

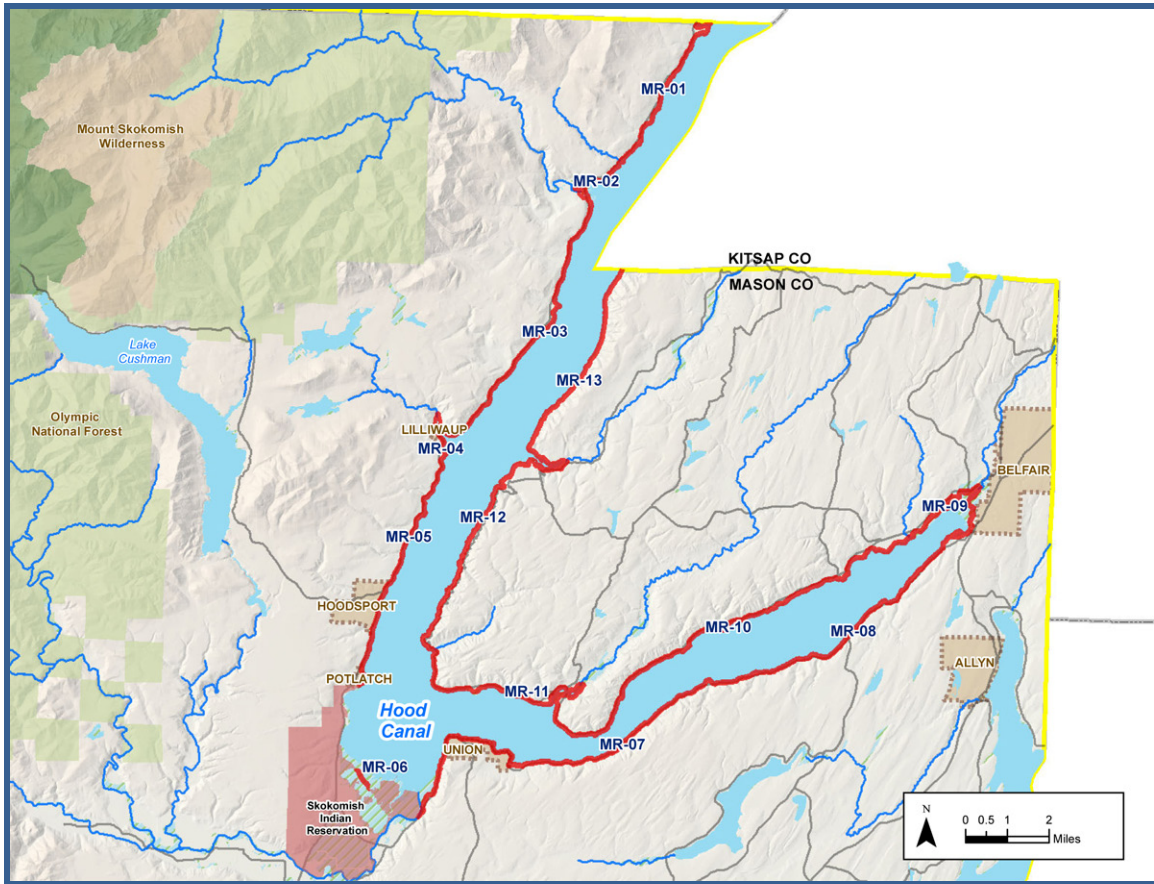
CHAPTER 4.

MARINE SHORELINES - HOOD CANAL

Chapter 4 provides a discussion of the marine nearshore shorelines of Hood Canal within Mason County, Washington. This section includes Hood Canal marine shorelines associated with Kennedy-Goldsborough Water Resource Inventory Area (WRIA) 14b, Kitsap WRIA 15, and Skokomish-Dosewallips WRIA 16. Marine shorelines are considered “shorelines of statewide significance.”

Marine shorelines are described generally from north to south beginning on the western shore of Hood Canal and looping back north to the eastern shore. After a summary description of the marine areas, the reaches have been described in two page reach sheets that provide a summary of data per shoreline reach. Information displayed in the reach sheets is largely GIS data taken from a combination of state and county data sources. Data sources are described in Chapter 2.

4.1 Hood Canal



4.1.1 Physical Characterization and Modifications

Hood Canal, a natural fjord carved by glaciers, is more than 60 miles long. Hood Canal is the westernmost marine waterbody within the Puget Sound basin and is located in Jefferson, Kitsap and Mason Counties. It extends southwesterly about 45 miles from Admiralty Inlet to the “Great Bend” at Annas Bay. Hood Canal then extends northeasterly in a “hook” another 15 miles to its head at the Union River estuary near Belfair.

Hood Canal is fed by nine sub-basins in WRIA 16, seven of these lie within Mason County. The main rivers include the Hamma Hamma River, Lilliwaup Creek, and the Skokomish. The Hamma Hamma River receives water from several alpine lakes in its upper reaches as well as Jefferson Creek, and drains the central portion of WRIA16. Freshwater rivers and streams discharging to Hood Canal and their process and modifications are described further in Chapter 8. The south shore of Hood Canal (WRIA 14b) has been included in the WRIA 16 planning area. This area of the watershed includes lower elevation hills and several small creeks including Alderbrook, Deveraux, Twanoh Falls, and Happy Hollow Creeks. Each of the creeks discharges directly into Hood Canal and originates from springs, groundwater discharges or from lakes such as Devereaux Lake. Freshwater lakes draining to the South Shore are discussed in Chapter 8.

Waves are the dominant driver of coastal geomorphic processes in Hood Canal. This is exemplified by (littoral) sediment transport occurring along most of the Hood Canal shoreline. The areas mapped as having no appreciable drift at the mouth of major fluvial systems, such as the Skokomish, Hamma Hamma, and Lilliwaup Rivers are fluvially dominated shores. Nearshore sediment supply is predominantly derived from eroding bluff backed beaches, which are the most abundant shoretype. Sediment is transported down-drift by wind-generated waves to form the many varieties of depositional shoreforms found in the area. Accretion shoreforms commonly occur in Hood Canal include: barrier beaches, some of which embay estuaries and lagoons, and cusped forelands. Several open coastal inlets also occur throughout this part of Mason County. Intermittent exposures of bedrock along the west shore of Hood Canal have created a single pocket beach, as well as several areas mapped as rocky platform and plunging bedrock shores. Many artificial shoreforms were also mapped along the Hood Canal shores of Mason County. These shores no longer resemble or function like their historic shoretypes.

Information on nearshore geomorphic processes (e.g., shoreform type, netshore drift, etc.) was derived in large measure from the Puget Sound Nearshore Ecosystem Restoration Program (PSNERP). The occurrence of nearshore stressors and degradation to nearshore processes was also analyzed and assessed by PSNERP. A composite measure of nearshore process degradation provides a summary of

nearshore ecosystem conditions at the drift cell scale. The range of process degradation ranges from “not degraded”, “least degraded”, “less degraded”, “moderately degraded”, “more degraded” to “most degraded”. These results can help to identify and focus protection and restoration strategies. Within the Hood Canal areas of Mason County overall process degradation was most commonly “more degraded” and “most degraded”. Far fewer process units were categorized as “moderately degraded” or “least degraded”.

4.1.2 Water Quality

In general, the water quality in Hood Canal is good. However low dissolved oxygen levels and high fecal coliform concentrations are problematic at certain locations and/or seasonally. Ecology’s 2008 water quality assessment (Washington Department of Ecology, 2008a) documented several segments (Figure 13) in Hood Canal that did not meet the State’s water quality standards for dissolved oxygen, fecal coliform or both; and were subsequently placed on the EPA 303 (d) list of impaired waters. These problems date back to before the 2008 assessment. Fish kills, presumably the result of low oxygen levels, were reported as far back as 1920 (Newton et. al. 2011). However, recent scientific studies and anecdotal evidence suggest that the frequency, duration, and spatial extent of low dissolved oxygen events are increasing (Newton et. al. 2011).

Aside from dissolved oxygen and fecal coliform, there are no other known water quality impairments for Hood Canal marine waters. Sediment quality analyses conducted by the Department of Ecology in 2005) indicated moderate sediment toxicity at some Hood Canal sampling sites within Mason County, and one site that had ‘intermediate/degraded’ quality. These results were based on a combination of results for chemical, toxicity, and benthic data referred to as the Sediment Quality Triad Index. No sites had individual chemical concentrations that exceeded State or National Oceanographic and Atmospheric Administration (NOAA) sediment quality standards (Long et. al. 2010).

Dissolved Oxygen

Hood Canal is designated ‘extraordinary aquatic life use’ in the State water quality standards WAC 173-201A. Commensurate with this designation is the requirement to maintain dissolved oxygen concentrations above 7.0 mg/L. The southern reaches of Hood Canal, especially in the areas extending from Lynch cove through Anna’s Bay and the Great Bend, are particularly prone to depleted oxygen levels during the summer months (Newton et. al. 2011). Dissolved oxygen concentrations in the Lynch Cove area have been documented as low as 0.46 mg/L; a level far below the 7 mg/L standard for ‘extraordinary aquatic life use,’ and even well below the 4.0 threshold for ‘fair aquatic life use’. The low dissolved oxygen events are caused by

complex interactions of physical and biological factors. A restrictive sill at the Canal's mouth to Admiralty Inlet limits the volume of water exchanged with Puget Sound. The waters of Hood Canal are also stratified with regard to density, which reduces vertical mixing. Oxygen in the water column is consumed through the process of microbial respiration, typically through decay of algae or other organic materials. Nutrient inputs (loading) affect the amount of algal growth and the amount of organic materials that ultimately decay and result in reduced oxygen concentrations. Relatively high nutrient loading resulting from influxes of nutrient rich marine waters coupled with low water exchange and strong density stratification provides ideal circumstances for seasonally very low oxygen concentrations (Newton et. al. 2011).

Primary productivity in Hood Canal is believed to be limited by the amount of dissolved inorganic nitrogen (DIN) (Paulsen et. al. 2007, Newton et. al. 2011). Therefore, increases or decreases of DIN loads would correspondingly result in increases or decreases in primary productivity, respectively. Sources of DIN to Hood Canal include: atmospheric deposition, inflowing streams, regional ground water, and from runoff from adjacent land area, and most important from marine water flowing over the seaward sill from Admiralty Inlet (Paulsen et. al. 2007). For the purposes of this characterization, the focus will be on human induced inputs, as these inputs are most likely to be affected by shoreline management actions.

There is conflicting opinion about the significance of septic systems as contributors to DIN in Hood Canal and therefore the extent to which they are an important indirect cause of depleted oxygen concentrations. In one study (Newton, 2011), it was estimated that 20% of the oxygen depletion in the deep layers of water in Hood Canal could be attributed to DIN contributed by septic systems. In contrast, Steinberg et.al., (2010) estimated that septic system contributions of nitrogen only comprise between 0.1 and 0.5% of Hood Canals nitrogen load and were insignificant in comparison to natural marine loading.

Fecal Coliform

Elevated fecal coliform concentrations are a concern because they potentially indicate contamination from sewage or septic discharges, which can pose a significant risk to human health. Fecal contamination poses a risk for those that contact it directly (i.e. through swimming) or indirectly through the consumption of contaminated shellfish. Hood Canal is required to meet strict fecal coliform standards because it is listed as having a designated use for 'Shellfish Harvest' and 'Primary Contact Recreation' (WAC 173-201A). This standard dictates that fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and that no more than 10 percent of samples exceed 43 colonies/100 mL (WAC 173-201A).

Nine marine areas of Hood Canal were identified by Ecology's 2008 assessment as being in violation of the State's water quality standards for fecal coliform and were subsequently placed on the 303 (d) list of impaired waters. Six of the nine Hood Canal marine segments listed for fecal coliform contamination were at the mouths of streams which were also included in the 303 (d) list of impaired waters for fecal coliform contamination (Washington State Department of Ecology 2008a), suggesting that one source of the marine fecal contamination is from upland areas. In 2005, 300 acres of Anna's bay that was previously used for commercial shellfish aquaculture, was closed due to fecal coliform contamination.

Mason County Public Health (MCPH) measured fecal coliform concentrations at more than 1,300 streams, freshwater seeps, and bulkhead drains along the south and west shores of Hood Canal as part of their Hood Canal Pollutant Identification and Correction (HCPIC) program. The primary goal of this study was to identify specific sources of fecal coliform pollution (i.e. malfunctioning septic systems) and correct the problem. Fecal coliform concentrations were found to be above 200 colonies/100mL at more than 7% of the sampled sites (Georgeson et. al. 2008), indicating areas of concern, and triggering further study of onsite septic systems. The County is currently continuing its HCPIC monitoring at sites along the north and east shores of Hood Canal, but results from this study are not yet available (Pers. Comm., Amy Georgeson, MCPH).

Belfair is currently in the process of constructing a sewage and wastewater treatment plant. Sewage connections will be available for business and residents adjacent to the shoreline in the Lynch cove area, as well as throughout the southwestern portion of the Belfair urban growth area. This action should help to reduce fecal coliform problems in the Union River and downstream marine areas, as well as to reduce the nitrogen load delivered to Hood Canal.

Sediment Quality

Sediment quality has not been studied extensively in Hood Canal. In 2004, as part of their Puget Sound Ambient Monitoring Program (PSAMP) studies, Ecology collected sediment samples from 30 random locations in Hood Canal; five of which were in Mason County (Long et. al. 2010).

Analyses were performed on all samples to evaluate: the concentrations of potentially toxic chemicals, their potential toxicity based on laboratory toxicity testing, and their composition of benthic organisms. Sediment Quality Triad Index scores were calculated based on these three components and used to assign designations of high, intermediate, or degraded quality. All but one of the Hood Canal sites were rated as having 'intermediate/high' quality; the remaining site was rated as being 'degraded/intermediate' quality.

4.1.3 Critical or Priority Habitat and Species Use

Critical or priority habitats and species mapped within the Mason County shoreline jurisdiction of Hood Canal are covered in this section; including Marine Reaches (MR): MR 1 through 13. Discussion of the priority habitats and species follows, with select quantitative data only located in the reach sheets, where noted.

Hood Canal is known to support many priority salmonid species (WDFW, 2010; Table 4-1).

Table 4-1. Fish species documented for Hood Canal

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	<i>Oncorhynchus clarkii clarki</i>	Presence/Migration	~	~
fall Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Known juvenile rearing, Known spawning, and Presence/Migration	Threatened	Candidate SSC
fall Chum salmon	<i>Oncorhynchus keta</i>	Known juvenile rearing, Known spawning, and Presence/Migration	~	~
summer Chum salmon	<i>Oncorhynchus keta</i>	Known spawning and Presence/Migration	Threatened	Candidate
Coho salmon	<i>Oncorhynchus kisutch</i>	Known juvenile rearing, Known spawning, and Presence/Migration	Concern	~
Dolly Varden/Bull trout	<i>Salvelinus confluentus</i>	Presence/Migration	~	Candidate
Pink salmon	<i>Oncorhynchus gorbuscha</i>	Known juvenile rearing, Known spawning, and Presence/Migration	~	~
Rainbow trout	<i>Oncorhynchus mykiss</i>	Presence/Migration	~	~
Sockeye salmon	<i>Oncorhynchus nerka</i>	Presence/Migration	~	~
summer Steelhead trout	<i>Oncorhynchus mykiss</i>	Presence/Migration	Threatened	~
winter Steelhead trout	<i>Oncorhynchus mykiss</i>	Known juvenile rearing, Known spawning, and Presence/Migration	Threatened	~

Critical habitat has been designated for the Puget Sound Evolutionarily Significant Unit (ESU) Chinook salmon and the Hood Canal ESU summer-run chum salmon for all reaches covered in this section. These designations extend upstream to the point of tidal influence (USFWS, 2010).

Approximately 1.8 acres of herring holding habitat is mapped for MR 10 while herring spawning habitat is mapped for the following reaches: 59.7 acres of MR 7, 139.8 acres of MR 8, and 152.2 acres of MR 10. Sand lance spawning habitat is mapped for several reaches (WDFW, 2010; see reach sheets). Smelt is mapped as spawning along the nearshore for: 19,410 linear feet of MR 7, 24,602 linear feet of MR 8, 25,074 linear feet of MR 10, 2,292 linear feet of MR 11, and 800 linear feet of MR 12 (WDFW, 2010).

Shellfish beds for Dungeness crab, geoduck, hardshell clam beds, oyster, and pandalid shrimp are found in numerous reaches (WDFW, 2010; see reach sheets). Eelgrass and kelp beds are also mapped for many reaches (WDNR, 2008).

Priority wildlife species occurring along Hood Canal include osprey and bald eagle. Osprey is found in Reach 1; however, bald eagle are found along MR 1, MR 2, MR 8, and MR 13. Priority species occurrences for purple martin are mapped along MR 5, MR 6, and MR 7. Great blue heron, a priority species, are mapped for MR 2, MR 6, and MR 12 (WDFW, 2010).

Wetlands are mapped along the nearshore for all reaches located in this section (NWI, 1989).

4.1.4 Land Use

The majority land uses in the shorelines of Hood Canal include residential, forestry, and vacant lands.

Residential development is centered on the coastline of Hood Canal and along the entire South Shore, as well as the eastern shore of Lake Cushman and the Skokomish Tribal Reservation at the mouth of the Skokomish River. The largest communities along Hood Canal are Hoodspport, Lilliwaup, Potlatch, Union and Belfair. Approximately 68 percent of the population in the watershed is located in the southern portion of Hood Canal (Hoodspport/Lilliwaup, Lower Skokomish River, and South Shore Sub-basins) while the largest population growth rates since the 1990 census occurred in the South Shore, Lower Skokomish River, and Lower North Fork Skokomish River Sub-basins (Envirovision, 2003). Forestry land uses are mostly concentrated across the canal from Hoodspport and Lilliwaup in reaches 11, 12 and 13. Vacant land uses are scattered throughout Hood Canal with the highest concentration in Reach 6 (Skokomish River Delta).

4.1.5 Land Cover

Land cover along the shorelines of Hood Canal is generally less than 40 percent forested, according to the Point No Point Treaty Council data (PNPTC, 2011). The greatest forested cover (over 46 percent) can be found in Reaches 1, 11, 12 and 13 (see Table 4-2). Little forested cover is recorded for the Skokomish River estuary, due to the presence of primarily estuarine wetland in this reach. According to the GAP data, the reaches with the highest percentage of “developed” lands occurs in Reaches 5, 8, and 10; these correspond to Hoodsport and communities near Belfair. These three reaches also have the lowest forested cover (25 to 30%) according to the PNPTC riparian analysis (2011).

Table 4-2. Shoreline Land Cover in the Hood Canal Marine Reaches (PNPTC, 2011)

Marine Reach	Location	Forested Cover %	Non-Forested Cover %	Other Natural Vegetation %
1	Western shore	53	32	9
2	Hamma Hamma Delta	36	29	27
3	Hamma Hamma to Lilliwaup	35	42	18
4	Lilliwaup Delta	32	50	13
5	Sund Creek to Potlatch	30	54	14
6	Skokomish River estuary	5	-	95
7	Skokomish Delta east to Twanoh State Park	38	53	7
8	Twanoh State Park East to Lynch Cove	25	72	2
9	Lynch Cove	34	21	40
10	Lynch Cove West to Tahuya River	29	59	5
11	Tahuya west to Great Ben	46	40	10
12	Great Bend north to Dewatto	77	16	4
13	Dewatto north to County Line	95	4	1

4.1.6 Summary of Key Management Issues

Key management issues for Hood Canal include the following:

- Water quality degradation from nutrient loading causing low dissolved oxygen concentrations and fish kills;
- Modifications along the shoreline due to bulkheads and hardened armoring;
- Highways and transportation corridors (i.e. SR 101) resulting in impervious surfaces which cause stormwater runoff and pollutant loading;
- Bridges and causeways creating constrictions at estuary mouths which impair tidal flow; and
- Development near the shoreline resulting in tree removal and reductions in forested canopy and habitat.

4.1.7 Reach Analysis

An analysis by shoreline reach is given in the following section. Reach sheets are provided corresponding to specific shorelines as listed below:

- Hood Canal – Western Shore (Reaches 1- 5);
- Skokomish River Delta (Reach 6);
- Hood Canal – South Shore (Reaches 7 and 8);
- Lynch Cove (Reach 9); and
- Hood Canal – North and Eastern Shore (Reaches 10-13).

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HOOD CANAL - REACH 01

SHORELINE LENGTH

5.2 MI (WESTERN SHORE)

PSNERP PROCESS UNITS

Delta HAM, SPU 2039, SPU 2041, SPU 2042

REACH AREA

122.8 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 7% (8 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

5.4% erosion, 81.2% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 32% barrier beaches, 29% rocky platforms, 26% plunging bedrock shores, 10% barrier beaches, 3% pocket beaches. Net shore drift - predominantly northward drift, a few cells with no appreciable drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Mostly moderately degraded; south end least degraded.

LAND COVER (MAP 15)

6% developed, 11% mudflat, 75% forest, 1% sand, 7% wetland (GAP, 2009)

53% forested cover, 32% Non-forest, 5% off-shore, 10% other natural vegetation (PNPTC, 2011).

HABITATS AND SPECIES (MAP 8)

750 LF of sand lance spawning habitat. 28.4 acres Dungeness crab. 22.6 acres of hardshell clam beds. 39.9 acres of oyster. 2 acres of pandalid shrimp. 399 LF of continuous and 8,771 LF of patchy eelgrass.

Wetlands – 6.2 acres (5.0% of reach); habitat types include estuarine intertidal aquatic bed, intertidal beach/bar, and unconsolidated shore.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 1 is included in the 303(d) list of impaired waters due to low dissolved oxygen (DO) concentrations. Based on Newton et. al. (2010) DO concentrations during the summer may fall to levels well below the water quality standard of 7 mg/L, and even below the 4 mg/L standard for "fair aquatic life use". Monitoring as part of the HCPIIC (Georgeson et. al. 2008) indicated that fecal coliform is of only moderate concern.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (44%), Vacant (26%), Parks, Open Space, & Recreation Areas (18%), Forestry (11%), and Aquaculture (1%). Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

There are 4 locations in the reach where tidal barriers exist: 2 road instances and 2 fill locations. Overwater structures in the reach include: 12 small docks, 4 upland bridges, and 1 large dock. Shoreline armoring is mapped along 20% of reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (81%) and Rural Tourist (19%). Comprehensive Plan Designations – 100% Rural. Existing SED – Urban Residential (88%) and Conservancy (12%).

PUBLIC ACCESS (MAP 14)

No parks or public access areas are mapped in the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 27% of reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 10.4% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show much of the reach to be forested, with limited residential development. SR 101 runs parallel to Hood Canal.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

There are 8 private cabins and large dock associated with a commercial scuba diving resort (Mikes Beach Resort, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists three inventoried early historic sites within this reach. Resource probability mapping suggests there is a high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Protection of existing forested riparian areas.

KEY MANAGEMENT ISSUES

Protect existing forested riparian areas.

HOOD CANAL - REACH 02

SHORELINE LENGTH

2.9 MI (HAMMA HAMMA DELTA)

PSNERP PROCESS UNITS

Delta HAM

REACH AREA

55.3 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Hamma Hamma River estuary; Floodplain - 45% (25 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

51.7% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 65% delta shores, 18% artificial shoreforms, 17% bluff backed beaches. Net shore drift - predominantly no appreciable drift, a few cells with northward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Moderately degraded.

LAND COVER (MAP 15)

5% developed, 12% mudflat, 31% forest, 4% sand, 48% wetland (GAP, 2009)

36% forest cover, 29% non-forest, 6% off-shore, 27% other vegetation, 2% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

7.6 ac. Dungeness crab; 12.7 acres of hardshell clam beds; 29 ac of oyster; 3,028 LF continuous and 141 LF patchy eelgrass.

Wetlands – 6.1 acres (11% of reach); estuarine intertidal aquatic bed, and palustrine scrub-shrub.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

There are no segments in this reach included on the 303 (d) list of impaired waters. High fecal coliform levels were detected in only one out of 21 samples collected along this reach (Georgeson et. al. 2008), likely a reflection of the lack of development in the Hamma Hamma River watershed. As with the rest of southern Hood Canal, low dissolved oxygen levels can be a problem during the summer (Newton et. al. 2011).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (47%), Agriculture (20%), Vacant (16%), Forestry (11%) and Aquaculture (6%).
Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

There are 11 locations in the reach where tidal barriers exist: 5 road instances, 4 fill locations, and 2 spur dikes. Overwater structures in the reach include: 4 small docks and the North and South Hamma Hamma Bridges. Shoreline armoring is mapped along 1% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (77%), Rural Natural Resource (13%), with the remaining 9% a mix of Long Term Commercial Forest and Agricultural Resource (LTCFAR) Lands. Comprehensive Plan Designations – Rural (91%) with the remaining 9% a mix of LTCFAR Lands. Existing SED – Conservancy (38%), Rural (33%), and Urban Residential (29%).

PUBLIC ACCESS (MAP 14)

No parks or public access areas are mapped in the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 9% of reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 6.9% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show much of the reach to be forested, with limited residential development and one shellfish processing facility. SR 101 runs parallel to Hood Canal through part of the reach.

AREAS OF SPECIAL INTEREST

No Ecology-listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists two inventoried early historic sites within this reach. The reach also includes the North and South Hamma Hamma Bridges, both of which are registered historic sites. The bridges were built in 1924 (Mason County Parks and Recreation Department, 2008). Resource probability mapping suggests there is a moderate-high to high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Hamma Hamma US Forest Service Road Decommissioning (08-06-001) (Habitat Work Schedule, 2011); Sponsor: USFS – decommission 24 miles of logging roads to reduce sediment delivery to the river and reduce sedimentation in the estuary.

KEY MANAGEMENT ISSUES

Sedimentation due to erosion and runoff from logging roads
Highway crosses Hamma Hamma River estuary and constrains sediment transport

HOOD CANAL - REACH 03

SHORELINE LENGTH

6.6 MI (HAMMA HAMMA TO LILLIWAUP)

PSNERP PROCESS UNITS

Delta HAM, SPU 2035, SPU 2036, SPU 2037, SPU 2038

REACH AREA

157.7 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 1% (2 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

8.3% erosion, 85.2% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 71% bluff backed beaches, 20% barrier beaches, 6% bedrock shores, 2% artificial shoreforms. Net shore drift - predominantly northward drift, a few cells with southward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

More degraded.

LAND COVER (MAP 15)

7% developed, 25% mudflat, 61% forest, 1% sand, 5% wetland (GAP, 2009)
35% forested cover, 42% non-forest, 5% off-shore, 18% other natural vegetation (PNPTC, 2011).

HABITATS AND SPECIES (MAP 8)

50.9 acres of Dungeness crab. 0.3 acres of geoduck. 8.5 acres of hardshell clam beds. 48.9 acres of oyster. 0.7 acres of pandalid shrimp. 7,015 LF of continuous and 5,884 LF of patchy eelgrass. 2,858 LF of patchy kelp beds. Wetlands – 8.3 acres (5.3% of reach); wetland habitat types include estuarine intertidal aquatic bed.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 3 is not included on the 303(d) list of impaired waters. Of the 14 sites sampled in this reach by Mason County (Georgeson et. al. 2008), none exhibited fecal coliform concentrations above 200 colonies per 100 mL, the threshold used to determine areas of potential concern. As with much of the southern portion of Hood Canal, low DO levels can be a problem during the summer (Newton et al. 2011; Newton, 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (36%), Transportation (25%), Forestry (16%), Vacant (15%), with remaining 8% a mix of Aquaculture, Parks, Open Space, & Recreation Areas, and Commercial. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

There are 5 locations in the reach where tidal barriers exist: 3 road instances and 2 fill locations. Overwater structures in the reach include: 3 upland bridges, 2 buildings, and 1 large dock. Shoreline armoring is mapped along 36% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (86%) with the remaining 13% a mix of Long Term Commercial Forest and Rural Natural Resource. Comprehensive Plan Designations – Rural (92%) and Long Term Commercial Forest (8%). Existing SED – Urban Residential (80%), Conservancy (13%), and Rural (8%).

PUBLIC ACCESS (MAP 14)

Lilliwaup Tidelands State Park, managed by Washington State Parks and WDNr, accounts for 11% of linear miles. The Eagle Creek Recreational Tidelands and South Jorsted Creek tidelands, managed by WDNr and WSDOT, account for 8% of linear miles. Eagle Creek Recreational Tidelands offer beach access, clamming and crabbing (Mason Co. Parks and Trails, 2006).

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 16% of reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 17% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show much of the reach to be forested, with limited residential development. SR 101 runs parallel to Hood Canal in this reach.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists one inventoried early historic site within this reach. Resource probability mapping suggests there is a moderate to moderate-high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Lilliwaup to Jorsted Creek Feeder Bluff Reconnection (09-03-001) (Habitat Work Schedule, 2011); Sponsor: HCCC – to reconnect coastal feeder bluffs to restore sediment supply to nearshore areas.

KEY MANAGEMENT ISSUES

Protection and restoration of coastal feeder bluffs.

HOOD CANAL - REACH 04

SHORELINE LENGTH

3.4 MI (LILLIWAUP DELTA)

PSNERP PROCESS UNITS

SPU 2034, SPU 2035

REACH AREA

80.7 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Lilliwaup Creek estuary; Floodplain - 17% (14 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain.

HAZARD AREAS (MAP 12)

4.1% erosion, 72.3% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 43% bluff backed beaches, 23% barrier estuary shores, 13% artificial shoreforms, 13% bedrock platform shores, 5% barrier beaches, 4% rocky shores. Net shore drift - predominantly northward drift, an area with no appreciable drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

North shore moderately degraded, south shore most degraded.

LAND COVER (MAP 15)

6% developed, 23% mudflat, 50% forest, 15% wetland, 7% floodplain/riparian (GAP, 2009);
32% forested cover, 50% non-forest, 4% off-shore, 13% other natural vegetation, 0.7% water (PNPTC, 2011).

HABITATS AND SPECIES (MAP 8)

7.1 acres of Dungeness crab. 0.2 acres of geoduck. 9 acres of hardshell clam beds. 18 acres of oyster. 3,236 of continuous and 1,660 acres of patchy eelgrass. 553 LF of patchy kelp beds.

Wetlands – 4.8 acres (6.0% of reach); wetland habitat types include estuarine intertidal aquatic bed and intertidal emergent.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 4 is included on the 303(d) list of impaired waters due to elevated fecal coliform concentrations. The marine segment at the mouth of Lilliwaup creek exceeded water quality standards due to fecal coliform concentrations (Ecology 2008a); indicating upland sources may be an important source of contamination. Of 55 sites sampled along this reach, 5 had fecal coliform levels greater than 200 colonies/100mL (Georgeson et.al., 2008). In 2006, dissolved oxygen levels were measured at less than 1.5 mg/L in this reach, a level far below the 7 mg/l water quality standard, and a level very stressful to fish and other marine life (Newton et. al. 2011). A fish kill believed to be caused by low oxygen was observed near Sund Rock (Newton 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (47%), Vacant (32%), with the remaining 21% a mix of Transportation, Forestry, Aquaculture, Parks, Open Space, & Recreation Areas, and Commercial. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

There are 4 instances in the reach where mapped road(s) serve as tidal barriers. Overwater structures in the reach include: 6 small docks, 3 upland bridges, 2 buildings and 1 buoy. Shoreline armoring is mapped along 36% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts (County) – Rural Residential (95%) with the remaining 4% a mix of Rural Tourist and Rural Commercial. Zoning districts (Lilliwaup) – Rural Residential (80%) and Rural Commercial (20%). Comprehensive Plan Designations – Rural (97%) and Hamlet (3%). Existing SED – Urban Residential (80%), Conservancy (15%), and Urban Commercial (5%).

PUBLIC ACCESS (MAP 14)

Lilliwaup Tidelands State Park, managed by Washington State Parks and WDNR, has 10% of linear miles. About 4,100 LF of tidelands are available for public use, a portion of which is in the reach (Mason Co. Parks and Trails, 2006). South of Lilliwaup Tidelands State Park, managed by WDNR, account for 4% of linear miles.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 16% of reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 11.5% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show much of the reach to be forested, with some residential development and a small commercial area in the south end of the reach.

AREAS OF SPECIAL INTEREST

No listed contaminated sites.

Rest-A-While RV Park located in the southern portion of the reach has 30 waterfront RV parking stalls, a marina and sling launch, private oyster and clam beach (Rest-A-While, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists six inventoried early historic sites within this reach. Resource probability mapping suggests there is a very low to low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Lilliwaup Creek Restoration Design (09-01-000) (Habitat Work Schedule, 2011) – sponsor: Long Live the Kings – restore salmonid habitat due to gravel aggradation in 0.7 mile reach and stabilize streambanks where landslides have occurred in 2007.

Lilliwaup Causeway Replacement (09-03-000) (Habitat Work Schedule, 2011) – sponsor: HCCC – restore tidal connectivity by replacing restricting causeway.

KEY MANAGEMENT ISSUES

Landslides and streambank erosion causing downstream gravel aggradation.

Estuary constricted due to causeway and highway crossing.

Alterations in estuary limiting habitat.

Water quality degradation due fecal coliform bacteria from upstream sources.

HOOD CANAL - REACH 05

SHORELINE LENGTH

5.2 MI (SUND CREEK TO
POTLATCH)

PSNERP PROCESS UNITS

SPU 2032, SPU 2034

REACH AREA

125.2 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 1% (2 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

2.3% erosion, 77.9% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 70% bluff backed beaches, 12% barrier beaches, 10% rocky platform shores, 5% artificial shoreforms, 2% pocket beaches.

Net shore drift - northern shore has northward drift, southern shore has southward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

North shore most degraded, south shore more degraded.

LAND COVER (MAP 15)

16% developed, 28% mudflat, 48% forest, 5% wetland, 3% floodplain/riparian (GAP, 2009);

30% forested cover, 54% non-forest, 3% off-shore, 14% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

34.7 acres of Dungeness crab. 0.03 acres of geoduck. 42 acres of hardshell clam beds. 38 acres of oyster. 0.01 acres of pandalid shrimp. 1,830 LF of patchy eelgrass and 146 LF of patchy kelp beds.

Wetlands – 37 acres (30% of reach); wetland habitat types include estuarine intertidal aquatic bed.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 05 is included on the 303(d) list of impaired waters for low DO concentrations. Dissolved oxygen concentrations in 2006 were measured as low as 0.8 and 1.4 mg/L, levels potentially lethal to fish and other marine life, and well below the standard of 7.0 mg/L (Newton et. al. 2011; Newton 2010). Fish kills were also observed in this area during September, 2010 (Newton 2010). Sampling by Mason County identified 21 sites, out of 218 sites sampled, which had fecal coliform levels greater than 200 colonies/100mL and were consider areas of potential concern (Georgeson et. al. 2008).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (35%), Transportation (30%), Forestry (14%), Vacant (12%), with the remaining 9% a mix of Agriculture, Commercial, Aquaculture, and Parks, Open Space, & Recreation Areas. Ownership – Private (98%) and Public (2%).

SHORELINE MODIFICATIONS (MAP 16)

Overwater structures in the reach include: 23 small docks, 6 large docks, 5 buildings, 4 upland bridges, and 1 buoy. Shoreline armoring is mapped along 58% of the reach. No tidal barriers mapped. There is a Hood Canal Salmon Hatchery at Hoodsport (Mason County Parks and Recreation, 2008).

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts (County) – Rural Residential (96%) with the remaining 4% a mix of Rural Tourist and Long Term Commercial Forest. Zoning districts (Hoodsport) – Rural Residential (87%), Rural Commercial (10%), and Rural Tourist (3%). Zoning districts (Potlatch) – 100% Rural Residential. Comprehensive Plan Designations – Rural (55%), Rural Activity Center (33%), Hamlet (12%), and Long Term Commercial Forest (1%). Existing SED – Urban Residential (73%) and Urban Commercial (27%).

PUBLIC ACCESS (MAP 14)

Hoodsport tideland area, adjacent to the hatchery, is managed by DNR, accounting for 14% of total linear miles. Hoodsport Marina, managed by the Port of Hoodsport has 2% of total linear miles. Public access is available at both sites.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 24% of reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 26.1% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show a substantial amount of residential and commercial development along the shoreline. Developments are present east of SR 101, between the highway and Hood Canal.

AREAS OF SPECIAL INTEREST

No listed contaminated sites.

The Glen Ayr resort located north of Hoodsport has motel rooms, townhouse suites, 36 RV sites, 750 LF of beach area, and a dock with 16 moorage slips (Glen Ayr, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists seven inventoried early historic sites within this reach. Resource probability mapping suggests there is a very low to moderate-low probability of finding unknown artifacts.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

Water quality degradation due fecal coliform bacteria from upstream sources.

HOOD CANAL - REACH 06

SHORELINE LENGTH

6.5 MI (SKOKOMISH RIVER DELTA)

PSNERP PROCESS UNITS

Delta SKO, SPU 2032

REACH AREA

146.8 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 55% (81 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

5.8% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 89% delta shores, 8% bluff backed beaches, 3% artificial shoreforms. Net shore drift - predominantly no appreciable drift, a small area along the western extent with southward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Moderately degraded.

LAND COVER (MAP 15)

73% wetland, 27% floodplain/riparian (GAP, 2009); 5% forest cover, 95% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

0.4 acres of Dungeness crab. 20 acres of hardshell clam beds. 11 acres of oyster. 1,127 LF of continuous and 2,161 LF of patchy eelgrass.

Wetlands – 101 acres (69% of reach); wetland habitat types include estuarine intertidal aquatic bed, estuarine intertidal beach/bar, intertidal emergent, palustrine emergent, forested, and scrub-shrub.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 06 is not included on the 303(d) list of impaired waters. However, more stringent standards apply in shellfish growing areas. In August of 2005, WDOH downgraded 300 acres of shellfish growing area on the east side of Anna's Bay from 'approved' for shellfish harvest to 'prohibited' due to fecal coliform contamination. A reach of the Skokomish river, near where it discharges into Anna's Bay also exceeded water quality standards for fecal coliform; indicating upland areas in the Skokomish River watershed are a likely source of contamination (Book 2007). The Anna's Bay area has since reopened for shellfish harvest, but has been given a 'concern' rating (WDOH 2011).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Vacant (97%) with the remaining 3% a mix of Residential and Transportation. Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

Overwater structures in the reach include 3 upland bridges. No shoreline armoring or tidal barriers are mapped in the reach. Tacoma City Light Hydropower Plant is located north of Potlatch State Park. Power is conveyed to the plan from dams at Skokomish River and Lake Cushman (Mason County Parks and Recreation, 2008).

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (99%) and Rural Multi Family (1%). Comprehensive Plan Designations – Indian Reservation (43%), Agricultural Resource Lands (31%), and Rural (26%). Existing SED – Rural (100%).

PUBLIC ACCESS (MAP 14)

Potlatch State Park, Managed by WDNR and Washington State Parks, accounts for 40% of total linear miles. The park is 57 acres in total size and has campgrounds, mooring buoys, picnic tables, and beach access for scuba diving and recreational shellfish harvesting (Mason County Parks and Trails, 2006; Washington State Parks, 2011). About 230 LF of WDNR trails are mapped in a portion of the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA does not map impervious surfaces in this reach (NOAA CCAP, 2006). HCCC maps 9.4% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show development focused in the NW part of the reach, with the undeveloped Skokomish River delta and tidelands occupying most of the reach.

AREAS OF SPECIAL INTEREST

No state listed contaminated sites.

Waterfront at Potlatch is a resort with waterfront access located north of the Tacoma City Light plant. The resort has 450 feet of private beach access, 14 RV sites, motel rooms and three cabins (Waterfront at Potlatch, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists one inventoried pre-contact site within this reach. Resource probability mapping suggests there is a moderate-low to very high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Skokomish River General Investigation (10-01-000) (Habitat Work Schedule, 2011); Sponsor: US Army Corps of Engineers, Mason Conservation District, and Skokomish Tribe – to address ecosystem restoration and flooding problems. <http://www.nws.usace.army.mil/publicmenu/menu.cfm?sitename=skokogi&pagename=home>

KEY MANAGEMENT ISSUES

Flooding and sedimentation in the lower river segments and estuary.
Water quality concerns related to fecal coliform from upstream sources.
Farming and agricultural uses in the delta which degrade estuary through ditching and draining of wetlands.

HOOD CANAL - REACH 07

SHORELINE LENGTH

10.7 MI

(SKOKOMISH DELTA EAST TO
TWANOH STATE PARK)

PSNERP PROCESS UNITS

Delta SKO, SPU 2028, SPU 2029,
SPU 2030, SPU 2031

REACH AREA

257.7 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 27% (71 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

79.4% erosion, 81.2% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 74% bluff backed beaches, 18% barrier beaches, 7% delta shores, 2% artificial shoreforms. Net shore drift - no appreciable drift at the estuary mouth, some areas of southward, northward, and westward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

West end and small section of east end of shore more degraded. Most of east shore most degraded.

LAND COVER (MAP 15)

5% developed, 14% mudflat, 59% forest, 20% wetland, 1% floodplain/riparian (GAP, 2009);

38% forested cover, 53% non-forest, 2% off-shore, 7% other natural vegetation, 1% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

60 acres of herring spawning habitat. 19,410 LF of smelt spawning habitat. 2,800 LF of sand lance spawning habitat. 29 acres of Dungeness crab. 0.81 acres of geoduck. 18 acres of hardshell clam beds. 41 acres of oyster. 5,651 LF of continuous and 28,810 LF of patchy eelgrass. 9,957 LF of patchy kelp beds. Wetlands – 7.0 acres (2.7% of reach); habitat types include estuarine intertidal aquatic bed.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 7 is included on the 303(d) list of impaired waters due to low dissolved oxygen. In 2006, dissolved oxygen concentrations in this reach were measured below 0.8 mg/L, a level extremely stressful and potentially lethal for fish and other marine life (Newton et. al. 2011; Newton 2010). This reach is not listed for fecal coliform contamination. However, Twanoh Creek and Twanoh Falls Creek, which discharge into this reach are on the list due to elevated fecal coliform concentrations. Contamination of marine water with fecal coliform may be due to these sources of pollution. Several shoreline seeps or drains sampled by Mason County along this reach exhibited concentrations of fecal coliform above 200 colonies/100 mL, indicating areas of potential concern (Georgeson et. al. 2008). One sediment sample was collected from this reach. Results indicated intermediate/high quality sediment quality based on the sediment quality triad index (Long et. al. 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (63%), Vacant (12%), Transportation (10%), with the remaining 15% a mix of Parks, Open Space, and Recreational Areas, Commercial, Forestry, and Utilities. Ownership – Private (96%) and Public (4%).

SHORELINE MODIFICATIONS (MAP 16)

There are 2 instances in the reach where mapped road(s) serve as tidal barriers. Overwater structures in the reach include: 117 small docks, 51 buildings, 21 buoys and floats, 16 large docks, and 1 bridge. Shoreline armoring is mapped along 61% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts (County) – Rural Residential (97%) and Rural Tourist (2%). Zoning districts (Union) – Rural Residential (74%), Rural Multi Family (16%), and Rural Commercial (10%). Comprehensive Plan Designations – Rural (82%) and Rural Activity Center (18%). Existing SED – Urban Residential (85%) with the remaining 14% a mix of Urban Commercial, Conservancy, and Rural.

PUBLIC ACCESS (MAP 14)

Twanoh State Park, managed by Washington State Parks, has 4% total linear miles of tideland ownership. The park is 182 acres in total size. The park has camping facilities, mooring buoys, picnic tables, 100 foot dock with 200 feet of moorage, and a boat launch (Mason County Department of Parks and Trails, 2006; Washington State Parks, 2011). The eastern end of Twanoh State Park and Union Public Boat Launch are managed by Mason County, accounting for 3% of total linear miles. 35 LF of WDNR trails are mapped in a portion of the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 14% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 26.6% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show residential development in Union. SR 106 paralleling Hood Canal through most of the reach.

AREAS OF SPECIAL INTEREST

No listed contaminated sites. Alderbrook Resort and Spa has 1,500 LF of dock for guest moorage and guest and meeting rooms. The marina has a fuel dock (owned by Hood Canal Marina) and a boat launch (Alderbrook Resort and Spa, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists two inventoried early historic sites and one inventoried pre-contact site within this reach. Additionally, the Dalby Waterwheel (a registered historic site) and the McReavy Site (a Mason County Historic Preservation Register site) are both located directly outside this reach. Resource probability mapping suggests there is a very low to high probability of finding unknown artifacts within this reach, with smaller portions of the reach in high to very high probability zones.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

Water quality degradation due to fecal coliform bacteria from upstream sources.

HOOD CANAL - REACH 08

SHORELINE LENGTH

7.2 MI (TWANOH STATE PARK
EAST TO LYNCH COVE)

PSNERP PROCESS UNITS

SPU 2024, SPU 2025, SPU 2026,
SPU 2027, SPU 2028

REACH AREA

170.6 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 66% (112 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

26.2% erosion, 49.7% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 78% bluff backed beaches, 21% barrier beaches, 1% artificial shoreforms. Net shore drift - predominantly northward drift, one cell with southward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

South shore most degraded, north shore more degraded.

LAND COVER (MAP 15)

10% developed, 14% mudflat, 44% forest, 28% wetland, 3% floodplain/riparian (GAP, 2009);
25% forested cover, 72% non-forest, 2% off-shore, 2% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

139.8 acres of herring spawning habitat. 600 LF of sand lance spawning habitat. 25,602 LF of smelt spawning habitat. 32.9 acres of Dungeness crab. 8.1 acres of hardshell clam and 45.8 acres of oyster beds. 18,381 LF of continuous/9,346 LF of patchy eelgrass. Wetlands – 7.1 acres (4.1% of reach); wetland habitat estuarine intertidal aquatic bed, intertidal emergent.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 8 is included on the 303(d) list of impaired waters due to low dissolved oxygen concentrations (Ecology2008). Newton et. al. (2010) documents that this reach of Hood Canal is among the most likely to experience severely low oxygen concentrations. Dissolved oxygen concentrations were estimated at times to be at or below, 0.5 mg/L during the summer of 2006, a level extremely stressful and potentially lethal for fish and other marine life (Newton et. al. 2011; Newton 2010). This reach is not included in the 303(d) list of impaired waters due to fecal coliform concentrations. However several small streams that flow into this reach have elevated fecal coliform concentrations and most are on the 303(d) list. Georgeson et. al. (2008) identified this particular reach as a segment of concern because up to 17 samples per mile from shoreline seeps or drains had fecal coliform concentrations above 200 colonies/100mL. One sediment sample was collected from this reach. Results indicated intermediate/high quality sediment quality based on the sediment quality triad index (Long et. al. 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (72%), Transportation (16%), with the remaining 12% a mix of Vacant, Parks, Open Space, and Recreational Areas, and Aquaculture. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

Overwater structures in the reach include: 74 small docks, 24 buoys, 8 bridges and buildings, and 3 large docks. Shoreline armoring is mapped along 76% of the reach. No tidal barriers are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Rural Residential. Comprehensive Plan Designations – 100% Rural. Existing SED – 100% Urban Residential.

PUBLIC ACCESS (MAP 14)

No parks or public access areas are mapped in the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 42% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 35.3% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show residential development along much of the shoreline, with SR 106 running parallel to Hood Canal through most of the reach.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

There are no listed cultural resources or state or federally listed historic properties. Resource mapping suggests there is a very low to moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

Water quality degradation due to fecal coliform bacteria from upstream sources.

HOOD CANAL – LYNCH COVE - REACH 09

SHORELINE LENGTH

4.1 MI

PSNERP PROCESS UNITS

SPU 2024, SPU 2025

REACH AREA

98.5 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 47% (46 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

1.7% erosion, 26.4% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 99% open coastal inlet shores, 1% barrier beaches. Net shore drift - predominantly no appreciable drift, an area along southwest shore with northward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

More degraded.

LAND COVER (MAP 15)

1% developed, 2% agriculture, 8% forest, 88% wetland, 1% floodplain/riparian (GAP, 2009);
34% forested cover, 21% non-forest, 0.1% off-shore, 40% other vegetation, 5% water (PNPTC, 2011).

HABITATS AND SPECIES (MAP 8)

2,148 LF of continuous eelgrass.
Wetlands – 2.7 acres (2.7% of reach); wetland habitat types include estuarine intertidal emergent and palustrine forested

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 9 is included in the 303(d) list of impaired waters due to high fecal coliform concentrations. The Union River, which discharges to Lynch Cove is also included on the 303(d) list due to elevated fecal coliform concentrations, and likely contributes to contamination of the marine waters. Runoff, and improperly treated septic discharges from the town of Belfair may also contribute to marine fecal coliform concentrations. However, limited sampling conducted by Mason County did not identify elevated fecal coliform concentrations in any of the sampled shoreline seeps or drains (Georgeson et. al. 2008). Although there are no 303 (d) listings in this reach for dissolved oxygen, low DO levels during the summer are a serious concern. The Lynch Cove area experiences less marine water circulation than other areas of Hood Canal, so it is most prone to oxygen depletion. Estimated dissolved oxygen levels were at 0.46 mg/L or lower during the summer of 2006, a level extremely stressful and potentially lethal for fish and other marine life (Newton et. al. 2011; Newton 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Vacant (74%), Residential (11%), with the remaining 15% a mix of Commercial, Transportation, Aquaculture, Agriculture, and Utilities. Ownership – Private (86%) and Public (14%).

SHORELINE MODIFICATIONS (MAP 16)

There are 21 locations mapped in the reach where tidal barriers exist: 11 road instances, 6 spur dikes, and 4 fill areas. Overwater structures in the reach include: 2 bridges and 1 large dock. No shoreline armoring is mapped along the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (87%), Agricultural Resource Lands (10%), and Rural Industrial (3%). Comprehensive Plan Designations -

Rural (90%) and Agricultural Resource Lands (10%). Existing SED – Conservancy (51%), Rural (28%), and Urban Residential (21%).

PUBLIC ACCESS (MAP 14)

Union River Wildlife Area, managed by Washington Department of Fish and Wildlife (WDFW), has 75% of total linear miles.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 12% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 3.5% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show the reach to be mainly undeveloped tidelands. SR 300 and other roads intersect portions of the reach.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

Belfair is currently in the process of constructing a sewage and wastewater treatment plant. Sewage connections will be available for business and residents adjacent to the shoreline in the Lynch cove area, as well as throughout the southwestern portion of the Belfair urban growth area. This action should help to reduce fecal coliform problems in the Union River and downstream marine areas, as well as to reduce the nitrogen load delivered to Hood Canal.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists one inventoried early historic site within this reach. Resource probability mapping suggests there is a very low to moderate-low probability of finding unknown artifacts within this reach, with smaller portions of the reach in moderate to moderate-high probability zones.

OPPORTUNITY AREAS (MAP 22)

KEY MANAGEMENT ISSUES

Water quality degradation due to fecal coliform bacteria from upstream sources.

HOOD CANAL - REACH 10

SHORELINE LENGTH

12.4 MI (LYNCH COVE WEST TO TAHUYA RIVER)

PSNERP PROCESS UNITS

SPU 2014, SPU 2015, SPU 2016, SPU 2017, SPU 2018, SPU 2019, SPU 2020, SPU 2021, SPU 2022, SPU 2023, SPU 2024

REACH AREA

294.9 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 32% (94 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

9.6% erosion, 65.3% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 55% bluff backed beaches, 41% barrier beaches, 2% artificial shoreforms, 1% barrier estuary, 1% barrier lagoon. Net shore drift - predominantly northeastward drift, a few cells with southward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Most mapped as more degraded, smaller reaches of moderately and less degraded shoreline.

LAND COVER (MAP 15)

20% developed, 44% mudflat, 28% forest, 8% wetland (GAP, 2009);

29% forested cover, 59% non-forest, 7% off-shore, 5% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

1.8 acres herring holding habitat and 152 acres of herring spawning habitat. 25,074 LF of smelt spawning habitat. 600 LF of sand lance spawning habitat. 72 acres of Dungeness crab. 3.6 acres of geoduck. 77 acres of oyster. 8,777 LF of continuous and 36,114 LF of patchy eelgrass.

Wetlands – 13.8 acres (4.7% of reach); habitat types include estuarine intertidal aquatic bed, estuarine intertidal emergent, and palustrine aquatic bed

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Marine Reach 10 is included on the 303(d) list of impaired waters due to high fecal coliform concentrations and low dissolved oxygen levels. The fecal coliform listings are coincident with the mouths of creeks that are also included on the 303(d) due to elevated fecal coliform concentrations; specifically Little Mission Creek and Stimson Creek. In 2006, dissolved oxygen concentrations were measured at less than 1.0 mg/L, which is very stressful or lethal to fish and other marine life, (Newton et. al. 2011; Newton 2010). One sediment sample was collected from this reach. Results indicated intermediate/high quality sediment quality based on the sediment quality triad index (Long et. al. 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (77%), Vacant (10%), with the remaining 13% a mix of Parks, Open Space, and Recreational Areas, Transportation, and Forestry. Ownership – Private (97%) and Public (3%).

SHORELINE MODIFICATIONS (MAP 16)

There are 10 locations mapped in the reach where tidal barriers exist: 6 fill areas, and 2 spur dikes, and 2 locations with partial dike removal. Overwater structures in the reach include 42 small docks, 41 buoys and floats, 30 buildings, 4 large docks and 4 bridges. Shoreline armoring is mapped along 56% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Rural Residential.
Comprehensive Plan Designations – 100% Rural.
Existing SED – Urban Residential (90%) and Conservancy (10%).

PUBLIC ACCESS (MAP 14)

Belfair State Park, managed by Washington State Parks, accounts for 6% of total linear miles. The 63 acre park has about 3,800 LF of public tidelands. The North Shore Dock (Belfair), managed by Port of Allyn, has moorage and launch ramp facilities. (Port of Allyn, 2011; Mason County Department of Parks and Trails, 2006).

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 15% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 30.3% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show a mixture of residential and commercial developments, forest, Belfair State Park facilities, and roads in the reach.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists two inventoried early historic sites and one inventoried pre-contact site within this reach. Resource probability mapping suggests there is a moderate-low to very high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

Water quality degradation due to fecal coliform bacteria from upstream sources.

HOOD CANAL - REACH 11

SHORELINE LENGTH

6.0 MI (TAHUYA WEST TO GREAT BEND)

PSNERP PROCESS UNITS

SPU 2013, SPU 2014, SPU 2084

REACH AREA

139.5 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 37% (52 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

39.6% erosion, 62.4% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 34% bluff backed beaches, 25% barrier beaches, 21% barrier estuary, 17% coastal inlet shores, 3% artificial shoreforms.

Net shore drift - eastward drift converges with northern drift at the mouth of the Tahuya River embayment, no appreciable drift within the inner shore of the embayment.

NEARSHORE PROCESS DEGRADATION (MAP 17)

More degraded.

LAND COVER (MAP 15)

8% developed, 42% mudflat, 31% forest, 16% wetland, 4% floodplain/riparian (GAP, 2009);
46% forested cover, 40% non-forest, 5% off-shore, 10% other natural vegetation, 0.2% water (PNPTC, 2011).

HABITATS AND SPECIES (MAP 8)

2,292 LF of smelt spawning habitat. 0.6 acres of Dungeness crab. 0.5 acres of geoduck. 14.2 acres of oyster. 915 LF of continuous and 14,751 LF patchy eelgrass. Wetlands – 17.9 acres (12.8% of reach); wetland habitat types include estuarine intertidal aquatic bed and emergent; palustrine emergent and forested.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Marine Reach 11 is included on the 303(d) list of impaired waters due to low dissolved oxygen concentrations. There are no 303(d) listings for fecal coliform. Fecal coliform contamination may be less of a problem in this reach as compared to others because the watershed in this area is generally less developed. Evaluations as part of Mason County's HCPIC program are currently ongoing throughout this reach, but results have yet to be published (Pers. Comm., Amy Georgeson, MCPH).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (48%), Forestry (40%), with the remaining 11% a mix of Transportation, Vacant, and Parks, Open Space, and Recreation Areas. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

Overwater structures in the reach include 12 small docks, 8 buildings, 4 buoys and floats, 4 large docks, and 3 bridges. Shoreline armoring is mapped along 34% of the reach. No tidal barriers are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (99%) and Rural Tourist (1%). Comprehensive Plan Designations – Rural (100%). Existing SED – 100% Urban Residential.

PUBLIC ACCESS (MAP 14)

No public access areas are mapped in the reach.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 6% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 23.6% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show a mix of residential development, forest, and roads in the reach.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists one inventoried early historic site within this reach. Resource probability mapping suggests there is a moderate-high to very high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

HOOD CANAL - REACH 12

SHORELINE LENGTH

9.8 MI (GREAT BEND NORTH TO DEWATTO)

PSNERP PROCESS UNITS

SPU 2010, SPU 2011, SPU 2013

REACH AREA

229.0 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 74% (170 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

8.9% erosion, 70.5% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 74% bluff backed beaches, 19% open coastal inlets, 4% barrier beach, 2% artificial shoreforms, 1% barrier estuary. Net shore drift - northward drift from Bald Point to mouth of Dewatto Bay, no appreciable drift within the upper extent of Dewatto Bay, eastward drift along the north shore halfway into the bay.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Less degraded.

LAND COVER (MAP 15)

81% forest, 8% wetland, 2% floodplain/riparian (GAP, 2009)
77% forested cover, 16% non-forest, 3% off-shore, 4% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

800 LF of smelt spawning habitat. 18.3 acres of Dungeness crab. 10.3 acres of hardshell clam beds. 47.4 acres of oyster. 1.44 acres of pandalid shrimp. 1,505 LF of continuous and 11,170 LF of patchy eelgrass. Wetlands – 9.9 acres (4.3% of reach); estuarine intertidal aquatic bed, beach/bar, and flats.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 12 is included in the 303(d) list of impaired waters due to low dissolved oxygen concentrations. There are no listings for fecal coliform. Similar to Reach 11, fecal coliform contamination may be less of a problem in this reach, as compared to the western and southern shore reaches because the watershed is generally less developed. Evaluations of streams, surface seeps, and bulkhead drains for fecal coliform by Mason County are currently ongoing in this reach, but results have yet to be published (Pers. Comm., Amy Georgeson, MCPH). Two sediment samples were collected from this reach; both samples indicate intermediate/high sediment quality based on the sediment quality triad index (Long et. al. 2010).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (33%), Residential (31%), Vacant (24%), with the remaining 12% a mix of Parks, Open Space, and Recreation Areas, Agriculture, and Transportation. Ownership – Private (97%) and Public (3%).

SHORELINE MODIFICATIONS (MAP 16)

There are 5 instances in the reach where mapped tidal barriers exist: 3 fill areas and 2 spur dikes. Overwater structures in the reach include: 16 small docks, 7 buoys and floats, 4 buildings, 3 bridges, and 1 large dock. Shoreline armoring is mapped along 16% of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential (91%) and Rural Tourist (9%). Comprehensive Plan Designations – 100% Rural. Existing SED – Rural (74%), Conservancy (15%), and Urban Residential (11%).

PUBLIC ACCESS (MAP 14)

Dewatto Bay tidelands, managed by WDNR, accounts for 2% of total linear miles. Harvey Rendsland State Park, managed by Washington State Parks, has 2% of total linear miles. Public access is available at both sites.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 13% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 3.9% impervious in this reach (HCCC, 2006). Aerial photos from 2009 show most of the reach to be forested, with residential development focused in the southern portion.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

There are no listed cultural resources or state or federally listed historic properties. Resource mapping suggests there is a very low probability of finding unknown artifacts within this reach, with smaller portions of the reach in very high probability zones.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

HOOD CANAL - REACH 13

SHORELINE LENGTH

5.1 MI (DEWATTO NORTH TO COUNTY LINE)

PSNERP PROCESS UNITS

SPU 2009, SPU 2010

REACH AREA

123.2 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 93% (115 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

84.7% landslide

SHOREFORM AND NET SHORE DRIFT (MAP 7)

Shoreform - 98% bluff backed beaches, 2% barrier beaches. Net shore drift - predominantly northward drift.

NEARSHORE PROCESS DEGRADATION (MAP 17)

Least degraded.

LAND COVER (MAP 15)

96% forest, 4% wetland (GAP, 2009)

95% forested cover, 4% non-forest, 1% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

32.0 acres of Dungeness crab. 41.5 acres of hardshell clam beds. 28.4 acres of oyster. 0.99 acres of pandalid shrimp. 328 LF patchy eelgrass. Wetlands – 7.4 acres (6.0% of reach); wetland habitat types include estuarine intertidal beach/bar.

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Reach 13 is included on the 303(d) list of impaired waters because of low dissolved oxygen concentrations. Dissolved oxygen concentrations in 2006 were estimated to have fallen below 1.5 mg/L, a level considered very stressful for fish (Newton 2011). There are no 303(d) listings due to fecal coliform concentrations in this reach. As with Marine Reach 11 and Marine Reach 12, fecal coliform contamination may be less of a problem in this reach as compared to reaches along the western and southern shoreline because there is generally less development. Evaluations as part of Mason County's HCPIC program are currently ongoing.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Vacant (39%), Forestry (34%), and Residential (26%). Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

Overwater structures in the reach include 1 buoy. Shoreline armoring is mapped along 1% of the reach. No tidal barriers are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Rural Residential. Comprehensive Plan Designations – 100% Rural. Existing SED – 100% Rural.

PUBLIC ACCESS (MAP 14)

Hood Canal tideland areas, managed by WDNR, account for 40% of total linear miles. Public access is available at this site by boat.

IMPERVIOUS SURFACES (MAP 16)

NOAA maps 7% of the reach as containing impervious surfaces (NOAA CCAP, 2006). HCCC maps 0.1% impervious in this reach (HCCC, 2006).

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed contaminated sites.

CULTURAL AND ARCHAEOLOGICAL RESOURCES

There are no listed cultural resources or state or federally listed historic properties. Resource mapping suggests there is a very low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Protect existing forested cover in the shoreline jurisdiction.

KEY MANAGEMENT ISSUES

Protection of existing forested riparian cover.

4.2 Data Gaps

The following data gaps have been identified for Hood Canal shorelines as part of this inventory:

- County-specific wetland inventory;
- Groundwater supply and effects of low baseflows in the summer on fish habitat;
- A comprehensive inventory and assessment of coastal feeder bluffs;
- Current and quantifiable data on shoreline modifications, specifically bulkheads; and
- Location of derelict structures, gear and debris in the nearshore environment.

DRAFT