches and barrier beaches, with less coastal lagoon or associated wetland area than Eastern Camano Island. Several coastal lagoons do occur on the shoreline, including Elger Bay. The marine shorelines along Saratoga Passage provide juvenile rearing habitat for anadromous salmonids including Chinook</p> <p>Numerous short, coastal drainages flow on both sides of Camano Island to the marine shorelines; most do not support documented salmon use, except for the stream draining to Triangle Cove from Kristoferson Lake which suggests that the area provides significant juvenile rearing habitat. Aquatic areas and associated shorelines provide habitat for waterfowl, forage fish, Dungeness crab, hard shell clams, pandalid shrimp, harbor seals, and gray whale, as well as bald eagle nesting sites.</p> <p>Land use pattern along the eastern marine shorelines is a mix of agriculture area intermixed with large-lot rural development, bluff fronting residential development (Triangle Cove) with hard armoring, and less developed areas. The west-facing shorelines of Camano Island are a mix of large residential lots behind coastal bluffs, dense residential development along Elger Bay, and Cama Beach State Park (with historic cabins and a bulkhead)</p> <p>Indicators:</p> <p>Armoring (% of shoreline): 5.6 mi (25%)</p> <p>Eelgrass: 7 occurrences and one large, contiguous eelgrass bed extending from the northern tip of Camano Island north to Dugualla Bay</p> <p>Culverts: 34</p> <p>Coastal Floodplain: 179 ac (27%)</p> <p>Forest Cover: 201 ac (31%)</p> <p>Impervious: 115 acres (18%)</p> <p>Overwater Structures: 8</p> <p>WDFW PHS – Priority Bird Species: Bald eagle (11 occurrences) and 1 purple Martin colony</p> <p>Protected Lands: 18 ac (3%)</p> <p>Riparian Vegetation: 61%</p> <p>Road Lengths: 3.8 mi</p> <p>Wetlands: 177 ac (27%)</p> <p>Reaches:</p> <p>Reach 1 (132 acres)</p> <p>Reach 2 (34 acres)</p>	<p>PSNERP Degradation Scores:</p> <p>No degradation: 0%</p> <p>Least degraded: 17%</p> <p>Less degraded: 67%</p> <p>Moderately degraded: 0%</p> <p>More degraded: 16%</p> <p>Shorelines are primarily unmodified (25% of shoreline has existing armoring). Rural residential shoreline development is the primary use (occurring in 'Rural' zoning areas), with development occurring landward of high bank shorelines. Modifications within Reach 1 associated with agricultural use, including land clearing and ditching.</p>	<p>Vacant: 23 ac (3%)</p> <p>Subdividable lands: 49 ac (7%)</p> <p>Potential residential units: 139</p>	<p>Water Quality: Low risk due to existing limited physical alteration within aquatic areas, as well as protections provided contiguous wetland areas (coastal lagoons). Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction.</p> <p>Water and Sediment Movement: Moderate risk due to additional shoreline armoring and changes in contributing basin due to increased impervious cover.</p> <p>Habitat: Direct impacts primarily limited to upland forest habitat; however land cover alterations and conversion to residential development may indirectly alter nearshore environments. Significant amounts of new residential shoreline armoring not expected.</p> <p>Shoreline vegetation: Moderate risk. Riparian loss could occur thru potential future subdivision and infill residential development; development will maintain a riparian buffer, however will likely result in forest loss in areas outside of the buffer. Additional alteration associated with private shoreline access and view maintenance. Continued introduction and competition from invasive vegetation.</p> <p>Hydrology (Water Quality): Low to moderate risk. Substantial potential for additional shoreline residential development – conversion of forested land cover to residential has potential to impact hydrologic conditions. Additional conversion to agricultural use not anticipated. Potential for</p>	<p>Protection</p> <p>Allowed uses and modifications:</p> <p>Residential Uses: Single-family uses, accessory dwelling units (CUP), accessory structures, accessory beach access structures on private lots, and subdivisions</p> <p>Boating and Related Facilities: Public boat launches, private and public piers, floats and docks, float plane docks, and marinas (CUP)</p> <p>Low intensity Agriculture: CUP</p> <p>Aquaculture (On-land): CUP</p> <p>Scientific, educational, historic, or archaeological uses: Water-oriented and non-water-related uses (CUP)</p> <p>Transportation: Ferry terminals, new and existing public vehicular routes and facilities, bridges, and culverts</p> <p>Utilities: All types</p> <p>Recreational Uses: Marine campgrounds, marine trails, undeveloped natural reserves/parks, unpaved non-vehicular trails and paths, passive recreation, and public parks</p> <p>Tourist Accommodations: Hotels, motels, and inns (CUP)</p> <p>Shoreline stabilization: Structural (CUP) and non-structural and shoreline restoration/beach enhancement</p> <p>Dikes, Grading, Dredging: (CUP) For restoration or marina only</p> <p>Groins and jetties for restoration or enhancement of natural resources, as part of an approved marina, or for navigational purposes (CUP)</p> <p>Prohibited uses and modifications:</p> <p>Residential Uses: Mobile home parks and multi-family uses</p> <p>Commercial Uses: Except tourist accommodations</p> <p>Industrial Uses: All types</p> <p>Boating & Related Facilities: Float plane bases</p> <p>Resource Management and Extraction: Mining</p> <p>Transportation: Parking lots and railroads</p> <p>Recreational Uses: Campgrounds, scenic overlooks, & RV parks (i.e. private uses)</p> <p>Groins and jetties</p> <p>Shoreline buffers, setbacks, maximum impervious surface and critical areas protection:</p> <p>Shoreline Marine Buffer: 75 feet</p> <p>Steep Slope Buffer: 30 feet for slopes greater than 40%, 50 feet for exceptional feeder bluffs</p> <p>Shoreline Setback: 25 feet</p> <p>Maximum Impervious Surface: 10 percent</p> <p>Critical Area Buffers: Landslide Hazard Area or Steep Slope (50-100 foot setback); Streams (50-100 foot buffer); Wetlands (20-300 foot buffer); Nesting sites and territory (200-1000 foot buffers); Washington Natural Heritage Program Areas (50 foot buffers)</p> <p>Additional standards</p> <p>ICC 11.03 (Stormwater and Surface Water) <i>Hydrology</i></p> <p>ICC 17.05A.090A: General Shoreline Development standards limiting alteration of natural drainage features and prohibiting release of solid and liquid waste. <i>Water Quality, Hydrology</i></p> <p>ICC 17.05A.100.C: Beach access structures are prohibited on exceptional marine feeder bluffs. Beach access structures are not allowed if public beach access is available within 500 feet. <i>Hydrology, Water and Sediment Movement</i></p> <p>ICC 17.05A.100.J: Joint use beach access is preferred in areas near unstable slopes, feeder bluffs or other geologically hazardous areas. Must be located in a manner that does not require shoreline stabilization. <i>Hydrology, Water and Sediment Movement</i></p> <p>ICC 17.05A.100.J: New residential development and subdivisions must be designed and built in a manner that avoids the need for structural shore armoring. <i>Hydrology; Water and Sediment Movement</i></p> <p>ICC 17.05A.100.J 1: All residential use and development managed to avoid damage to shoreline and prevent cumulative impacts. <i>All</i></p> <p>ICC 17.05A.100.J.2: Subdivision subject to maximum density limits. <i>All</i></p> <p>ICC 17.05A.100.C: Beach access structures are prohibited on exceptional marine feeder bluffs.</p>	<p>No Cumulative Impacts</p> <p>No cumulative impacts due to required marine shoreline and critical areas buffers, restrictions on allowed uses and detailed standards to ensure only appropriate development and use will occur. Structural shoreline stabilization only allowed for necessary and imminent protection of existing structures, and for limited water dependent uses. Protections extending outside of shoreline jurisdiction, including stormwater and surface water standards, provide additional protection.</p>

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Reach 3 (179 acres) Reach 4 (47 acres) Reach 6 (48 acres) Reach 7 (114 acres) Reach 8 (17 acres) Reach 9 (28 acres) Reach 10 (14 acres) Reach 11 (30 acres) Reach 12 (14 acres)			saltwater intrusion of groundwater.	Beach access structures are not allowed if public beach access is available within 500 feet. <i>Hydrology, Water and Sediment Movement</i> ICC 17.05A.090D: Native vegetation within shoreline buffers must be maintained or, where lacking, must be enhanced. As a general guideline, the percentage of buffer to be enhanced should equal the percentage increase in impervious lot coverage on the site. <i>Shoreline Vegetation</i> ICC 17.05A.090K: Native vegetation within shoreline jurisdiction should be retained. If removal is necessary, it should be minimized and mitigated. If non-native is removed, it should be replaced with native vegetation. Tree topping is prohibited. <i>Shoreline Vegetation</i> ICC 17.05A.090H: Where buffer enhancement is required, buffer areas must be enhanced with native species, noxious weeds and impervious surfaces must be removed from the enhanced buffer, and 90% vegetative cover achieved within 5 years. <i>Habitat</i> Restoration Opportunities include: CAM03 Remove portions of dyke to re-introduce tidal flow to old saltmarsh (1800') CAM10 Restore tidal inlet & saltmarsh complex at Onamac Point. May have been partially filled; channel history should be researched for feasibility of re-establishing fish access. See Aquatic for additional opportunities in adjacent waters.	
Shoreline Residential					
Summary of Conditions: The Skagit / Stillaguamish Estuaries and Port Susan shorelines of Camano Island are predominantly comprised of delta with bluff backed beaches and barrier beaches farther to the north and south of the delta influence. Key physical processes are dominated by the influence of the river deltas and two relatively short drift cells on the north and south ends of the area. Skagit Bay and Port Susan generally face east, facing two significant estuaries draining mainland Skagit County and Snohomish County. The eastern Camano shorelines importance for outmigrating and rearing juvenile salmonids, including anadromous bull trout populations, is significant due to the proximity of both estuary areas. Significant portions of estuary wetland areas have been modified by agricultural land uses. Saratoga Passage is comprised primarily of bluff backed beaches and barrier beaches, with less coastal lagoon or associated wetland area than Eastern Camano Island. The marine shorelines along Saratoga Passage provide juvenile rearing habitat for anadromous salmonids including Chinook Numerous short, coastal drainages flow on both sides of Camano Island to the marine shorelines; most do not support documented salmon use, except for the stream draining Carp Lake. Aquatic areas and associated shorelines provide habitat for waterfowl, forage fish, Dungeness crab, pandalid shrimp, harbor seals, and gray whale, as well as bald eagle nesting sites.	PSNERP Degradation Scores: No degradation: 0% Least degraded: 9% Less degraded: 81% Moderately degraded: 0% More degraded: 9% Small lot (~8000 SF) residential shoreline development is the primary use. Significant areas of low bank development with existing hard armoring. Land cover substantially altered (limited forest cover) both within 'buffer' / shoreline setback areas and throughout shoreline jurisdiction.	Vacant: 13 ac (4%) Subdividable lands: 14 ac (4%) Potential residential units: 160 Potential for single-use docks and piers at Camano Country Club lagoon. Limited potential for infill of the Historic Beach Communities because they are primarily built-out. Potential for continuing redevelopment with larger building footprints and heights.	Water Quality: Low risk due to existing limited physical alteration within aquatic areas, as well as protections provided contiguous wetland areas (coastal lagoons). Primary pathway of degradation would occur through changes to contributing basin (land cover / land use changes) outside of shoreline jurisdiction. Water and Sediment Movement: Moderate risk due to additional shoreline armoring and changes in contributing basin due to increased impervious cover. Hydrology: Low risk. Limited potential for new development within shoreline jurisdiction due to	Protection Allowed uses and modifications: Residential Uses: Single-family and multi-family uses, accessory dwelling units, accessory structures, accessory beach access structures on private lots, and subdivisions Commercial Uses: Water-oriented commercial, non-water-oriented commercial if part of a mixed-use development with a water-dependent use Boating and Related Facilities: Boat launches, private and public piers, floats and docks, float plane bases and docks, and marinas (CUP) Scientific, educational, historic, or archaeological uses: Water-oriented and non-water-related uses (CUP) Resource Management and Extraction: Low intensity agriculture and forest practices Transportation: Parking lots, new and existing vehicular routes and facilities, bridges, and culverts (CUP) Utilities: All types some subject to a CUP Recreational Uses: Marine campgrounds, marine trails, undeveloped natural reserves/parks, unpaved non-vehicular trails and paths, passive recreation, and public parks Tourist Accommodations: Hotels & motels (CUP), and inns Shoreline stabilization: Structural (CUP) and non-structural and shoreline restoration/beach enhancement Dikes (CUP) Grading and Dredging Groins and jetties for restoration or enhancement of natural resources, as part of an approved marina, or for navigational purposes (CUP)	No Cumulative Impacts No cumulative impacts due to existing degraded ecological functions and potential for improvement as new development meets SMP buffer, setback, and use standards (including mitigation). Heights restricted to maximum 35 feet, but may partially block some existing views. Structural shoreline stabilization only allowed for necessary and imminent protection

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<p>Land use pattern along the eastern marine shorelines are a mix of dense shoreline residential developments (Juniper Beach along Port Susan and Livingston Bay); bluff fronting residential development (Triangle Cove, around the Camano Country Club and Tillicum Beach); residential development behind bluffs (central portion); and rural development behind coastal bluffs on large lots (southern portion). Bluff-fronting residential developments typically have hard shoreline armoring. Developments behind bluffs in the central portion of the island have significant clearing of forested vegetation landward of steep slope areas. On the western marine shoreline, north of Cama Beach State Park, there is dense single-family residential development extending almost uninterrupted to the Utsalady community at the north end of the Island. Several of these old beach communities have been designated Shoreline Residential-Historic Beach Community with reduced buffers and setbacks.</p> <p>Indicators:</p> <p>Armoring (% of shoreline): 10.8 mi (75%)</p> <p>Eelgrass: 7 occurrences and one large, contiguous eelgrass bed extending from the northern tip of Camano Island north to Dugualla Bay</p> <p>Culverts: 86</p> <p>Coastal Floodplain: 157 ac (45%)</p> <p>Forest Cover: 66 ac (19%)</p> <p>Impervious: 111 acres (32%)</p> <p>Overwater Structures: 26</p> <p>WDFW PHS – Priority Bird Species: Bald eagle (1 occurrence) and 1 purple Martin colony</p> <p>Protected Lands: 5 ac (1%)</p> <p>Riparian Vegetation: 59%</p> <p>Road Lengths: 9.3 mi</p> <p>Wetlands: 47 ac (14%)</p> <p>Reaches:</p> <p>Reach 1 (19 acres)</p> <p>Reach 2 (33 acres)</p> <p>Reach 3 (66 acres)</p> <p>Reach 4 (57 acres)</p> <p>Reach 6 (9 acres)</p> <p>Reach 7 (17 acres)</p> <p>Reach 8 (6 acres).</p> <p>Reach 9 (36 acres)</p> <p>Reach 10 (10 acres)</p> <p>Reach 11 (76 acres)</p> <p>Reach 12 (19 acres)</p>			<p>existing pattern (relatively few undeveloped lots). Potential for saltwater intrusion into groundwater.</p> <p>Habitat: Potential for limited number of new docks (Camano Country Club lagoon) would create new overwater structures, degrading aquatic habitat. Aquatic habitats additionally threatened by water quality degradation – associated with untreated stormwater, failing and/or high density of septic systems, illegal dumping, and normal use of chemicals in residential landscaping. Restrictions on shoreline armoring should limit future degradation associated with these structures.</p> <p>Shoreline vegetation: Low risk for impact to riparian habitat – some opportunity for additional impact through redevelopment and encroachment from existing uses; however little intact shoreline vegetation remains.</p>	<p>Prohibited uses and modifications:</p> <p><u>Residential Uses:</u> Mobile home parks</p> <p><u>Commercial Uses:</u> Non-water-oriented commercial (except tourist accommodations)</p> <p><u>Industrial Uses:</u> All types</p> <p><u>Resource Management and Extraction:</u> Aquaculture on land activities/structures/processing and mining</p> <p><u>Transportation:</u> Ferry terminals and railroads</p> <p><u>Recreational Uses:</u> Campgrounds, scenic overlooks, & RV parks (i.e. private uses)</p> <p><u>Groins and jetties</u> (except as permitted above)</p> <p><u>Dolphins</u></p> <p>Shoreline buffers, setbacks, maximum impervious surface and critical areas protection:</p> <p><u>Shoreline Marine Buffer:</u> 30 feet; 20 ft. Historic Beach Community (SRHBC)</p> <p><u>Steep Slope Buffer:</u> 30 feet; N/A Historic Beach Community (SRHBC)</p> <p><u>Shoreline Setback:</u> 45 feet; 10 ft. Historic Beach Community (SRHBC)</p> <p><u>Maximum Impervious Surface:</u> 30 percent; N/A Historic Beach Community (SRHBC)</p> <p><u>Critical Area Buffers:</u> Landslide Hazard Area or Steep Slope (50-100 foot setback); Streams (50-150 foot buffer); Wetlands (20-300 foot buffer); Nesting sites and territory (200-1000 foot buffers); Washington Natural Heritage Program Areas (50 foot buffers)</p> <p>Additional standards</p> <p>ICC 11.03 (Stormwater and Surface Water) <i>Hydrology</i></p> <p>ICC 17.05A.090A: General Shoreline Development standards limiting alteration of natural drainage features and prohibiting release of solid and liquid waste. <i>Hydrologic</i></p> <p>ICC 17.05A.100.J: New residential development and subdivisions must be designed and built in a manner that avoids the need for structural shore armoring. <i>Hydrologic</i></p> <p>ICC 17.05A.100.C: Beach access structures are prohibited on exceptional marine feeder bluffs. Beach access structures are not allowed if public beach access is available within 500 feet. <i>Hydrologic</i></p> <p>ICC 17.05A.100.J: Joint use beach access is preferred in areas near unstable slopes, feeder bluffs or other geologically hazardous areas. Must be located in a manner that does not require shoreline stabilization. <i>Hydrologic</i></p> <p>ICC 17.05.A.090D: Native vegetation within shoreline buffers must be maintained or, where lacking, must be enhanced. As a general guideline, the percentage of buffer to be enhanced should equal the percentage increase in impervious lot coverage on the site. <i>Shoreline Vegetation</i></p> <p>ICC 17.05A.090K: Native vegetation within shoreline jurisdiction should be retained. If removal is necessary, it should be minimized and mitigated. If non-native is removed, it should be replaced with native vegetation. Tree topping is prohibited. <i>Shoreline Vegetation</i></p> <p>ICC 17.05A.090E and 17.05A.090G: Development in the setback or buffer for constrained lots is allowed provided buffer enhancement is installed. <i>Vegetation</i></p> <p>ICC 17.05A.090H: Where buffer enhancement is required, buffer areas must be enhanced with native species, noxious weeds and impervious surfaces must be removed from the enhanced buffer, and 90% vegetative cover achieved within 5 years. <i>Vegetation</i></p> <p>ICC 17.05A.090.E: Septic drainfields are required to be located landward of SFR whenever possible. <i>Habitat</i></p> <p>ICC 17.05A.100.J: Subdivisions and individual residential structures must be designed to ensure that surface runoff does not pollute adjacent waters or cause soil or beach erosion either during or after the construction phase. <i>Habitat</i></p> <p>ICC 17.05A.090.N: Herbicides, fungicides, pesticides, and fertilizers must not be applied within 25 feet of a shoreline of the state except by a qualified professional. <i>Habitat</i></p> <p>ICC 17.05A.090N: Low impact development techniques must be considered, materials that come into contact with water must be composed of non-toxic materials. <i>Habitat</i></p> <p>17.05A.100D: Private boat launches allowed only when public launches are unavailable within 1 mi. Rail and track systems preferred. Mooring buoys must avoid critical saltwater habitats. <i>Habitat</i></p> <p>17.05A.110B: Single-family residential docks, floats and piers approved only if existing shared, public or community facilities are shown to be inadequate and possibility of multi-owner/user has</p>	<p>of existing structures. New residential development subject to buffers and setbacks to minimize adverse impacts. Impervious coverage restriction imposed to address stormwater impacts.</p>

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				<p>been investigated and is not feasible. Cumulative impacts on water circulation and quality and fish and wildlife must be assessed. New docks, piers and floats must not extend further waterward than 90 feet for single-use and 110 feet for shared use. New docks, piers and floats must have a maximum width of four feet. Existing docks, piers and floats may be replaced or reconstructed to the existing dimensions provided they include measures that increase light transmission, maximize the height of piers above water surface, reduce the overall number or size of piles, and enhance shoreline vegetation. Design standards must be met to limit impacts.</p> <p><i>Habitat</i></p> <p>Restoration</p> <p>Opportunities include:</p> <p>CAM03 Open up mouth of inlet to coastal lagoon to increase fish access and tidal flushing. Currently a tidegate and riprap are present in inlet.</p> <p>CAM09 Remove vertical face bulkhead at the south beach at Indian Beach from intertidal beach and move artificial boundary between upland and beach landward.</p> <p>CAM09 Daylight creek that apparently flows through a culvert under a small house and improve access under road.</p> <p>See Aquatic for additional opportunities in adjacent waters.</p>	