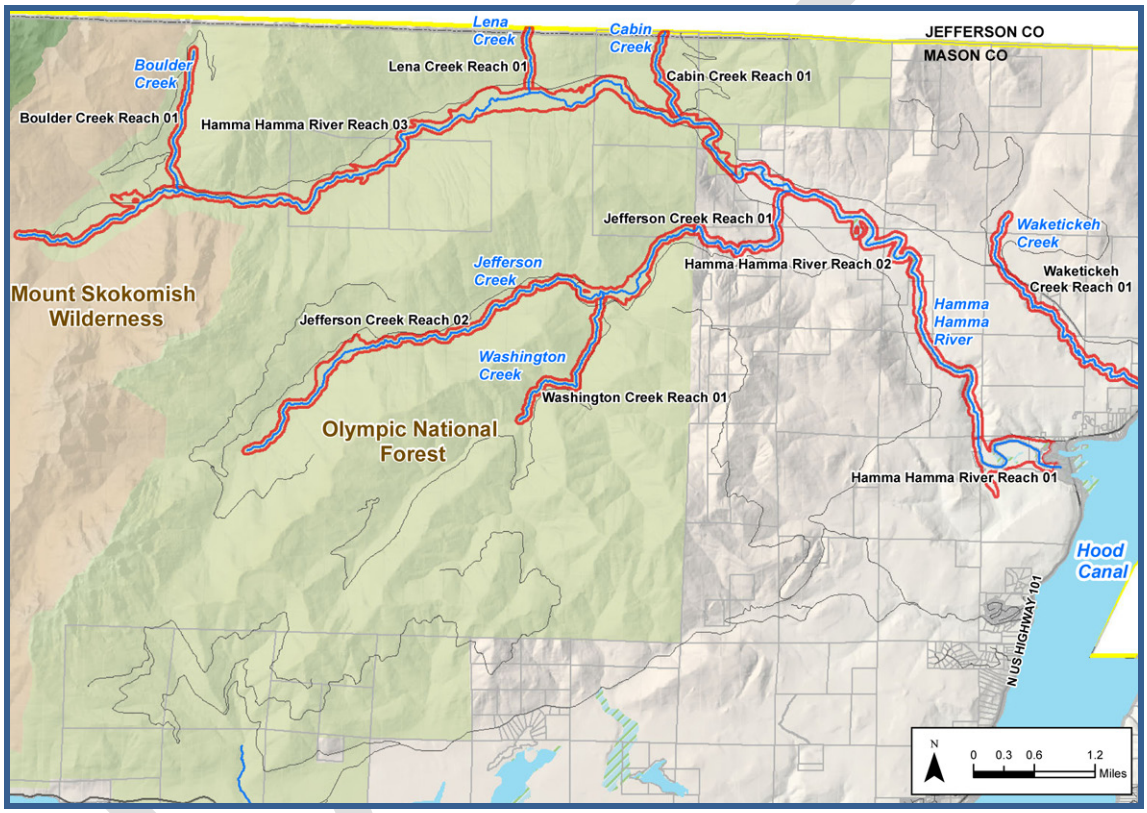
CHAPTER 8.
WRIA 16 / 14B: SKOKOMISH-DOSEWALLIPS

8.1 Hamma Hamma River and Tributary (Jefferson Creek)



This section describes Hamma Hamma River and its shoreline tributaries within Mason County jurisdiction. Therefore, this section describes a total of 11.4 miles of river designated as shorelines of the state within the Hamma Hamma sub-basin. Reach sheets are provided for Hamma Hamma and its main tributary - Jefferson Creek. A Reach sheet is also provided for Waketickeh Creek – a tributary to Hood Canal within the Hamma Hamma subbasin.

While shorelines outside of the County lands in National Forest are part of the inventory, no reach sheets have been provided for these streams or sections of streams. Streams in National Forest lands are therefore only generally described; these streams are a portion of Jefferson Creek (Reach 2 only), Washington Creek, Cabin Creek, Lena Creek, Boulder Creek, and a portion of Hamma Hamma River (Reach 3 only).

8.1.1 Process and Channel Modifications

Hamma Hamma River (Jefferson Creek)

The Hamma Hamma River originates in the Olympic National Park and enters Hood Canal at the community of Eldon (Correa, 2003). The mainstem extends approximately 17.8 miles with an additional 209 miles of tributaries (Correa, 2003). Jefferson Creek enters the Hamma Hamma River at river mile 5.7. Below river mile 1.5, the stream gradient is more gradual as it enters a broad floodplain. The lower 0.6 mile of stream is tidally influenced (Correa, 2003).

Managed forest is the primary land use in the upper watershed with aquaculture practiced within the estuary and adjacent nearshore (WDFW and PNPTT, 2000). A dredged channel is present in the river's delta and fill, riprap/armoring, and dikes are located at the mouth of the river in association with multiple residential developments and Highway 101. A utility corridor crosses the stream in the middle portion of Reach 2. An impassable falls is located at river mile 2.5, with no known artificial barriers downstream of this location (Correa, 2003).

The Hamma Hamma River has been altered by development, especially in the lower reaches. Some of the process modifications include:

- Logging practices causing sediment transport;
- Alteration in the estuary;
- Adjacent residential development in the lower reach;
- Culverts and other structures that alter flow regime; and
- Fill and bank armoring in the lower reach.

Waketickeh Creek

The stream and its major tributary total 8.2 miles and drain a watershed of approximately 5,772 acres (Correa, 2003). The stream enters Hood Canal about a mile north of Eldon and the mouth of the Hamma Hamma River.

Logging and a utility corridor occur in the upper portion of the reach. Fill and riprap/armoring are present on both sides of the lower floodplain and Highway 101 has filled floodplain subject to tidal influence (Correa, 2003). In addition, a residence with associated parking area is located at the mouth of the stream. A culvert is located downstream of the confluence of the stream and its main tributary; however, there are no known artificial barriers to anadromous fish migration (Correa, 2003).

Waketickeh Creek has been altered to a limited extent. Some of the process modifications include:

- Logging practices;
- Culverts and other structures that alter flow regime; and
- Fill and bank armoring.

8.1.2 Water Quality

The Hamma Hamma River, Jefferson Creek, and Waketickeh Creek are not listed on the 303(d) list of impaired waterbodies for exceeding any surface water quality standards (Ecology, 2008). Testing is conducted by Ecology on the Hamma Hamma River at the Lena Creek Campground; this sampling indicates overall good water quality in the river (Ecology, 2011). No other water quality concerns have been identified at this time for these waterbodies.

8.1.3 Critical or Priority Habitat and Species

Hamma Hamma River

According to the Priority Habitat and Species data, the Hamma Hamma River supports many priority salmonid species (WDFW, 2010' Table 8-1).

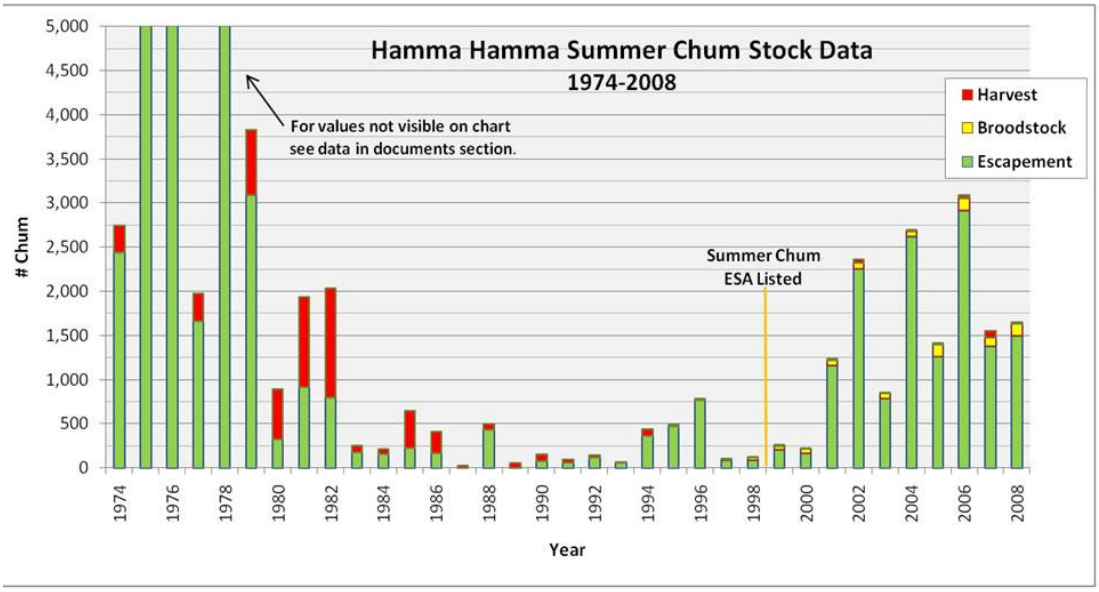
Table 8-1. Priority fish species documented for Hamma Hamma River (Reaches 1 and 2) and Jefferson Creek

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon (Hamma Hamma only)	*Oncorhynchus tshawytscha*	Migration/Spawning/ Rearing	Threatened	Candidate
fall Chum salmon (Hamma Hamma River only)	*Oncorhynchus keta*	Migration/Spawning	~	~
summer Chum salmon (Hamma Hamma only)	*Oncorhynchus keta*	Migration/Spawning	Threatened	Candidate
Coho salmon (Hamma Hamma River only)	*Oncorhynchus kisutch*	Migration/Spawning/rearing	Concern	~

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Dolly Varden/Bull trout	*Salvelinus confluentus*	Migration	Threatened	Candidate
kokanee salmon	*Oncorhynchus nerka*	Migration/Spawning	~	~
Pink salmon (Hamma Hamma River only)	*Oncorhynchus gorbuscha*	Migration/Spawning	~	~
Rainbow trout	*Oncorhynchus mykiss*	Migration/Spawning/ Rearing	~	~
winter Steelhead trout (Hamma Hamma only)	*Oncorhynchus mykiss*	Migration/Spawning/ Rearing	Threatened	~

Chinook salmon, summer chum and coho salmon spawn and rear in the lower two miles of the river and in a tributary located at river mile 1.4. Stock charts for summer chum (see Figure 8-1 below) indicate depressed chum salmon stock through the 1990s (WDFW, 2008).

Figure 8-1. Hamma Hamma Summer Chum Stock



For exact values see the stock data files in the documents section or visit WA State Dept. of Fish and Wildlife's website: http://wdfw.wa.gov/fish/chum/index.htm

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 Reaches 1 and 2 of the Hamma Hamma River (USFWS, 2005; Table 8-2).

Table 8-2. Critical habitat for Chinook salmon and summer-run chum salmon in Hamma Hamma River

Stream	Reach	Species Common Name	Scientific Name
Hamma Hamma River	01	Chinook salmon and summer-run chum salmon	*Oncorhynchus tshawytscha and O. keta*
Hamma Hamma River	02	Chinook salmon and summer-run chum salmon	*Oncorhynchus tshawytscha and O. keta*

Approximately 39.5 acres of wetland (27.8 percent of the reach) is mapped in Reach 1 and 96.6 acres (32.3 percent of the reach) is mapped in Reach 2, within the Mason County shoreline jurisdiction of the river (NWI, 1989).

Other priority habitat/wildlife species are documented to occur within both reaches and include: bald eagle buffer, bald eagle, harlequin duck, and Roosevelt elk (WDFW, 2010). Reach 1 also has osprey mapped while Reach 2 has cliff/bluffs mapped (WDFW, 2010). Marbled murrelet and northern spotted owl are mapped in Reach 2 (USFWS, 2009 and 2010; WDFW, 2010).

The Washington Department of Natural Resources (WDNR) Natural Heritage Program (NHP) has identified the following priority plant species or vegetation communities within the Hamma Hamma River, Reach 1, shoreline planning area (WNHP, 2009):

- 18.5 acres of Freshwater Tidal Surge Plain Wetland PTN;
- 1.7 acres of Lyngby's Sedge;
- 1.7 acres of Lyngby's Sedge - Pacific Silverweed; and
- 18.5 acres of Sitka Spruce / Slough Sedge – Skunkcabbage.

Approximately 142.1 acres of chain-fern habitat are mapped in Reach 2.

Jefferson Creek

Several priority salmonid species are mapped in Jefferson Creek (WDFW, 2010; Table 8.1). No wetlands are mapped within the Mason County shoreline jurisdiction

of the stream (NWI, 1989). A priority species occurrence for harlequin duck is recorded in the reach (WDFW, 2010). Marbled murrelet and northern spotted owl are also documented (USFWS, 2009 and 2010; WDFW, 2010). The NHP has identified the following priority plant species within the Jefferson Creek shoreline planning area (WNHP, 2009): 52.4 acres of chain-fern.

Waketickeh Creek

Waketickeh Creek is mapped as supporting a few priority salmonid species (WDFW, 2010; Table 8-3).

Table 8-3. Priority fish species documented for Waketickeh Creek

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon	*Oncorhynchus tshawytscha*	Known spawning and Presence/Migration	Threatened	Candidate
Coho salmon	*Oncorhynchus kisutch*	Known spawning and Presence/Migration	Concern	~

No wetlands are mapped within the Mason County shoreline jurisdiction of the stream (NWI, 1989). Other priority habitats/ wildlife species that occur in the vicinity of Waketickeh Creek include: bald eagle buffer, bald eagle, and Roosevelt elk (WDFW, 2010).

8.1.4 Land Use

Approximately 95% of the watershed is in public ownership with 60% in managed forest (Aspect 2009). Land use along Hamma Hamma River, Jefferson Creek and Waketickeh Creek is primarily resource lands associated with commercial and non-commercial timber harvest. There are two campgrounds in the Olympic National Forest that provide public access to the shorelines: Hamma Hamma Campground and Lena Creek Campground.

Lands within the National Forest are also in forestry use along Hamma Hamma River and Jefferson Creek. Land use information is not available for Washington Creek, Cabin Creek, Lena Creek, and Boulder Creek.

8.1.5 Land Cover

Except in Reach 1 of the Hamma Hamma River, forest cover is found in the majority (70 percent or greater) of the shoreline jurisdiction within the Hamma Hamma drainage. The mouth and lower sections of the Hamma Hamma River contain limited residential development, with farming and aquaculture practiced in the vicinity. Highway 101 crosses the mouth of the river. Much of the Hamma Hamma River is forested with logging activity at several locations adjacent to the river. Jefferson Creek is primarily forested along its length. Waketickeh Creek has a forested riparian corridor and is crossed by a power line corridor and national park road. Logging is practiced along the upstream portion of the stream.

8.1.6 Summary of Key Management Issues

PLACEHOLDER

8.1.7 Reach Analysis

HAMMA HAMMA RIVER - REACH 01

SHORELINE LENGTH

1.5 MI

REACH AREA

141.9 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 66% (94 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain.

HAZARD AREAS (MAP 12)

97.4% landslide

LAND COVER (MAP 15)

0% developed, 24% forest, 28% wetland, 23% floodplain/riparian, 18% agriculture (GAP, 2009);

Riparian vegetation: 42% forest cover, 31% non-forest, 17% other natural vegetation, 10% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, fall chum salmon, summer chum salmon, coho salmon, Dolly Varden/bull trout, kokanee salmon, pink salmon, rainbow trout, winter steelhead trout; Critical habitat for Chinook salmon and summer chum salmon; bald eagle buffer, bald eagle, harlequin duck, osprey, and Roosevelt elk; Wetlands – 13.0 acres (9.2% of reach); wetland habitat types include estuarine intertidal emergent, palustrine emergent, scrub-shrub, and riverine tidal flat

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters. Testing by Ecology indicates overall good water quality.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (79%); remaining 21% is a mix of Agriculture, Aquaculture, and Vacant. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Agricultural Resource Lands (53%), Long Term Commercial Forest (28%), and Rural Residential 5 Acres (19%). Comprehensive Plan Designations – Agricultural Resource Lands (53%), Long Term Commercial Forest (28%), and Rural (19%). Existing SED – Rural (87%) and Conservancy (13%).

PUBLIC ACCESS (MAP 14)

Hamma Hamma River Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show very limited rural residential development; the reach is dominated by forest and pastureland.

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 high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Hamma Hamma River Engineered Log Jam (ELJ) and Off-channel restoration (08-03-000) (Habitat Work Schedule, 2011); Sponsor: Hood Canal Salmon Enhancement Group – adding log jams and LWD to the lower channel and estuary to improve salmon habitat.

Protection of existing forested riparian areas.

KEY MANAGEMENT ISSUES

Protect existing forested riparian areas.

Roads, residential development, and agriculture have degraded and limited fish access to habitat in the estuary and instream.

Excessive fine sediment loading due to landslides in the upper watershed (WRIA 16 Planning Unit, 2006).

HAMMA HAMMA RIVER - REACH 02

SHORELINE LENGTH

5.1 MI

REACH AREA

298.8 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 34% (100 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

48.8% landslide

LAND COVER (MAP 15)

0% developed, 68% conifer forest, 5% deciduous forest, 24% floodplain/riparian, (GAP, 2009).

Riparian vegetation: 76% forest cover, 9% other natural vegetation, 15% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, fall chum salmon, summer chum salmon, coho salmon, Dolly Varden/bull trout, kokanee salmon, pink salmon, rainbow trout, winter steelhead trout; Critical habitat for Chinook salmon and summer chum salmon; bald eagle buffer, cliff/bluffs, bald eagle, harlequin duck, and Roosevelt elk; marbled murrelet and northern spotted owl; 14.4 acres of palustrine forested wetland (4.8% of reach)

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters. Testing by Ecology indicates overall good water quality.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – Public (77%) and Private (23%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, there are overhead electrical transmission lines that cross the creek. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Hamma Hamma River Reach 2 has no formal public access or parks facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland.

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 moderate-high to high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

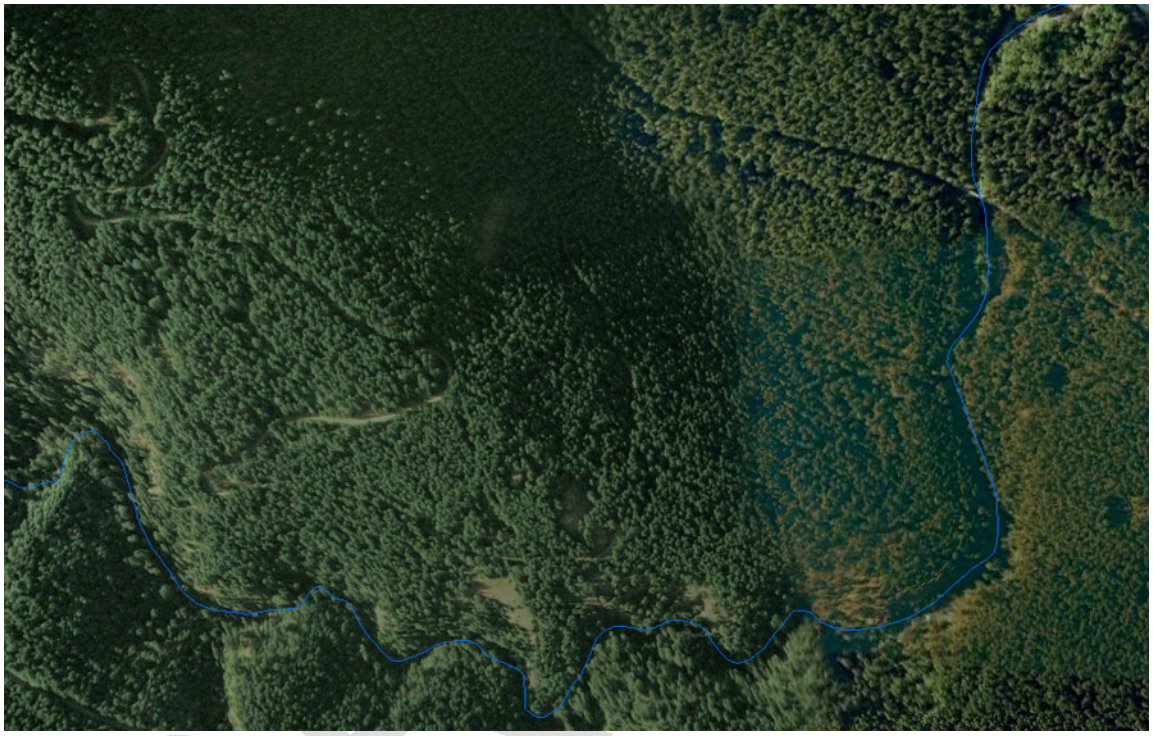
Protect existing forested riparian habitat.

KEY MANAGEMENT ISSUES

Protection of existing forested riparian areas.

JEFFERSON CREEK - REACH 01

SHORELINE LENGTH	REACH AREA
1.7 MI	83.5 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 30% (25 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

No mapped hazard areas.

LAND COVER (MAP 15)

0% developed, 75% conifer forest, 13% deciduous forest, 9% floodplain/riparian (GAP, 2009)

Riparian vegetation: 70% forest cover, 1% non-forest, 29% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, Dolly Varden/bull trout, kokanee salmon, rainbow trout; Harlequin duck, marbled murrelet, northern spotted owl; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, a road crosses the creek in Reach 01. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Jefferson Creek Reach 01 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland.

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 sites within this reach. Resource probability mapping suggests there is a very low to moderate probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

WAKETICKEH CREEK

SHORELINE LENGTH	REACH AREA
3.1 MI	144.4 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach

HAZARD AREAS (MAP 12)

0.2% erosion, 94.4% landslide

LAND COVER (MAP 15)

0% developed, 68% forest, % wetland, 7% floodplain/riparian, 24% harvested forest (GAP, 2009)

Riparian vegetation: 79% forest cover, 1% non-forest, 20% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, coho salmon; bald eagle buffer, bald eagle, Roosevelt elk; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (94%) and remaining 6% is a mix of Parks, Open Space, Recreation Areas, and Residential. Ownership – Private (72%) and Public (28%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, a forest road and overhead electrical transmission lines cross the creek.. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Long Term Commercial Forest (64%), Rural Residential 20 Acres (23%), and remaining 13% is a mix of Rural Residential 5 Acres and Inholding Lands. Comprehensive Plan Designations – Long Term Commercial Forest (64%) and remaining 36% is a mix of Rural and Inholding Lands. Existing SED – 100% Urban Residential.

PUBLIC ACCESS (MAP 14)

Waketickeh Creek Reach 01 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland with a few forest roads.

AREAS OF SPECIAL INTEREST

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

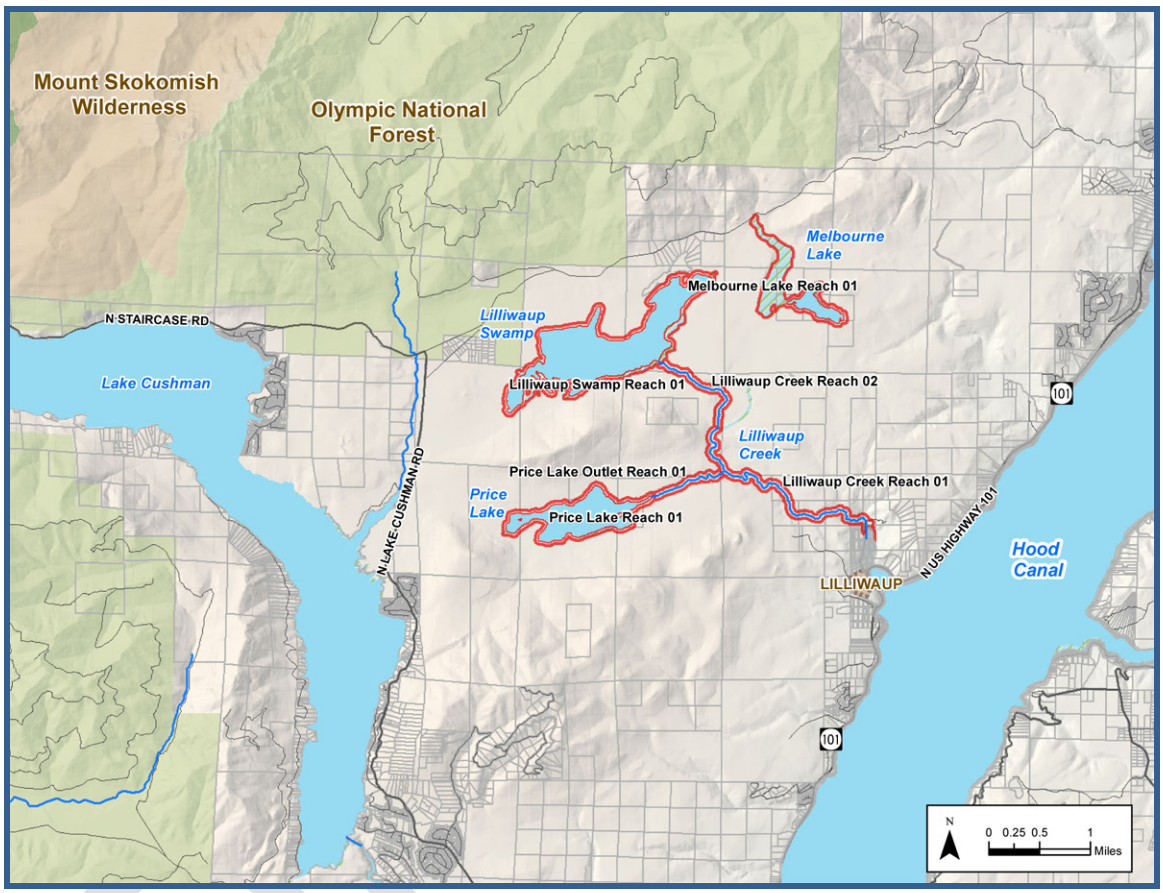
CULTURAL AND ARCHAEOLOGICAL RESOURCES

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

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

8.2 Lilliwaup Creek and Tributaries (Lilliwaup Swamp, Price Lake, Melbourne)



8.2.1 Physical Characterization and Modifications

Lilliwaup Creek, Price Lake, Price Lake Outlet, and Lilliwaup Swamp

The Lilliwaup Creek mainstem extends approximately 6.9 miles with an additional 6.3 mile of tributaries draining 17.8 square miles of land (Correa, 2003). Extensive wetlands, associated with Lilliwaup Swamp and Price Lake contribute flow to Lilliwaup Creek. A large falls is located at river mile 0.7 on Lilliwaup Creek (WDFW and PNPTC, 2000).

The upper Lilliwaup Creek watershed is dominated by forested lands and much of the lower stream reach contains residential development. Highway 101 crosses the stream at its mouth, which drains into Hood Canal. A utility corridor crosses the stream in the middle portion of the reach. Riprap, hard armoring and fill have been placed along the lower portion of the stream to support residential and transportation uses. There are no known artificial barriers located below the falls.

Lilliwaup Creek and associated waterbodies have been altered by development, especially along the lower reaches. Some of the process modifications include:

- Logging practices causing upstream sedimentation;
- Landslides and streambank erosion;
- Adjacent residential development in the lower reach;
- Culverts and other structures that alter flow regime; and
- Fill and bank armoring in the lower reach.

Melbourne Lake

Melbourne Lake and its associated wetlands drains to Eagle Creek and was dammed in the 1950s for Coho production (Correa, 2003). Although fish are no longer supplemented from the lake, the dam is still there. Logging dominates the land adjacent and is the primary process modification to Melbourne Lake.

8.2.2 Water Quality

Lilliwaup Creek is listed on the 303(d) list of impaired waterbodies (Category 5 waters) for fecal coliform bacteria (Ecology, 2008). Lilliwaup Bay (MR 04, Hood Canal) is also impaired for fecal coliform. Lilliwaup Creek upstream of Lilliwaup Swamp is listed as a Category 2 stream for fecal coliform; however, the listed reach is outside the shoreline jurisdiction.

No water quality data or assessments were identified for Lilliwaup Swamp, Price and Melbourne Lakes. None of these lakes are included on Ecology's 303 (d) list of impaired waters.

8.2.3 Critical or Priority Habitat and Species

Lilliwaup Creek

Several species of priority salmonids are found within Lilliwaup Creek (WDFW, 2010)(Table 8-4).

Table 8-4. Priority fish species documented for Lilliwaup Creek (Reaches 1 and 2)

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon (Reach 1 only)	*Oncorhynchus tshawytscha*	Presence/Migration	Threatened	Candidate
fall Chum salmon (Reach 1 only)	*Oncorhynchus keta*	Known spawning and Presence/Migration	~	~
summer Chum salmon (Reach 1 only)	*Oncorhynchus keta*	Known spawning and Presence/Migration	Threatened	Candidate
Coho salmon (Reach 1 only)	*Oncorhynchus kisutch*	Known spawning and Presence/Migration	Concern	~
Pink salmon (Reach 1 only)	*Oncorhynchus gorbuscha*	Known spawning and Presence/Migration	~	~
Rainbow trout	*Oncorhynchus mykiss*	Presence/Migration	~	~
winter Steelhead trout (Reach 1 only)	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~

Estuarine degradation and a lack of riparian vegetation limit habitat quality for salmonids in the lower reach of Lilliwaup Creek (Erickson and Gulick, 2006).

Summer-run chum primarily spawn in the lower mile of the river.

Critical habitat has been designated for the Hood Canal ESU summer-run chum salmon for Reach 1 of Lilliwaup Creek (USFWS, 2005; Table 8-5).

Table 8-5. Critical habitat for summer-run chum salmon in Lilliwaup Creek

Stream	Reach	Species Common Name	Scientific Name
Lilliwaup Creek	01	summer-run chum salmon	*Oncorhynchus keta*

Approximately 0.1 acres (0.1 percent of the reach) of wetland is mapped in Reach 1 and 3.2 acres (5.8 percent of the reach) is mapped in Reach 2, within the Mason County shoreline jurisdiction of the stream (NWI, 1989). Priority habitat/species mapped in the vicinity of Reaches 1 and 2 of the stream includes bald eagle buffer and elk (WDFW, 2010). Marbled murrelet is also recorded in Reach 2 of the stream (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Lilliwaup Creek shoreline planning area (WNHP, 2009).

Lilliwaup Swamp

Coastal cutthroat trout and rainbow trout are mapped as occurring in Lilliwaup Swamp (WDFW, 2010). Approximately 61.2 acres (30 percent of the reach) of wetland are mapped in the Mason County shoreline jurisdiction of the reach (NWI, 1989). Priority habitat/species recorded in the vicinity of Reaches 1 of the swamp includes old growth/mature forest, elk, pileated woodpecker, marbled murrelet and western toad (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Lilliwaup Swamp shoreline planning area (WNHP, 2009).

Price Lake

Coastal cutthroat trout and rainbow trout are known to occurr in Price Lake (WDFW, 2010). Approximately 18.8 acres (18 percent of the reach) is mapped as wetland within the Mason County shoreline jurisdiction of the stream (NWI, 1989). Priority species occurrences for elk and western toad are found in the vicinity of the lake (WDFW, 2010).

Price Lake Outlet

Coastal cutthroat trout and rainbow trout are mapped as occurring in Price Lake Outlet (WDFW, 2010). No wetlands are mapped within the Mason County

shoreline jurisdiction of the stream (NWI, 1989). A priority species occurrence for elk is mapped in the vicinity of the Price Lake Outlet (WDFW, 2010).

Melbourne Lake

Melbourne Lake has recorded use by two priority salmonid species – coastal cutthroat trout and rainbow trout (WDFW, 2010). Approximately 109 acres (representing 74 percent of the reach) is mapped as wetland within the Mason County shoreline jurisdiction of the lake (NWI, 1989). Occurrences for elk and marbled murrelet are recorded on the PHS data for the vicinity of the lake (WDFW, 2010).

8.2.4 Land Use

Land use in the Lilliwaup Creek and Lilliwaup Swamp basin is primarily resource lands associated with commercial and non-commercial timber harvest. Land ownership is predominantly State of Washington or DNR. In the lower sections of Lilliwaup Creek, private tree farms and timber companies are the primary landowners along with single-family residential properties (Golder Associates 2003).. In the upper watershed, land uses are timber harvest on USFS lands in the Olympic National Forest. Commercial and residential development is concentrated along the shore of Hood Canal in the town of Lilliwaup, near the mouth of Lilliwaup Creek.

Public access is only available to Melbourne Lake. Melbourne Lake Park, managed by Washington State Department of Natural Resources, provides camping facilities and 1,000 feet of water access (Mason County Department of Parks and Trails, 2006). Lilliwaup Campground, upstream of Lilliwaup Swamp in the Olympic National Forest, provides public access as well.

8.2.5 Land Cover

Forest cover is the dominant land cover (75 percent or greater) in the shoreline jurisdiction within the Lilliwaup Creek drainage (PNPTC, 2011). The mouth of Lilliwaup Creek contains limited residential development and is crossed by Highway 101. Lilliwaup Creek has a forested riparian corridor along much of its length and is traversed by a Tacoma Power utility corridor. Lilliwaup Swamp is a large, undeveloped wetland complex with a forested riparian zone. Price Lake is also undeveloped and the outlet stream has a forested riparian corridor. Melbourne Lake is undeveloped with a large forested wetland extending west and north of the lake. Logging occurs adjacent to the lake. Logging is commonly practiced adjacent to these waterbodies.

8.2.6 Summary of Key Management Issues

PLACEHOLDER

8.2.7 Reach Analysis

LILLIWAUP CREEK - REACH 01

SHORELINE LENGTH

2.6 MI

REACH AREA

126.0 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 0.4% (0.5 acre) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

71.5% landslide

LAND COVER (MAP 15)

0% developed, 75% conifer forest, 6% deciduous forest, 16% floodplain/riparian, (GAP, 2009);

Riparian vegetation: 76% forest cover, 2% non-forest, 22% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, fall chum salmon, summer chum salmon, coho salmon, pink salmon, rainbow trout, winter steelhead trout; Critical habitat for summer chum salmon; bald eagle buffer, elk; 0.1 acres of palustrine scrub-shrub wetland (0.1% of reach)

WATER QUALITY (MAP 13)

Listed on Ecology's 303(d) list of impaired waters for fecal coliform bacteria

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use - Forestry (97%); remaining 3% is a mix of Residential and Vacant. Ownership – Public (57%) and Private (43%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, there are overhead electrical transmission lines that cross the creek. No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Long Term Commercial Forest (57%), remaining 43% is a mix of Rural Residential 10 Acres, Rural Residential 20 Acres, and Rural Residential 5 Acres. Comprehensive Plan Designations – Long Term Commercial Forest (57%) and Rural (43%). Existing SED – Conservancy (77%) and Urban Residential (23%).

PUBLIC ACCESS (MAP 14)

Lilliwaup Creek Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be almost entirely undeveloped forestland; a small treatment plan is located at the lower end 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 high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

Roads and residential development have degraded fish access to habitat in the estuary and in riparian areas.

Culverts and other structures limit fish passage in tributaries and block transport of woody debris.

Population growth and future development may further strain limited water resources in the sub-basin.

LILLIWAUP CREEK - REACH 02

SHORELINE LENGTH	REACH AREA
1.1 MI	54.4 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 0.1% (0.1 acre) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

79.3% landslide

LAND COVER (MAP 15)

0% developed, 60% forest, 34% floodplain/riparian, (GAP, 2009);

Riparian vegetation: 79% forest cover, 21% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, rainbow trout; bald eagle buffer, elk, marbled murrelet; 3.1 acres of palustrine scrub-shrub wetland (5.8% of reach)

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, a road crosses the creek. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations - 100% Long Term Commercial Forest.

Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Lilliwaup Creek Reach 2 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland with one road crossing.

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)

KEY MANAGEMENT ISSUES

Roads in the upper watershed have caused sediment transport.

Culverts and other structures limit fish passage in tributaries and block transport of woody debris.

Population growth and future development may further strain limited water resources in the sub-basin.

LILLIWAUP SWAMP

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
7.9 MI	465.5 AC	206.6 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 12% (24 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

0.4% landslide

LAND COVER (MAP 15)

0% developed, 21% forest, 39% wetland, 39% floodplain/riparian, %mud flat (GAP, 2009);

Riparian vegetation: 80% forest cover, 20% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, rainbow trout; old growth/mature forest, elk, pileated woodpecker, western toad, marbled murrelet; Wetlands – 60.9 acres (29.5% of reach); wetland habitat types include palustrine aquatic bed, palustrine forested, and palustrine scrub-shrub.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – Public (84%) and Private (16%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts –Long Term Commercial Forest (86%) and In-holding Lands (14%). Comprehensive Plan Designations – Long Term Commercial Forest (86%) and In-holding Lands (14%). Existing SED – Natural (99%) and Conservancy (1%).

PUBLIC ACCESS (MAP 14)

Informal public access through logging roads.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland with a few forest roads.

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.

OPPORTUNITY AREAS (MAP 23)

Protect associated wetland areas

KEY MANAGEMENT ISSUES

Protection of associated wetlands.

Protection of forested riparian zones to protect habitats.

PRICE LAKE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
4.4 MI	192.3 AC	295.5 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 18% (18 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

7.5% landslide

LAND COVER (MAP 15)

0% developed, 27% forest, 9% wetland, 45% floodplain/riparian, 18% open water (GAP, 2009);

Riparian vegetation: 69% forest cover, 10% other natural vegetation, 21% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, rainbow trout; elk, western toad; Wetlands – 17.0 acres (16.5% of reach); wetland habitat types include palustrine emergent, palustrine forested, and palustrine scrub-shrub

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (95%) and Vacant (5%). Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations –

100% Long Term Commercial Forest. Existing SED – 100% Natural.

PUBLIC ACCESS (MAP 14)

Price Lake has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland.

AREAS OF SPECIAL INTEREST

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

CULTURAL AND ARCHAEOLOGICAL RESOURCES

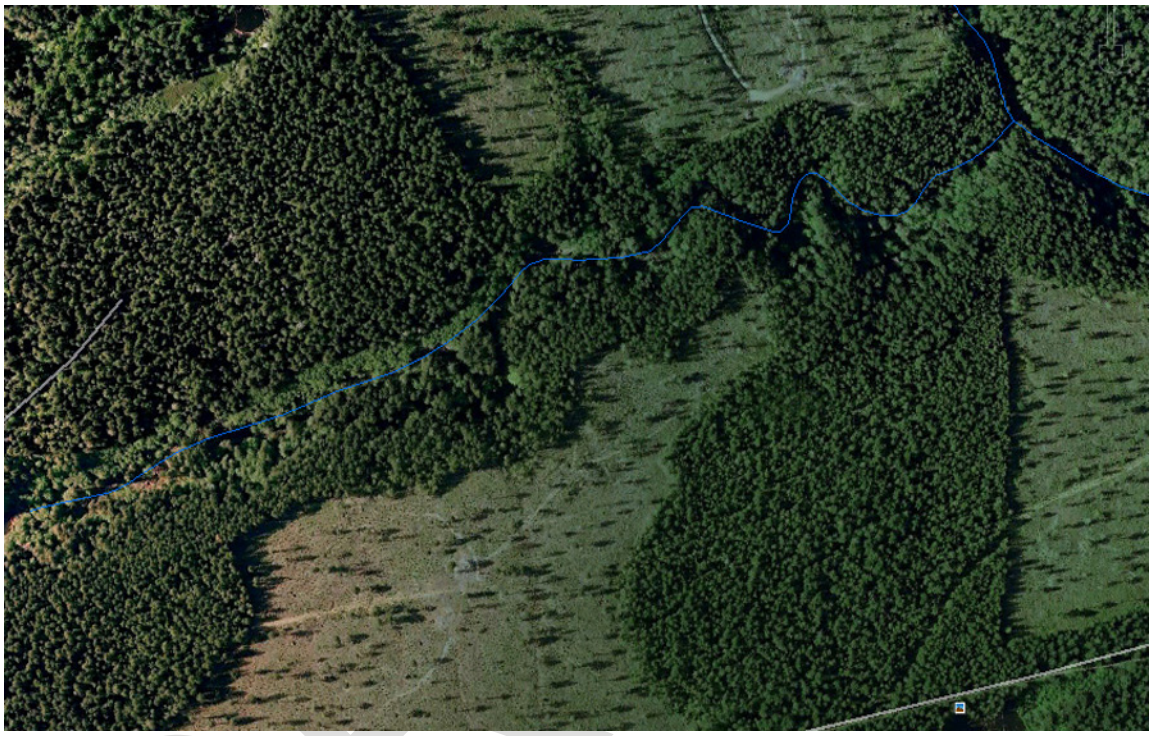
There are no listed cultural resources or state or federally listed historic properties. Resource mapping suggests there is a very low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

PRICE LAKE OUTLET

SHORELINE LENGTH	REACH AREA
0.8 MI	37.3 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)	HAZARD AREAS (MAP 12)
Floodplain - 0.03% (0.01 acre) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain	91% landslide
LAND COVER (MAP 15)	**HABITATS AND SPECIES (MAP 8)**
0% developed, 75% conifer forest, 12% deciduous forest, 13% floodplain/riparian, (GAP, 2009); Riparian vegetation: 80% forest cover, 20% other natural vegetation (PNPTC, 2011)	Coastal cutthroat trout, rainbow trout; elk; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts - 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Price Lake Outlet has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland.

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)

KEY MANAGEMENT ISSUES

MELBOURNE LAKE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
1.8 MI	38.7 AC	184.7 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 7% (10 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

16% landslide

LAND COVER (MAP 15)

0% developed, 28% forest, 18% open water, 50% floodplain/riparian (GAP, 2009);

Riparian vegetation: 69% forest cover, 7% other natural vegetation, 24% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, rainbow trout; elk, marbled murrelet; Wetlands --104.3 acres (71.4% of reach); wetland habitat types include palustrine emergent and palustrine forested

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (94%) and Parks, Open Space and Recreation Areas (6%). Ownership – Public (84%) and Private (16%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Melbourne Lake Park, managed by Washington State Department of Natural Resources, provides camping facilities and 1,000 feet of water access (Mason County Department of Parks and Trails, 2006).

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forestland.

AREAS OF SPECIAL INTEREST

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

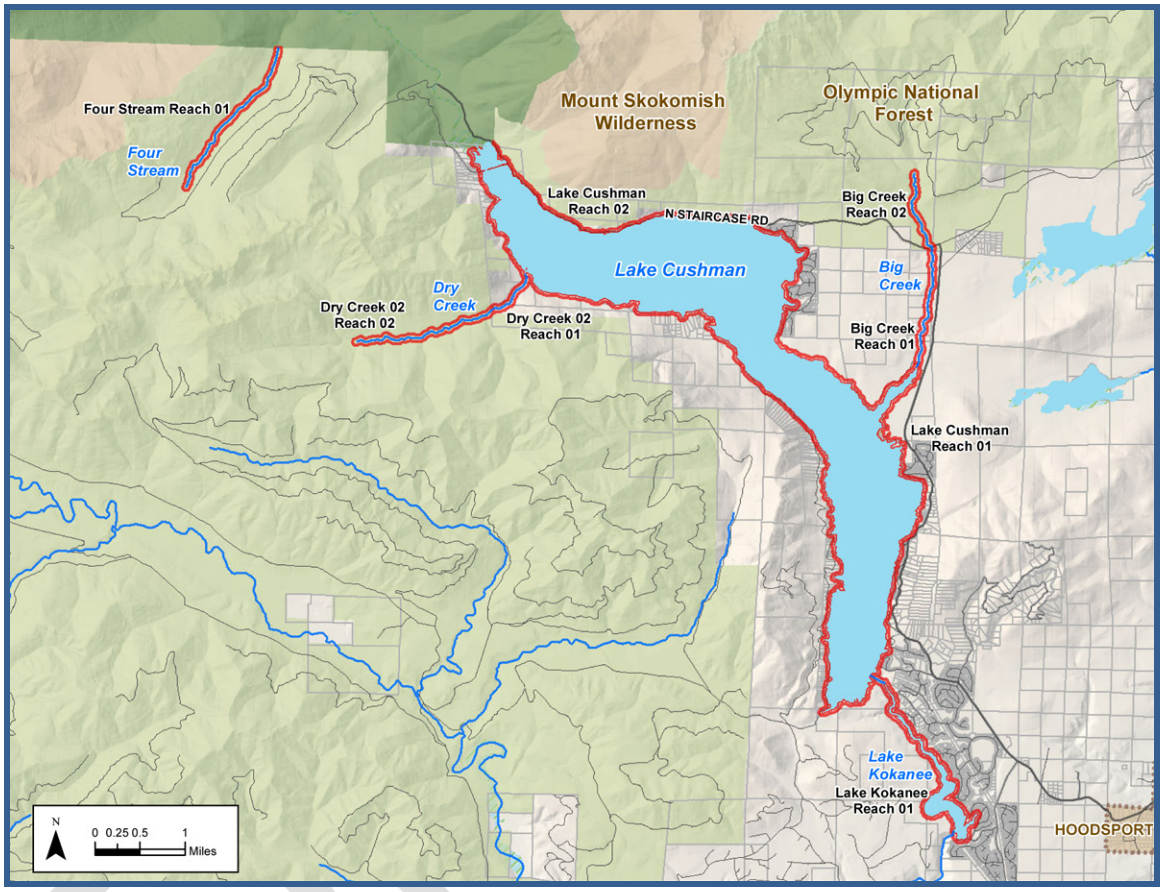
CULTURAL AND ARCHAEOLOGICAL RESOURCES

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

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

8.3 Lake Cushman, Dry Creek, Big Creek, and Lake Kokanee



This section describes Lake Cushman, its tributaries, and Lake Kokanee within Mason County jurisdiction. Therefore, this section describes a total of 38.8 miles of river and lake designated as shorelines of the state. Reach sheets are provided for Lake Cushman, Dry Creek, Big Creek, and Lake Kokanee.

While shorelines outside of the County lands in the National Forest are part of the inventory, no reach sheets have been provided for these streams or sections of streams. Streams in National Forest lands are therefore only generally described; these streams are a portion of Big Creek (Reach 2 only), Dry Creek 02 (Reach 2 only) and Four Stream.

8.3.1 Physical Characterization and Modifications

Lake Cushman is a 4,010 acre reservoir behind Cushman Dam and an impoundment of the North Fork of the Skokomish River. Lake Cushman and the dam are owned and operated by Tacoma Power. Due to its size over 1,000 acres, Lake Cushman is considered a shoreline of statewide significance. This reservoir is 8.5 miles in length running from the upper dam to the southeastern corner of the Olympic National Park (Correa, 2003).

Two shoreline tributaries enter Lake Cushman: Dry Creek and Big Creek. Dry Creek enters the reservoir's southwestern shore. The stream is undisturbed by logging or development, but contains one culvert. Big Creek drains to Lake Cushman on its eastern shoreline. Logging is common on the lands adjacent to the stream and one culvert is mapped on the reach. From the upper dam on Lake Cushman, limited flows travel approximately 1.5 miles downstream to another reservoir, Lake Kokanee, which is 150 acres in surface area. The downstream end of the reservoir is located at river mile 17.3 on the North Fork Skokomish River and acts as a barrier to anadromous fish passage (Correa, 2003).

Dams are located at the downstream ends of Lake Cushman and Lake Kokanee. Residential development and roadways are located along the eastern and southern shorelines of Lake Cushman, with many associated pier, ramps, and floats to support recreational boating. Across the northern extent of Lake Cushman, a road has been built on fill, with a small span that allows limited flow to pass through. Logging is common on the lands adjacent to Lake Cushman, concentrated around the middle and southern portions of Lake Cushman Reach 1. Residential development is located along the eastern and southern shorelines of Lake Kokanee, with logging practiced on lands west of the lake.

Lake Cushman and Lake Kokanee have been altered by historic development. Some of the process modifications include:

- Dams on the North Fork Skokomish;
- Timber harvest and logging practices in the watershed;
- Logging roads crossing tributaries and causing sediment transport;
- Water diversion/storage use;
- Adjacent residential development;
- Pier, ramps, and floats;
- Fill and bank armoring; and
- Conversion of pervious to impervious surfaces.

8.3.2 Water Quality

Water quality in Lake Cushman and Lake Kokanee was not tested by Ecology for the 303(d) list (Ecology, 2008). These reservoirs are subject to the Settlement Agreement for the Cushman Relicensing Project signed by Tacoma Power in 2009. This settlement agreement outlines that a water quality enhancement plan will be developed to enhance downstream habitats for fish and wildlife. Dissolved nitrogen gases will be monitored at the outfalls and spillways to ensure that dissolved gases are within state standards (Tacoma Power, 2009).

Based upon a recent study on selected lakes, Lake Cushman was found to meet a 303 (d) Category 2 listing for dioxin toxic equivalency quantity (TEQ) in fish tissue. (Johnson et al, 2010). Lake Cushman also exhibits distinct temperature stratification during summer months, ranging from about 6 degrees Celsius (°C) near the lake bottom to 18 °C near the surface. Waters are typically well oxygenated and rarely drop below the state standard of 9.5 mg/l (FERC 1996).

No water quality data is recorded for Big Creek or Dry Creek; or Four Stream Reach in the Olympic National Forest (Ecology, 2008).

8.3.3 Critical or Priority Habitat and Species

Lake Cushman and Lake Kokanee

According to the PHS data, Lake Cushman and Lake Kokanee supports many species of priority salmonids (WDFW, 2010; Table 8-6).

Table 8-6. Prioirty fish species documented for Lake Cushman (Reaches 1 and 2), Big Creek, and Lake Kokanee

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon (Lake Cushman and Lake Kokanee only)	*Oncorhynchus tshawytscha*	Presence/Migration	Threatened	Candidate
fall Chum salmon (Lake Kokanee only)	*Oncorhynchus keta*	Presence/Migration	~	~

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coho salmon	*Oncorhynchus kisutch*	Presence/Migration	Concern	~
Dolly Varden/Bull trout	*Salvelinus confluentus*	Known juvenile rearing (Reach 2 only) and Presence/Migration	Threatened	Candidate
kokanee salmon	*Oncorhynchus gorbuscha*	Presence/Migration	~	~
Rainbow trout (Lake Cushman and Lake Kokanee only)	*Oncorhynchus mykiss*	Presence/Migration	~	~
Sockeye salmon	*Oncorhynchus nerka*	Presence/Migration	~	~
summer Steelhead trout	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~
winter Steelhead trout	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~

A land-locked sockeye salmon (Kokanee) population is present in Lake Cushman and Lake Kokanee and is supplemented by a hatchery (Erikson and Gulick, 2006).

Critical habitat has been designated for the Puget Sound ESU Chinook salmon and Coastal-Puget Sound Distinct Population Segment (DPS) Dolly Varden/bull trout for Reaches 1 and 2 of Lake Cushman (USFWS, 2005 and 2010; Table 8-7).

Table 8-7. Critical habitat for Chinook salmon and Dolly Varden/bull trout in Lake Cushman (Reaches 1 and 2) and Lake Kokanee

Stream	Reach	Species Common Name	Scientific Name
Lake Cushman	01	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*
Lake Cushman	02	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*

In addition to the salmonids and Dolly Varden/bull trout, Salish sucker is mapped in Reach 1 of Lake Cushman (WDFW, 2010).

Approximately 61.4 acres (14.9 percent of the reach) of wetland are mapped in Reach 1 within the Mason County shoreline jurisdiction of the lake. Approximately 13.5 acres (7.5 percent of the reach) of wetland are mapped in Reach 2 (NWI, 1989). According to PHS data, harlequin duck, northern spotted owl and marbled murrelet are documented in tthe vicinity of Lake Cushman (USFWS, 2009; WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Lake Cushman shoreline planning area (WNHP, 2009).

Table 8-8. Critical habitat for Chinook salmon and Dolly Varden/bull trout in Lake Kokanee

Stream	Reach	Species Common Name	Scientific Name
Lake Kokanee	01	Chinook salmon	*Oncorhynchus tshawytscha*
Lake Kokanee	01	Dolly Varden/bull trout	*Salvelinus confluentus*

Approximately 9.9 acres (representing 7.2 percent of the reach) of wetland have been mapped within the Mason County shoreline jurisdiction of the lake (NWI, 1989). A priority species occurrence for osprey has been mapped in the vicinity of Lake Kokanee (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Lake Kokanee shoreline planning area (WNHP, 2009).

Big Creek

Big Creek is mapped as supporting a few priority salmonid species (WDFW, 2010; Table 8.3). No wetlands are mapped within the Mason County shoreline jurisdiction of the stream (NWI, 1989). An elk priority species occurrence is mapped in the vicinity of Big Creek (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Big Creek shoreline planning area (WNHP, 2009).

Dry Creek

Dry Creek is not mapped as supporting any priority salmonid species (WDFW, 2010). No wetlands are mapped within the Mason County shoreline jurisdiction of Dry Creek (NWI, 1989). Marbled murrelet and northern spotted owl are mapped in

the vicinity of the stream (USFWS, 2009 and 2010; WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Dry Creek shoreline planning area (WNHP, 2009).

8.3.4 Land Use

Land uses in the shorelines of Lake Cushman include hydroelectric facilities, public recreation and single-family residential. The Lake has 125 mapped docks/piers, as well as breakwaters and marinas. Lands surrounding Lake Cushman are owned by the City of Tacoma, Green Diamond Resources, private residential property owners, and US Forest Service.

Camp Cushman, managed by the Skokomish Tribe, has a boat launch and associated parking that is open to the public between Memorial Day and Labor Day weekends. The camp is located at the mouth of Big Creek. The Camp was transferred from Tacoma Power to the Skokomish Tribe as part of the 2009 settlement agreement. The agreement concluded two years of negotiations and several years of litigation, including lawsuits for past damages of $5.8 billion and trespass damages for the utility's transmission line (Tacoma Power, 2011). Public access is also available along DNR trails.

Lake Kokanee has a mix of parks, open space and recreation, utilities, residential and vacant land uses. There is a WDFW concrete boat launch that provides access to Lake Kokanee (Washington Department of Fish and Wildlife WDFW Lands, 2011).

Land uses along Big Creek are predominately timber resources. Land ownership includes Skokomish Tribe (Camp Cushman), Manke Timber Resources, State of Washington and US Forest Service (National Forest lands). Big Creek campground provides public access and is located in the Olympic National Forest. The campground is operated by the USFS.

Dry Creek 02 is predominately in forestry use. City of Tacoma and USFS are the main land owners along Dry Creek 02. Public access is available along DNR trails.

Land use along Big Creek in the National Forest is mostly vacant. Land use information is not available for Dry Creek 02 Reach 2 and Four Stream.

8.3.5 Land Cover

Much of the Lake Cushman shoreline is forested. The lake has a road along its northern shoreline that crosses its northern extent. Aside from the road, the northern portion of the lake is primarily undeveloped. The western shoreline contains sparse residential development. The eastern shoreline contains substantial

residential development with associated docks and piers. Logging is common on the land east of the lake. Tacoma power operates a dam at the southern extent of the lake. Dry Creek has a forested riparian corridor along its length. Big Creek also has a forested riparian corridor, but logging is practiced on both sides of the stream, outside of the corridor. Lake Cushman has a forested shoreline and extensive residential development is located east of the lake. No docks or piers are on the lake, with the exception of a dock located at a park near the south end of the lake. Logging is practiced adjacent to the western shoreline. Tacoma Power operates a dam at the south end of the lake.

8.3.6 Summary of Key Management Issues

PLACEHOLDER

8.3.7 Reach Analysis

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LAKE CUSHMAN - REACH 01

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
18.8 MI	2,613.3 AC	3,026.3 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 44% (180 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

2.2% landslide

LAND COVER (MAP 15)

80% open water, 5% playa, 14% forest, 1% wetland (GAP, 2009)

Riparian vegetation: 10% forest cover, 2% non-forest, 1% other natural vegetation, 87% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, coho salmon, Dolly Varden/bull trout, kokanee salmon, rainbow trout, sockeye salmon, summer steelhead, winter steelhead trout; Critical habitat for Chinook salmon, Dolly Varden/bull trout; marbled murrelet; 1.1 acres of wetland (0.3% of reach)

WATER QUALITY (MAP 13)

Not sampled for Ecology's 303(d) list; subject to the Settlement Agreement for the Cushman Relicensing Project signed by Tacoma Power in 2009; a water quality enhancement plan will be developed to enhance downstream habitats for fish and wildlife; dissolved nitrogen gases will be monitored at the outfalls and spillways to ensure that dissolved gases are within state standards; found to meet a 303 (d) Category 2 listing for dioxin toxic equivalency quantity (TEQ) in fish tissue; exhibits distinct temperature stratification during summer months

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Residential (66%), Parks, Open Space, and Recreation Areas (18%), and remaining 16% is a mix of Vacant, Utilities, and Forestry. Ownership – Private (96%) and Public (4%).

SHORELINE MODIFICATIONS (MAP 16)

There are 125 docks/piers and one buoy mapped throughout the reach. According to 2006 aerial imagery there are several breakwaters, a boat launch and marinas in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential 5 Acres (67%), Rural Residential 20 Acres (25%), and remaining 8% is a mix of Rural Residential 10 Acres, Rural Tourist, and Long Term Commercial Forest. Comprehensive Plan Designations – 100% Rural. Existing SED – Rural 43%, Urban Residential (30%), and Conservancy (27%).

PUBLIC ACCESS (MAP 14)

The boat launch and associated parking at Camp Cushman, located near the mouth of Big Creek, are open to the public between Memorial Day and Labor Day weekends. The Skokomish Tribe owns the camp (Tacoma Power, 2011).

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show limited residential development and roads in the reach.

AREAS OF SPECIAL INTEREST

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

Lake Cushman Resort is a private camping resort that provides tent and RV sites and cabin rentals. The resort has a marina and fuel dock (Lake Cushman Resort, 2011).

CULTURAL AND ARCHAEOLOGICAL RESOURCES

The DAHP database lists two inventoried early historic sites and four inventoried pre-contact sites within this reach. The reach also includes the Cushman No. 1 Hydroelectric Power Plant, which is a registered historic site. Resource probability mapping suggests there is a moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

LAKE CUSHMAN - REACH 02

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
12.5 MI	1,396.6 AC	1,577.0 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 27% (48 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

No mapped hazard areas.

LAND COVER (MAP 15)

1% developed, 73% open water, 11% playa, 11% forest, 1% sand prairie, 4% wetland (GAP, 2009)

Riparian vegetation: 7% forest cover, 1% non-forest, 3% other natural vegetation, 88% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, coho salmon, Dolly Varden/bull trout, kokanee salmon, rainbow trout, sockeye salmon, summer steelhead, winter steelhead trout; Critical habitat for Chinook salmon, Dolly Varden/bull trout; harlequin duck, marbled murrelet, northern spotted owl; Wetlands -- 8.8 acres (5% of reach); wetland habitats include lacustrine aquatic bed, littoral flat; palustrine emergent, forested, and scrub-shrub

PHYSICAL AND ECOLOGICAL FEATURES

WATER QUALITY (MAP 13)

Not sampled for Ecology's 303(d) list; subject to the Settlement Agreement for the Cushman Relicensing Project signed by Tacoma Power in 2009; a water quality enhancement plan will be developed to enhance downstream habitats for fish and wildlife; dissolved nitrogen gases will be monitored at the outfalls and spillways to ensure that dissolved gases are within state standards; found to meet a 303 (d) Category 2 listing for dioxin toxic equivalency quantity (TEQ) in fish tissue; exhibits distinct temperature stratification during summer months

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Utilities (83%). remaining 17% is a mix of Vacant and Residential. Ownership – Private (94%) and Public (6%).

SHORELINE MODIFICATIONS (MAP 16)

There are 5 fill areas, 2 upland bridges, and Dry Creek Trail bridge that crosses the lake at the north end of the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – County: Rural Residential: 20 Acres (58%), 5 Acres and 10 Acres (19%), remaining 3% is Olympic National Park and Olympic National Forest. US Forest Service: Olympic National Forest (14%), and Rural Residential 20 Acres (6%). Comprehensive Plan Designations – Rural (84%), remaining 16% is Olympic National Forest and Olympic National Park. Existing SED – County: Rural (51%) and Natural (29%). US Forest Service: 20% Natural.

PUBLIC ACCESS (MAP 14)

There are over 4,700 feet of Department of Natural Resources (DNR) trails mapped throughout the reach.

IMPERVIOUS SURFACES (MAP 16)

1.3% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested. SR 119 runs parallel to the lake shore within the northern part of 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.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

LAKE KOKANEE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
5.6 MI	105.3 AC	244.1 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 28% (38 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

49.5% landslide

LAND COVER (MAP 15)

30% open water, 67% forest, 3% floodplain/riparian (GAP, 2009)

Riparian vegetation: 47% forest cover, 3% non-forest, 3% other natural vegetation, 47% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, fall Chinook salmon, fall chum salmon, coho salmon, Dolly Varden/bull trout, rainbow trout, sockeye salmon, summer steelhead, winter steelhead trout; Critical habitat for Chinook salmon, Dolly Varden/bull trout; osprey; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not sampled for Ecology's 303(d) list; subject to the Settlement Agreement for the Cushman Relicensing Project signed by Tacoma Power in 2009; a water quality enhancement plan will be developed to enhance downstream habitats for fish and wildlife; dissolved nitrogen gases will be monitored at the outfalls and spillways to ensure that dissolved gases are within state standards

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Parks, Open Space, and Recreation Areas (42%); Utilities (22%), Residential (18%); Vacant (17%) and Forestry (2%). Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential 5 Acres (80%), remaining 20% is a mix of Rural Residential 20 Acres and Long Term Commercial Forest. Comprehensive Plan Designations – Rural (93%) and Long Term Commercial Forest (7%).

Existing SED – Urban Residential (52%) and Natural (48%).

PUBLIC ACCESS (MAP 14)

There is a WDFW boat launch that provides access to Lake Kokanee. The boat launch is a 10-foot wide concrete launch (Washington Department of Fish and Wildlife WDFW Lands, 2011).

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show limited residential development in the reach.

AREAS OF SPECIAL INTEREST

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

CULTURAL AND ARCHAEOLOGICAL RESOURCES

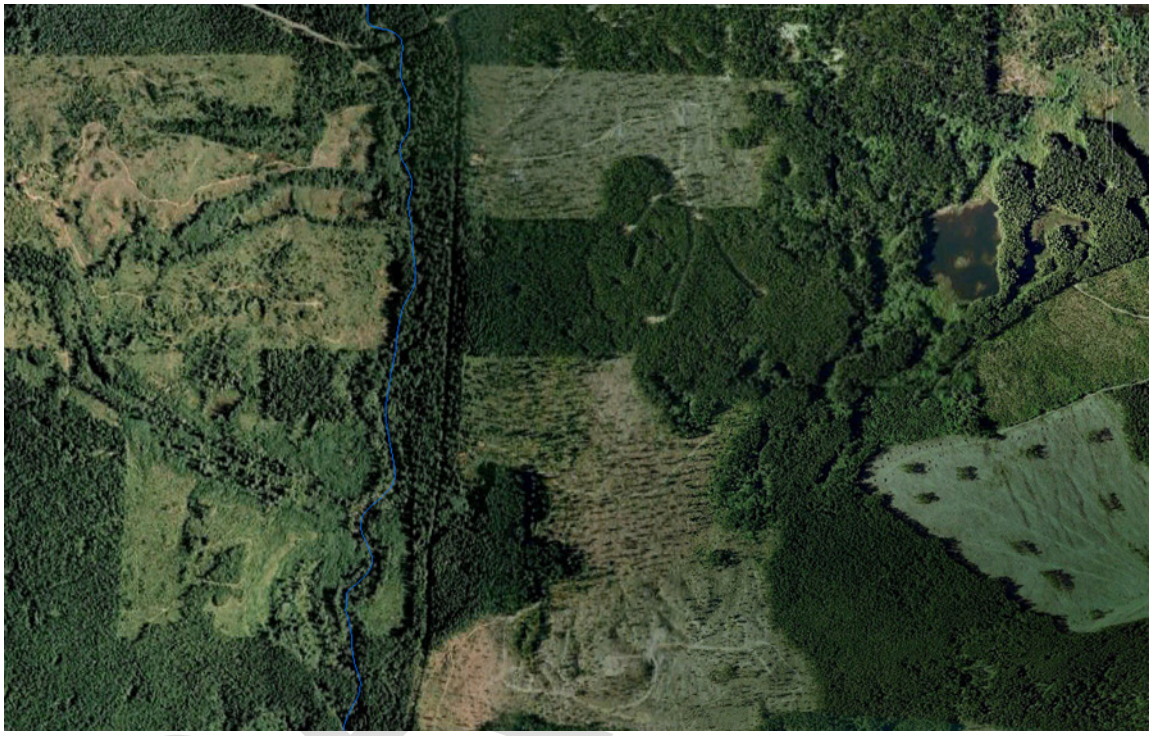
The reach includes a portion of the Cushman No. 2 Hydroelectric Power Plant, which is a registered historic site. Resource probability mapping suggests there is a moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

BIG CREEK - REACH 01

SHORELINE LENGTH	REACH AREA
1.3 MI	65.1 AC



PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach.

HAZARD AREAS (MAP 12)

31.6% landslide

LAND COVER (MAP 15)

28% forest, 72% floodplain/riparian (GAP, 2009)

Riparian vegetation: 74% forest cover, 26% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout, coho salmon, Dolly Varden/bull trout, kokanee salmon, sockeye salmon, summer steelhead, winter steelhead trout; elk; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (80%) and Parks, Open Space, and Recreation Areas (20%). Ownership – Private (67%) and Public (33%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential 20 Acres (80%) and Long Term Commercial Forest (20%) Comprehensive Plan Designations – Rural (80%) and Long Term Commercial Forest (20%).

Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Camp Cushman, located at the mouth of Big Creek, provides public access to a boat launch and associated parking between Memorial Day and Labor Day weekends. Camp Cushman is owned by the Skokomish Tribe (Tacoma Power, 2011).

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forest land with a few forest roads.

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)

KEY MANAGEMENT ISSUES

DRY CREEK 02 - REACH 01

SHORELINE LENGTH	REACH AREA
0.6 MI	27.7 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach

HAZARD AREAS (MAP 12)

No mapped hazard areas.

LAND COVER (MAP 15)

88% forest, 12% floodplain/riparian (GAP, 2009)

Riparian vegetation: 84% forest cover, 16% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Marbled murrelet, northern spotted owl; No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (80%) and Parks, Open Space, and Recreation Areas (20%). Ownership – Private (67%) and Public (33%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – US Forest Service: Rural Residential 20 Acres (69%) and Olympic National Forest (31%). Comprehensive Plan Designations – Rural (69%) and Olympic National Forest (31%). Existing SED – 100% Rural.

PUBLIC ACCESS (MAP 14)

About 210 feet of DNR trails are mapped in the northeast portion of the reach.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forest land.

AREAS OF SPECIAL INTEREST

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

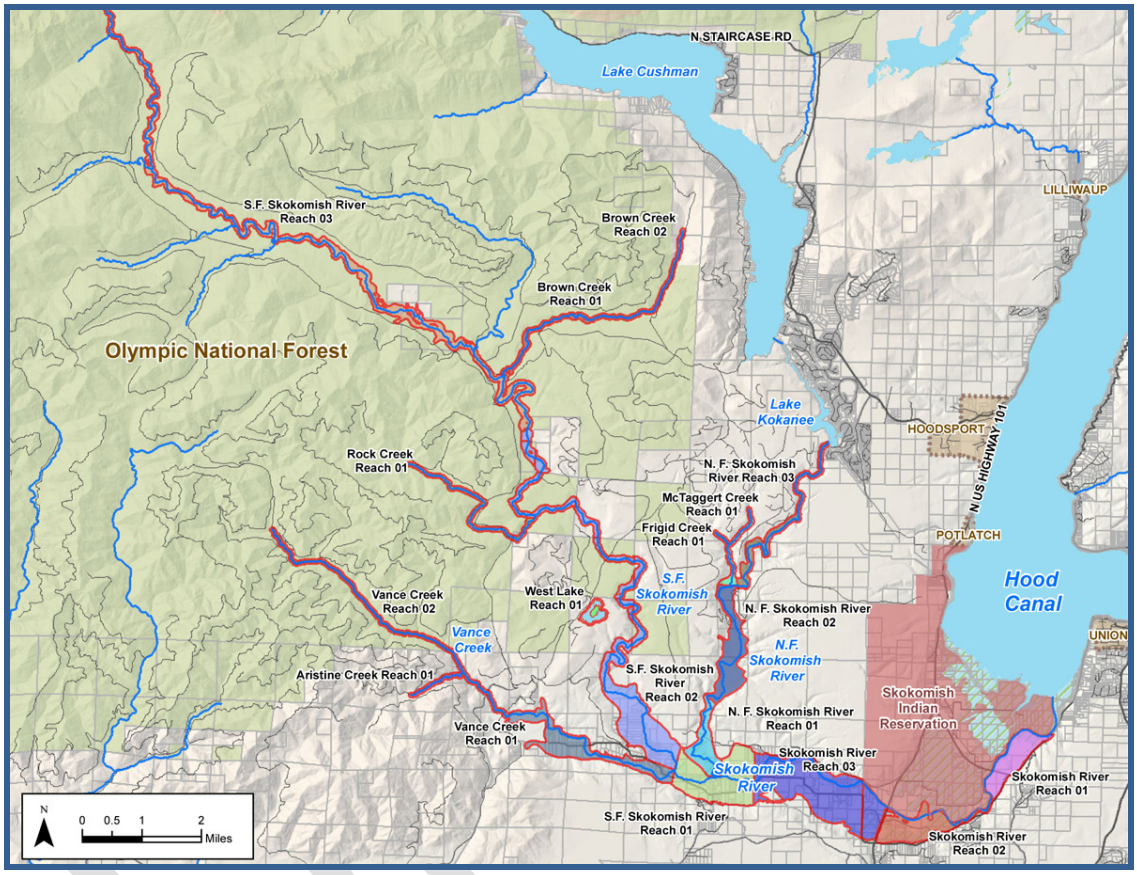
CULTURAL AND ARCHAEOLOGICAL RESOURCES

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

8.4 Skokomish River and Tributaries (North Fork, McTaggert, Frigid Creek, South Fork, West Lake, Brown Creek, Vance Creek, Aristine Creek)



This section describes Skokomish River and its shoreline tributaries within Mason County jurisdiction. Therefore, this section describes a total of 38.1 miles of river and lake designated as shorelines of the state within the Skokomish River sub-basin. Reach sheets are provided for Skokomish River, North Fork and South Fork Skokomish Rivers, McTaggert Creek, Frigid Creek, Brown Creek, West Lake, Vance Creek and Aristine Creek.

While shorelines outside of the County lands in National Forest are part of the inventory, no reach sheets have been provided for these streams or sections of streams. Streams in National Forest lands are therefore only generally described; these streams are a portion of South Fork Skokomish River (Reach 3 only), a portion of Brown Creek (Reach 1 only), Lebar Creek, Cedar Creek, Pine Creek, Church Creek, Rule Creek, South Fork Skokomish River Unnamed Tributary, Rock Creek and a portion of Vance Creek (Reach 2 only).

8.4.1 Physical Characterization and Modifications

The Skokomish River empties to The Great Bend of Hood Canal and is the largest river system draining to the canal. At its mouth, the river has created a large subestuary and intertidal delta in the Hood Canal Basin (Correa, 2003). The watershed is approximately 240 square miles, with 80 miles of mainstem and more than 260 miles of tributaries (WDFW and PNPTT 2000). The mainstem extends from the mouth to river mile 9.0 (Correa, 2003), where the river splits into the North Fork and South Fork Skokomish River.

The North Fork is a continuance of the mainstem and drains through Lake Cushman and Lake Kokanee (Correa, 2003). McTaggert Creek is a tributary to the North Fork at river mile 13.3 and extends approximately 5.6 miles (Correa, 2003). Frigid Creek is a tributary to McTaggert Creek. Logging is common on the lands adjacent to both tributaries.

The South Fork is the largest tributary to the river at 27.5 miles (Correa, 2003). West Lake is a tributary that is located west of the South Fork and drains to the lower portion of the reach. Brown Creek is one of the tributaries to the South Fork that is located upstream of the confluence with West Lake. Only a small reach of Brown Creek is located outside of the National Forest and is covered in this section. Vance Creek is the largest tributary to the South Fork and is located just upstream of the confluence of the North Fork and South Fork Skokomish. Logging and agriculture are common on lands adjacent to Vance Creek. Aristine Creek is a tributary to Vance Creek, merging with Vance Creek at the upstream portion of the reach. Aristine Creek drains Haven Lake. Logging is common on lands adjacent to the South Fork and waterbodies associated with the river.

Hydropower production, timber, and agriculture uses dominate the watershed. Channelization of the mainstem for agriculture and residential development, limited flows on the North Fork due to dams, and extensive timber harvest on the South Fork have greatly impacted the rivers, increasing aggradation beyond natural conditions (Correa, 2003). There are no known artificial barriers to fish migration in the mainstem; however, numerous culverts are located on all waterbodies discussed above.

The Skokomish River and its tributaries have been extensively altered. Barriers, channelization, loss of riparian habitat and sediment build-up (aggradation) have occurred along the main stem. A majority of the main stem river has been diked and channelized resulting in a reduction of side channel habitat. Over half of the mainstem is sparsely vegetated and cleared for agriculture. Some of the process modifications include:

- Logging practices resulting in downstream sedimentation;
- Water diversion/storage use affecting stream flow and reducing salmonid habitat values;
- Adjacent residential development;
- Agricultural practices;
- Pier, ramps, and floats;
- Culverts and other structures that alter flow regime;
- Excessive sedimentation;
- Fill and bank armoring; and
- Conversion of pervious to impervious surfaces.

8.4.2 Water Quality

The Skokomish River is on the 303(d) list of impaired waterbodies (Category 5 water) for fecal coliform bacteria (Ecology, 2008). Several impaired reaches are outside of Mason County's shoreline jurisdiction; however, one impaired reach is located near the mouth of the river. Category 5 waters require the preparation of a TMDL to address water quality concerns for that parameter. A TMDL has been established for the Skokomish River for fecal coliform bacteria.

A TMDL has been established for Reaches 1 through 3 of the North Fork Skokomish River for the temperature parameter. In addition, Reach 3 of the North Fork Skokomish River is designated as Category 4C water for instream flow. Category 4C waters indicate impairment by a non-pollutant (Ecology, 2008). North fork tributaries, McTaggert and Frigid Creeks, are not identified as having water quality problems at this time.

Reach 2 of the South Fork Skokomish River, immediately upstream of the confluence with Rock Creek, is on the 303(d) list of impaired waterbodies (Category 5 water) for temperature (Ecology, 2008). Category 5 waters require the preparation of a TMDL to address water quality concerns for that parameter. The South Fork Skokomish River also contains two Category 2 listings for temperature within Reach 3. Category 2 listings indicate some evidence of water quality problems associated with that parameter. Reach 1 of Lebar Creek, a tributary to the South Fork Skokomish River is also 303(d) listed for the temperature parameter. Other tributaries including Arstine, Vance, Rock, Brown, Cedar, Pine, Church, Rule, and an unnamed tributary have not been identified as having water quality problems at this time.

No water quality data or assessments were identified for West Lake and it is not included on Ecology's 303 (d) list of impaired waters.

8.4.3 Critical or Priority Habitat and Species

Skokomish River

Skokomish River is mapped as supporting many priority salmonid species (WDFW, 2010; Table 8-9).

Table 8-9. Priority fish species documented for Skokomish River Mainstem (Reaches 1, 2, and 3)

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon	*Oncorhynchus tshawytscha*	Known juvenile rearing (Reaches 2 and 3 only), Known spawning, and Presence/Migration	Threatened	Candidate
fall Chum salmon	*Oncorhynchus keta*	Known juvenile rearing (Reaches 2 and 3 only), Known spawning, and Presence/Migration	~	~
summer Chum salmon	*Oncorhynchus keta*	Presence/Migration	Threatened	Candidate
Coho salmon	*Oncorhynchus kisutch*	Known juvenile rearing (Reach 1 only), Known spawning, and Presence/Migration	Concern	~
Dolly Varden/Bull trout	*Salvelinus confluentus*	Presence/Migration	Threatened	Candidate
Pink salmon	*Oncorhynchus gorbuscha*	Known juvenile rearing (Reaches 1 and 2 only), Known spawning, and Presence/Migration	~	~
Sockeye salmon	*Oncorhynchus nerka*	Presence/Migration	~	~
summer Steelhead trout	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~
winter Steelhead trout	*Oncorhynchus mykiss*	Known juvenile rearing (Reach 1 only), Known spawning, and Presence/Migration	Threatened	~

Historically, the river produced the largest runs of salmon and steelhead in Hood Canal, primarily in the North Fork, but these runs have been impacted due to development. The fluvial-type of sockeye salmon are present in the river mainstem, but the population is not considered viable (Erickson and Gulick, 2006).

Critical habitat has been designated for the Puget Sound ESU Chinook salmon, the Hood Canal ESU summer-run chum salmon, and Coastal-Puget Sound DPS Dolly Varden/bull trout for all reaches of the Skokomish River (USFWS, 2005 and 2010; Table 8-10).

Table 8-10. Critical habitat for Chinook salmon, summer-run chum salmon, and Dolly Varden/bull trout in Skokomish River

Stream	Reach	Species Common Name	Scientific Name
Skokomish River	01	Chinook salmon, summer-run chum salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, O. keta, Salvelinus confluentus*
Skokomish River	02	Chinook salmon, summer-run chum salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, O. keta, Salvelinus confluentus*
Skokomish River	03	Chinook salmon, summer-run chum salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, O. keta, Salvelinus confluentus*

Approximately 105.1 acres (representing 29.4 percent of the reach) of wetland are mapped in Reach 1, 230.4 acres (64.4 percent of the reach) in Reach 2, and 190.3 acres (20.5 percent of the reach) in Reach 3, all within the Mason County shoreline jurisdiction of the river (NWI, 1989). The following priority habitats or species are mapped in the vicinity of the river: bald eagle buffer in all reaches, estuarine zone and waterfowl concentrations in Reach 1, fisher in Reaches 2 and 3, and bald eagle, harlequin duck, and wood duck in Reach 3 (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Skokomish River shoreline planning area (WNHP, 2009).

North Fork Skokomish

The North Fork Skokomish River supports the same ten species of priority salmonids as shown in the main stem river listed in Table 8-9 (WDFW, 2010). The early spawning Chinook salmon group is extinct in the North Fork Skokomish River. Efforts are currently underway to restore this group in the river system (Skokomish

Indian Tribe and WDFW, 2010). Reticulate sculpin, a priority fish species, is also mapped in Reach 2 of the river (WDFW, 2010).

Critical habitat has been designated for the Puget Sound ESU Chinook salmon and Coastal-Puget Sound DPS Dolly Varden/bull trout for all reaches of the Skokomish River (USFWS, 2005 and 2010; Table 8-12).

Table 8-11. Critical habitat for Chinook salmon and Dolly Varden/bull trout in North Fork Skokomish River

Stream	Reach	Species Common Name	Scientific Name
N.F. Skokomish River	01	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*
N.F. Skokomish River	02	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*
N.F. Skokomish River	03	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*

Approximately 86.4 acres (representing 37.1 percent of the reach) of wetland in Reach 1 and 4.9 acres (2.0 percent of the reach) of wetland in Reach 3 are mapped within the Mason County shoreline jurisdiction of the river (NWI, 1989). The following priority habitats or species are mapped in the vicinity of the river: bald eagle buffer, bald eagle, harlequin duck, and Roosevelt elk in Reaches 1 and 2 (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the North Fork Skokomish River shoreline planning area (WNHP, 2009).

McTaggert Creek

McTaggert Creek is mapped as supporting many priority salmonid species (WDFW, 2010; Table 8-13).

Table 8-12. Priority fish species documented for McTaggert Creek and Frigid Creek

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon (McTaggert Creek only)	*Oncorhynchus tshawytscha*	Known spawning and Presence/Migration	Threatened	Candidate
fall Chum salmon (McTaggert Creek only)	*Oncorhynchus keta*	Known spawning and Presence/Migration	~	~
summer Chum salmon (McTaggert Creek only)	*Oncorhynchus keta*	Presence/Migration	Threatened	Candidate
Coho salmon	*Oncorhynchus kisutch*	Known spawning (McTaggert Creek only) and Presence/Migration	Concern	~
Dolly Varden/Bull trout	*Salvelinus confluentus*	Presence/Migration	Threatened	Candidate
Sockeye salmon (McTaggert Creek only)	*Oncorhynchus nerka*	Presence/Migration	~	~
summer Steelhead trout (McTaggert Creek only)	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~
winter Steelhead trout	*Oncorhynchus mykiss*	Known spawning (McTaggert Creek only) and Presence/Migration	Threatened	~

Critical habitat has been designated for the Puget Sound ESU Chinook salmon and Coastal-Puget Sound DPS Dolly Varden/bull trout in McTaggert Creek (USFWS, 2005 and 2010; Table 8-14).

Table 8-13. Critical habitat for Chinook salmon and Dolly Varden/bull trout in McTaggert Creek

Stream	Reach	Species Common Name	Scientific Name
McTaggert Creek	01	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*

Approximately 1.9 acres of wetland, representing 2.1 percent of the reach, are mapped in the Mason County Shoreline jurisdiction of the stream (NWI, 1989). No priority habitats or species are mapped in the vicinity of the stream (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the McTaggert Creek shoreline planning area (WNHP, 2009).

Frigid Creek

Several priority salmonid species are mapped as occurring in Frigid Creek (WDFW, 2010; Table 8.4.4). No wetlands are mapped within the Mason County shoreline jurisdiction of the stream (NWI, 1989). No priority habitats or wildlife species occurrences have been mapped in the vicinity of the stream (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Frigid Creek shoreline planning area (WNHP, 2009).

South Fork Skokomish River

Similar to the North Fork, the South Fork Skokomish River supports all of the same priority salmonid species (WDFW, 2010; Table 8-9). In addition, rainbow trout is known to occur in Reach 2. Three races of native salmonids (spring Chinook, pink, and early chum salmon) that utilize the South Fork Skokomish River have been nearly extirpated and fall spawning species (coho, chum, and fall Chinook) are at risk due to limited habitat availability (WDNR, 2004). Efforts are currently underway to restore the early timed spawning Chinook salmon group in the river system (Skokomish Indian Tribe and WDFW, 2010).

Critical habitat has been designated for the Puget Sound ESU Chinook salmon and Coastal-Puget Sound DPS Dolly Varden/bull trout in South Fork Skokomish River (USFWS, 2005 and 2010; Table 8-16).

Table 8-14. Critical habitat for Chinook salmon and Dolly Varden/bull trout in South Fork Skokomish River

Stream	Reach	Species Common Name	Scientific Name
South Fork Skokomish River	01	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*
South Fork Skokomish River	02	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*

Approximately 118 acres (19.5 percent of the reach) of wetland are mapped in Reach 1 and 257 acres (22.2 percent of the reach) are mapped in Reach 2, within the Mason County shoreline jurisdiction of the river (NWI, 1989). Priority habitat and species occurrences mapped in the vicinity of the river include: bald eagle buffer and harlequin duck in Reaches 1 and 2, bald eagle and Roosevelt elk in Reach 1, and Cascade frog and elk in Reach 2 (WDFW, 2010). Marbled murrelet is mapped in Reach 2 (USFWS, 2009 and 2010; WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the South Fork Skokomish River shoreline planning area (WNHP, 2009).

Brown Creek

Several priority salmonid species are mapped in Brown Creek (WDFW, 2010; Table 8-17).

Table 8-15. Priority fish species documented for Brown Creek

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
Dolly Varden/Bull trout	*Salvelinus confluentus*	Presence/Migration	Threatened	Candidate
Rainbow trout	*Oncorhynchus mykiss*	Presence/Migration	~	~

Critical habitat has been designated for Coastal-Puget Sound DPS Dolly Varden/bull trout in Brown Creek (USFWS 2010; Table 8-18).

Table 8-16. Critical habitat for Dolly Varden/bull trout in Brown Creek

Stream	Reach	Species Common Name	Scientific Name
Brown Creek	02	Dolly Varden/bull trout	*Salvelinus confluentus*

Approximately 0.9 acre (2.9 percent of the reach) of wetland is mapped in Reach 2 within the Mason County shoreline jurisdiction of the stream (NWI, 1989). No priority habitats or species occurrences are mapped in the vicinity of Reach 2 of the stream and the NHP has not identified any priority plant species or vegetation communities within the Brown Creek shoreline planning area (WDFW, 2010; WNHP, 2009).

West Lake

There are no documented priority salmonids in West Lake (WDFW, 2010). Approximately 24.3 acres (49.6 percent of the reach) of wetland are mapped in the Mason County shoreline jurisdiction of the lake (NWI, 1989). No priority habitats or species occurrences are mapped in the vicinity of the lake and the NHP has not identified any priority plant species or vegetation communities within the West Lake shoreline planning area (WDFW, 2010; WNHP, 2009).

Vance Creek

Vance Creek is mapped as supporting many priority salmonid species (WDFW, 2010; Table 8-19).

Table 8-17. Priority fish species documented for Vance Creek and Aristine Creek

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	Presence/Migration	~	~
fall Chinook salmon (Vance Creek only)	*Oncorhynchus tshawytscha*	Known spawning and Presence/Migration	Threatened	Candidate
fall Chum salmon (Vance Creek only)	*Oncorhynchus keta*	Known juvenile rearing, Known spawning, and Presence/Migration	~	~

Common Name	Scientific Name	Habitat Use	Federal Listing	State Listing
summer Chum salmon (Vance Creek only)	*Oncorhynchus keta*	Presence/Migration	Threatened	Candidate
Coho salmon	*Oncorhynchus kisutch*	Known juvenile rearing, Known spawning (Vance Creek only), and Presence/Migration	Concern	~
Dolly Varden/Bull trout (Vance Creek only)	*Salvelinus confluentus*	Presence/Migration	Threatened	Candidate
Pink salmon	*Oncorhynchus gorbuscha*	Known spawning and Presence/Migration	~	~
Rainbow trout (Vance Creek only)	*Oncorhynchus mykiss*	Presence/Migration	~	~
Sockeye salmon (Vance Creek only)	*Oncorhynchus nerka*	Presence/Migration	~	~
summer Steelhead trout (Vance Creek only)	*Oncorhynchus mykiss*	Presence/Migration	Threatened	~
winter Steelhead trout	*Oncorhynchus mykiss*	Known spawning (Vance Creek only) and Presence/Migration	Threatened	~

Reticulate sculpin and riffle sculpin, priority fish species, are also mapped in Vance Creek (WDFW, 2010).

Critical habitat has been designated for the Puget Sound ESU Chinook salmon and Coastal-Puget Sound DPS Dolly Varden/bull trout for Vance Creek (USFWS, 2005 and 2010; Table 8.-20).

Table 8-18. Critical habitat for Chinook salmon and Dolly Varden/bull trout in Vance Creek

Stream	Reach	Species Common Name	Scientific Name
Vance Creek	01	Chinook salmon, Dolly Varden/bull trout	*Oncorhynchus tshawytscha, Salvelinus confluentus*

Approximately 80.4 acres, representing 14.2 percent of the reach, of wetland is mapped within the Mason County shoreline jurisdiction of the stream (NWI, 1989). A priority species occurrence for harlequin duck is mapped in the vicinity of the stream (WDFW, 2010). The NHP has not identified any priority plant species or vegetation communities within the Vance Creek shoreline area (WNHP, 2009).

Aristine Creek

Several priority salmonid species are mapped in Aristine Creek (WDFW, 2010; Table 8.4.9). No wetlands are mapped in the Mason County shoreline jurisdiction of the stream (NWI, 1989). No priority habitats or species occurrences are mapped in the vicinity of the lake and the NHP has not identified any priority plant species or vegetation communities within the Aristine Creek shoreline planning area (WDFW, 2010; WNHP, 2009).

8.4.4 Land Use

Land uses along Skokomish River are a mix of agriculture and vacant lands with some residential use located in the uppermost reach. There are two WDFW boat launches that provide access to the river. Both boat launches are gravel bars. The boat launch in the uppermost reach has parking facilities and is associated with a 64 acre park (Washington Department of Fish and Wildlife WDFW Lands, 2011; Mason County Department of Parks and Trails, 2006).

North Fork Skokomish River, McTaggert Creek, Frigid Creek, West Lake and Aristine Creek are predominately in forestry land use. No public access is available to these shorelines.

South Fork Skokomish River has a mix of forestry, agriculture, vacant, and residential land uses. National Forest Develop Rd 2353 provides access to Brown Creek Campground in the Olympic National Forest; located at the confluence between Brown Creek and S.F. Skokomish River Reach 03 (US Forest Service Recreational Opportunities and Distance Map; 2011).

Land use in the National Forest along South Fork Skokomish River Reach 3 is mostly vacant. Land use along Rock Creek and Vance Creek Reach 2 is entirely in forestry use. Land use information is not available for Brown Creek Reach 1, Lebar Creek, Cedar Creek, Pine Creek, Church Creek, Rule Creek, and South Fork Skokomish River Unnamed Tributary.

8.4.5 Land Cover

Farming dominates the mainstem of the Skokomish River as do extensive floodplain and riparian areas. Highway 101 crosses a lower reach of the river. The shoreline of the North Fork Skokomish River is forested, except for the lower reach which is farmed with sparse forested riparian cover. McTaggert and Frigid creeks are heavily forested along their shorelines. Farming and spare residential development are on the banks of the South Fork Skokomish River, which has a very wide channel. Vance Creek is farmed on both banks and has a fairly wide channel with forested riparian cover. West Lake is undeveloped, but nearly surrounded by cleared land. Aristine Creek and Brown Creek have forested riparian corridors along most of their lengths. Logging is commonly practiced in the vicinity of most of these waterbodies.

8.4.6 Summary of Key Management Issues

PLACEHOLDER

8.4.7 Reach Analysis

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SKOKOMISH RIVER - REACH 01

SHORELINE LENGTH

1.7 MI

REACH AREA

300.2 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 99% (299 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain. Channel Migration Zone - 14% (43 acres) of the reach, including open water, is mapped as CMZ.

HAZARD AREAS (MAP 12)

4.9% erosion, 4.9% landslide

LAND COVER (MAP 15)

1% developed, 16% agriculture, 1% open water, 1% playa, 3% forest, 73% wetland, 5% floodplain/riparian (GAP, 2009)

Riparian vegetation: 19% forest cover, 49% non-forest, 21% other natural vegetation, 11% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands -- 72.0 acres (24.0% of reach); wetland habitat types include palustrine emergent, palustrine forested, palustrine scrub-shrub, and riverine tidal flat

WATER QUALITY (MAP 13)

A TMDL is in place to address water quality concerns for fecal coliform bacteria.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Agriculture (97%), remaining 3% is a mix of Transportation and Forestry. Ownership – Private (97%) and Public (3%).

SHORELINE MODIFICATIONS (MAP 16)

One road crossing exists in northeast portion of the reach: State Route 106.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Agriculture (97%) and Rural Residential 20 Acres (3%).Comprehensive Plan Designations – Agricultural Resource Lands (97%) and Rural Residential 20 Acres (3%). Existing SED – 100% Rural.

PUBLIC ACCESS (MAP 14)

Skokomish River Reach 1has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

1.5% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be mostly in pastureland, with limited rural residential development and SR 106.

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 pre-contact village site and one inventoried early historic site within this reach. Resource probability mapping suggests there is a moderate-low to moderate-high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

SKOKOMISH RIVER - REACH 02

SHORELINE LENGTH

1.4 MI

REACH AREA

357.9 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 92% (329 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain. Channel Migration Zone - 22% (80 acres) of the reach, including open water, is mapped as CMZ.

HAZARD AREAS (MAP 12)

6.8% erosion, 5.2% landslide

LAND COVER (MAP 15)

1% agriculture, 4% forest, 88% wetland, 7% floodplain/riparian (GAP, 2009)

Riparian vegetation: 49% forest cover, 7% non-forest, 37% other natural vegetation, 7% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands -- 203 acres (57% of reach); wetland habitat types include palustrine emergent, palustrine forested, palustrine scrub-shrub, and riverine upper perennial flat

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Vacant (84%), remaining 16% are a mix of Forestry, Commercial, and Residential. Ownership – Private (73%) and Public (27%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, State Route 101 crosses the river in the northern part of the reach. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential: 10 Acres (68%), Rural Residential 5 Acres (20%), and remaining 12% is a mix of Indian Reservation, Rural Residential 20 Acres, and Rural Natural Resource. Comprehensive Plan Designations – 100% Rural. Existing SED – 100% Rural.

PUBLIC ACCESS (MAP 14)

There is a WDFW boat launch that provides access to Skokomish River. Access is south of Skokomish River Bridge on the east side of Hwy 101. The launch type is a rough gravel bar (Washington Department of Fish and Wildlife WDFW Lands, 2011).

IMPERVIOUS SURFACES (MAP 16)

3.5% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be undeveloped forest and wetlands, with roads including SR 101.

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 within this reach. Resource probability mapping suggests there is a moderate-low probability of finding unknown artifacts within this reach, with small portions of the reach in moderate to moderate-high zones.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

SKOKOMISH RIVER - REACH 03

SHORELINE LENGTH

3.0 MI

REACH AREA

1,093.2 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 95% (1034 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain. Channel Migration Zone - 340% (31 acres) of the reach, including open water, is mapped as CMZ.

HAZARD AREAS (MAP 12)

7.7% erosion, 1.5% landslide

LAND COVER (MAP 15)

1% developed, 48% agriculture, 1% beach, 10% forest, 8% wetland, 32% floodplain/riparian (GAP, 2009)

Riparian vegetation: 26% forest cover, 57% non-forest, 14% other natural vegetation, 3% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands - 127.8 acres (11.7% of reach); wetland habitat types include palustrine emergent, palustrine forested, palustrine scrub-shrub, and riverine upper perennial flat

WATER QUALITY (MAP 13)

A TMDL is in place to address water quality concerns for fecal coliform bacteria.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Agriculture (62%), Residential (16%) Vacant (14%), remaining 8% are a mix of Forestry, Aquaculture, and Parks, Open Space, and Recreation Areas. Ownership – Private (95%) and Public (5%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, there are overhead electrical transmission lines that cross the river. No other mapped shoreline modifications are found in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Agricultural Resource Lands (65%), Rural Residential 20 Acres (21%), and remaining 14% is a mix of Rural Residential 10 Acres, Rural Residential 20 Acres, and Long Term Commercial Forest. Comprehensive Plan Designations – Agricultural Resource Lands (65%), Rural (33%), and Long Term Commercial Forest (2%). Existing SED – 100% Rural.

PUBLIC ACCESS (MAP 14)

There is a Washington Department of Fish and Wildlife (WDFW) boat launch in the northern part of the reach that provides access to Skokomish River. The boat launch is gravel bar with about 31 feet of riverfront access. The total park size is 64 acres. Parking facilities are available (Washington Department of Fish and Wildlife WDFW Lands, 2011; Mason County Department of Parks and Trails, 2006).

IMPERVIOUS SURFACES (MAP 16)

2.3% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be largely agricultural with scattered rural residential development.

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 five inventoried early historic sites within this reach. Resource probability mapping suggests there is a moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

NORTH FORK SKOKOMISH RIVER - REACH 01

SHORELINE LENGTH	REACH AREA
2.0 MI	232.9 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 85% (199 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain.

HAZARD AREAS (MAP 12)

15.4% erosion, 6.6% landslide

LAND COVER (MAP 15)

11% agriculture, 1% beach, 37% forest, 8% wetland, 44% floodplain/riparian (GAP, 2009)

Riparian vegetation: 26% forest cover, 45% non-forest, 23% other natural vegetation, 6% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands – 86.4 acres (37.1% of reach); wetland habitat types include palustrine emergent, palustrine forested, and river upper perennial flat

WATER QUALITY (MAP 13)

A TMDL is in place to address water quality concerns for temperature.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (98%) and Agriculture (2%). Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

According to 2009 aerial imagery, Sunnyside Road crosses the river in the middle of the reach. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Agricultural Resource Lands (87%) and Long Term Commercial Forest (13%). Comprehensive Plan Designations – Agricultural Resource Lands (87%) and Long Term Commercial Forest (13%). Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

North Fork Skokomish River Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the upper part of the reach to be forested, with agricultural land and roads in the lower part.

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 moderate-low to moderate-high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

NORTH FORK SKOKOMISH RIVER - REACH 02

SHORELINE LENGTH	REACH AREA
2.8 MI	390.5 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 78% (304 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

2.5% erosion, 25.5% landslide

LAND COVER (MAP 15)

60% forest, 2% wetland, 38% floodplain/riparian (GAP, 2009)

Riparian vegetation: 84% forest cover, 13% other natural vegetation, 2% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

A TMDL is in place to address water quality concerns for temperature.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

North Fork Skokomish River Reach 2 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested with a few forestry roads.

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 moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

NORTH FORK SKOKOMISH RIVER - REACH 03

SHORELINE LENGTH

4.1 MI

REACH AREA

246.0 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 36% (89 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain.

HAZARD AREAS (MAP 12)

0.3% erosion, 67.5% landslide

LAND COVER (MAP 15)

1% agriculture, 62% forest, 37% floodplain/riparian (GAP, 2009)

Riparian vegetation: 87% forest cover, 11% other natural vegetation, 2% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands – 3.6 acres (1.5% of reach); wetland habitat types include palustrine forested and palustrine scrub-shrub

WATER QUALITY (MAP 13)

A TMDL is in place to address water quality concerns for temperature. This reach has also been identified as a Category 4C water for being impaired by a non-pollutant (in-stream flow).

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (97%) and Utilities (3%).
Ownership – Private (98%) and Public (2%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Long Term Commercial Forest (82%), remaining 18% is a mix of Rural Residential: 20 Acres and Rural Residential 5 Acres.
Comprehensive Plan Designations – Long Term Commercial Forest (82%) and Rural (18%). Existing SED – 100% Natural.

PUBLIC ACCESS (MAP 14)

North Fork Skokomish River Reach 3 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested with a few forestry roads.

AREAS OF SPECIAL INTEREST

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

CULTURAL AND ARCHAEOLOGICAL RESOURCES

This reach includes the Cushman No. 2 Hydroelectric Power Plant, which is a registered historic site. Resource probability mapping suggests there is a moderate-low probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

McTAGGERT CREEK

SHORELINE LENGTH	REACH AREA
1.7 MI	92.4 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 24% (22 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain.

HAZARD AREAS (MAP 12)

21.8% erosion, 72.2% landslide

LAND COVER (MAP 15)

33% forest, 66% floodplain/riparian (GAP, 2009)

Riparian vegetation: 93% forest cover, 6% other natural vegetation, 1% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

McTaggert Creek Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested with a few forestry roads.

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)

KEY MANAGEMENT ISSUES

FRIGID CREEK

SHORELINE LENGTH	REACH AREA
0.3 MI	15.0 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach.

HAZARD AREAS (MAP 12)

100% landslide

LAND COVER (MAP 15)

60% forest, 40% floodplain/riparian (GAP, 2009)

Riparian vegetation: 100% forest cover (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – not designated.

PUBLIC ACCESS (MAP 14)

Frigid Creek Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested.

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 probability mapping suggests there is a very high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

SOUTH FORK SKOKOMISH RIVER - REACH 01

SHORELINE LENGTH

1.6 MI

REACH AREA

605.1 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 94% (569 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

14.6% erosion, 3.8% landslide

LAND COVER (MAP 15)

16% agriculture, 4% open water, 7% beach, 29% forest, 6% wetland, 37% floodplain/riparian (GAP, 2009)

Riparian vegetation: 41% forest cover, 29% non-forest, 27% other natural vegetation, 2% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands - 89.3 acres (14.8% of reach); wetland habitat types include palustrine emergent, palustrine forested, palustrine scrub-shrub, and riverine upper perennial flat

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (37%), Agriculture (28%), Vacant (22%), and Residential (12%). Ownership – Private (97%) and Public (3%).

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential 5 Acres (48%), Agricultural Resource Lands (40%), and remaining 12% is a mix of Long Term Commercial Forest and Industrial. Comprehensive Plan Designations – Rural (49%), Agricultural Resource Lands (41%), and Long Term Commercial Forest (10%). Existing SED – Conservancy (56%) and Rural (44%).

PUBLIC ACCESS (MAP 14)

South Fork Skokomish River Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

1.1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show a mixture of pastureland and forest in the reach, with some rural residential development and a small treatment plant.

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)

KEY MANAGEMENT ISSUES

SOUTH FORK SKOKOMISH RIVER - REACH 02

SHORELINE LENGTH

10.8 MI

REACH AREA

1,157.3 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 69% (799 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

14.7% erosion, 10.7% landslide

LAND COVER (MAP 15)

1% agriculture, 2% open water, 9% beach, 63% forest, 11% wetland, 13% floodplain/riparian (GAP, 2009)

Riparian vegetation: 49% forest cover, 15% non-forest, 29% other natural vegetation, 7% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands - 207.4 acres (17.9% of reach); wetland habitat types include palustrine emergent, palustrine scrub-shrub, and riverine upper perennial flat

WATER QUALITY (MAP 13)

303(d) listed for the temperature parameter, which requires the preparation of a TMDL to address water quality concerns for that parameter. .

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (46%), Residential (23%), Vacant (14%), and remaining 17% is a mix of Agriculture, Utilities, and Parks, Open Space, and Recreational Areas. Ownership – Private (73%) and Public (27%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2006 aerial imagery, a national forest road crosses the river. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – County: Long Term Commercial Forest (30%), Rural Residential 5 Acres (28%), and remaining 15% is a mix of Agricultural and Rural Residential 20 Acres. US Forest Service: 27% Olympic National Park. Comprehensive Plan Designations – County: Rural (33%), Long Term Commercial Forest (30%), and Agriculture Resources Lands (10%). US Forest Service: Olympic National Forest (27%). Existing SED – County: Conservancy (39%) and Natural (35%). US Forest Service: Conservancy (14%) and Natural (12%).

PUBLIC ACCESS (MAP 14)

S.F. Skokomish River Reach 02 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show forest in the upper part of the reach, with agriculture and rural residential development in the lower part.

AREAS OF SPECIAL INTEREST

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

CULTURAL AND ARCHAEOLOGICAL RESOURCES

This reach includes the High Steel Bridge, which is a registered historic site. 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

BROWN CREEK - REACH 02

SHORELINE LENGTH	REACH AREA
0.6 MI	31.3 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach.

HAZARD AREAS (MAP 12)

2.7% landslide

LAND COVER (MAP 15)

92% forest, 8% floodplain/riparian (GAP, 2009)

Riparian vegetation: 94% forest cover, 6% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

0.9 acres of riverine upper perennial flat wetland (2.9% of reach)

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Tax Exempt. Ownership – 100% Public.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Rural Residential 20 Acres. Comprehensive Plan Designations – 100% Rural. Existing SED – not designated.

PUBLIC ACCESS (MAP 14)

Brown Creek Reach 2 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 indicate that the reach is forested with a forestry road running parallel to the creek.

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.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

WEST LAKE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
1.9 MI	34.5 AC	83.6 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach

HAZARD AREAS (MAP 12)

No mapped hazard areas.

LAND COVER (MAP 15)

32% open water, 42% forest, 24% wetland, 2% floodplain/riparian (GAP, 2009)

Riparian vegetation: 32% forest cover, 12% other natural vegetation, 55% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands – 11.7 acres (23.8% of reach); wetland habitat types include palustrine emergent and palustrine forested

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – not designated.

PUBLIC ACCESS (MAP 14)

West Lake has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested and wetland.

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)

KEY MANAGEMENT ISSUES

VANCE CREEK - REACH 01

SHORELINE LENGTH

5.2 MI

REACH AREA

564.4 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 68% (384 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

14.4% erosion, 10.7% landslide

LAND COVER (MAP 15)

2% agriculture, 4% beach, 53% forest, 4% wetland, 37% floodplain/riparian (GAP, 2009)

Riparian vegetation: 58% forest cover, 20% non-forest, 20% other natural vegetation, water 2% (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands – 80.4 acres (14.2% of reach); wetland habitat types include palustrine emergent, palustrine forested, palustrine scrub-shrub, and riverine upper perennial flat

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Forestry (52%), Residential (28%), and remaining 20% is a mix of Agriculture and Vacant. Ownership –Private (75%) and Public (25%).

SHORELINE MODIFICATIONS (MAP 16)

According to 2006 aerial imagery, there are four road crossings: unnamed road, national forest road, and W. Skokomish Valley Rd (crosses creek twice), No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – Rural Residential 5 Acres (54%) and Long Term Commercial Forest (46%). Comprehensive Plan Designations – Rural (54%) and Long Term Commercial Forest (46%). Existing SED – 100% Conservancy.

PUBLIC ACCESS (MAP 14)

Vance Creek Reach 1 has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach is mapped as containing impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show the upper part of the reach to be forested, with agricultural and rural residential development in the lower part.

AREAS OF SPECIAL INTEREST

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

CULTURAL AND ARCHAEOLOGICAL RESOURCES

This reach includes the Vance Creek Bridge, which is a registered historic site. Resource probability mapping suggests there is a moderate to very high probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

ARISTINE CREEK

SHORELINE LENGTH	REACH AREA
1.0 MI	50.4 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 4% (2 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

23.1% landslide

LAND COVER (MAP 15)

92% forest, 7% floodplain/riparian (GAP, 2009)

Riparian vegetation: 67% forest cover, 2% non-forest, 31% other natural vegetation (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

No wetlands are mapped in this reach.

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters..

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – 100% Forestry. Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

No shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts – 100% Long Term Commercial Forest. Comprehensive Plan Designations – 100% Long Term Commercial Forest. Existing SED – not designated.

PUBLIC ACCESS (MAP 14)

Aristine Creek Reach 1has no formal public access or park facilities.

IMPERVIOUS SURFACES (MAP 16)

No impervious surfaces are mapped in this reach (NOAA CCAP, 2006). Aerial photos from 2009 show the reach to be forested.

AREAS OF SPECIAL INTEREST

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

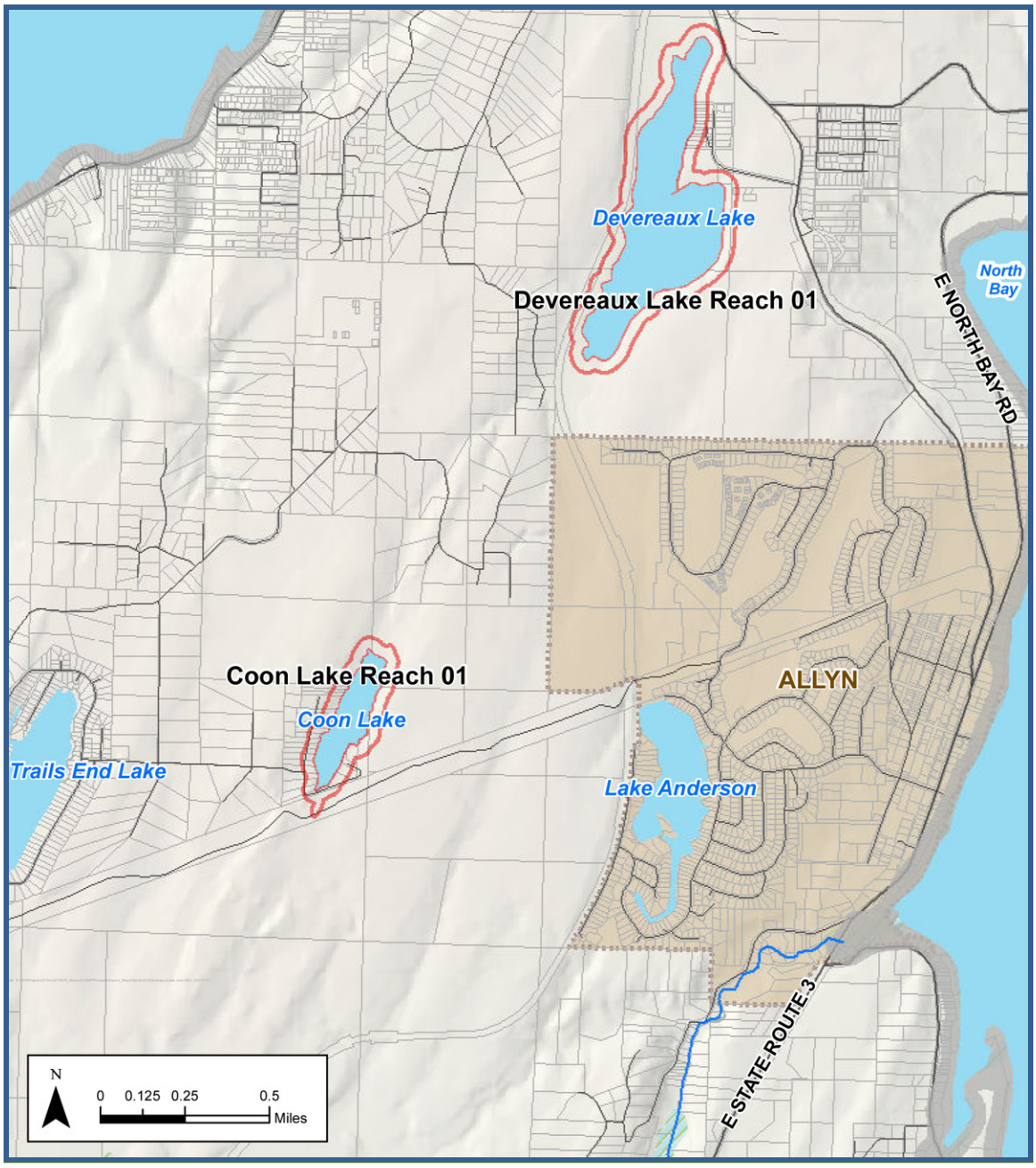
CULTURAL AND ARCHAEOLOGICAL RESOURCES

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

OPPORTUNITY AREAS (MAP 23)

KEY MANAGEMENT ISSUES

8.5 Devereaux Lake and Coon Lake



8.5.1 Physical Characterization and Modifications

Two lakes near Allyn, listed from north to south include Devereaux Lake and Coon Lake. Devereaux and Coon Lake cover an area of approximately 98 and 20 acres respectively. Coon Lake has a relatively small drainage area whereas a significant portion of the West Drainage Basin of the Allyn Urban Growth Area drains into Devereaux Lake (Otak, 2007).

The areas around Devereaux and Coon Lake have been modified by development to varying degrees. Some of the process modifications include:

- Land conversion from pervious to impervious surfaces:
  - Overwater structures found along portions of the shoreline, primarily for recreational use
  - Shoreline areas are mostly surrounded by trees and parks; and
- Logging adjacent to lakes.

8.5.2 Water Quality

Devereaux Lake and Coon Lake are not included on Ecology's 303 (d) list of impaired waters (Ecology, 2008). No other water quality assessments or aquatic plant management plans were identified for these lakes. Critical or Priority Habitat and Species

Devereaux Lake

Coastal cutthroat trout have been identified as occurring in Devereaux Lake (WDFW, 2010). Approximately 2.3 acres of wetland have been mapped along the lake, representing 3.7 percent of the reach (NWI, 1989). A common loon priority species occurrence is mapped in the vicinity of the lake (WDFW, 2010). The WDNR NHP has not identified priority plant species or vegetation communities within the Devereaux Lake shoreline planning area (WDNR, 2009).

Coon Lake

No priority salmon or trout species have been documented in Coon Lake (WDFW, 2010). Approximately 2.8 acres of wetland is mapped along the shoreline of the lake. This area represents 10.0 percent of the reach (NWI, 1989). No priority species occurrences have been mapped in the vicinity of the lake, and the WDNR NHP has not identified priority plant species or vegetation communities within the Coon Lake shoreline planning area (WDNR, 2009).

8.5.3 Land Use

Deveraux Lake has a small residential community with docks/piers in the northern part of the lake. There is also a WDFW public boat launch (Mason County Parks and Recreation Department, 2008). Coon Lake has limited residential development with docks/piers and a small private marina. Most of Deveraux and Coon Lakes are classified by Mason County assessor's data as open space.

8.5.4 Summary of Key Management Issues

PLACEHOLDER

8.5.5 Reach Analysis

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DEVEREAUX LAKE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
2.6 MI	98.1 AC	161.0 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - 48% (30 acres) of the reach, excluding open water, is mapped as FEMA 1% annual chance floodplain

HAZARD AREAS (MAP 12)

5% landslide

LAND COVER (MAP 15)

46% open water, 4% beach, 44% forest, 1% wetland, 4% floodplain/riparian (GAP, 2009).

Riparian vegetation: 35% forest cover, 4% non-forest, 8% other natural vegetation, 53% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Coastal cutthroat trout; common loon.

Wetlands – 2.3 acres of palustrine emergent wetland (3.7% of reach).

WATER QUALITY (MAP 13):

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use - Parks, Open Space, and Recreation Areas (73%); Transportation (11%); Vacant (11%); and remaining 6% is a mix of Forestry and Residential. Ownership – 100% Private.

Girl Scout Camp St. Albans (414 acres) on eastern shore.

SHORELINE MODIFICATIONS (MAP 16)

There is a public boat launch and some individual docks/piers associated with a residential community. No other shoreline modifications are mapped in the reach.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21)

Zoning districts –Rural Tourist (80%); Rural Residential 5 Acres (17%) and Rural Residential 10 Acres (3%). Comprehensive Plan Designations – 100% Rural.

Existing SED - Conservancy (94%) and Urban Residential (6%).

PUBLIC ACCESS (MAP 14)

There is a WDFW boat launch that provides access to Devereaux Lake. The boat launch is a 12-foot wide concrete launch. The total park size is about 1 acre (Washington Department of Fish and Wildlife WDFW Lands, 2011; Mason County Department of Parks and Trails, 2006). .

IMPERVIOUS SURFACES (MAP 16)

Less than 1% of the reach contains mapped impervious surfaces (NOAA CCAP 2006). Aerial photos from 2009 show a few single-family residences along the NE shoreline of the lake.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed facilities or 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 low to moderate probability of finding unknown artifacts within this reach.

OPPORTUNITY AREAS (MAP 23)

Work with Girl Scouts of Washington to identify restoration opportunities in Camp St. Alban.

KEY MANAGEMENT ISSUES

COON LAKE

SHORELINE PERIMETER	WATERBODY AREA	REACH AREA
1.0 MI	20.4 AC	48.3 AC

PHYSICAL AND ECOLOGICAL FEATURES

HYDROLOGY (MAPS 4 AND 10)

Floodplain - There is no mapped FEMA 1% annual chance floodplain for the reach

HAZARD AREAS (MAP 12)

No listed erosion or landslide areas.

LAND COVER (MAP 15)

18% open water, 11% beach, 63 % forest, 9% floodplain/riparian (GAP, 2009).

Riparian vegetation: 39% forest cover, 9% non-forest, 11% other natural vegetation, 41% water (PNPTC, 2011)

HABITATS AND SPECIES (MAP 8)

Wetlands – 2.8 acres of palustrine scrub-shrub wetland (10.0% of reach).

WATER QUALITY (MAP 13)

Not included on Ecology's 303 (d) list of impaired waters.

BUILT ENVIRONMENT AND LAND USE

EXISTING LAND USES AND OWNERSHIP (MAP 18)

Land Use – Parks, Open Space, and Recreation Areas (34%); Vacant (24%); Residential (23%); Forestry (13%); and Utilities (6%). Ownership – 100% Private.

SHORELINE MODIFICATIONS (MAP 16)

According to aerial imagery (2009), there are a few docks/piers present as well as a small, private marina. No other shoreline modifications are mapped.

ZONING AND COMPREHENSIVE PLAN DESIGNATIONS (MAP 21):

Zoning districts – County: Rural Residential 5 Acres (70%) and Rural Tourist (30%). Comprehensive Plan Designations – 100% Rural.

Existing SED – Not designated.

PUBLIC ACCESS (MAP 14):

There is no mapped public access to Coon Lake. The eastern shore contains a private recreational resort.

IMPERVIOUS SURFACES (MAP 16)

2.8% of the reach contains a low level of mapped impervious surfaces (NOAA CCAP, 2006). Aerial photos from 2009 show scattered single-family residences and roads, mainly along the south part of the lake shore.

AREAS OF SPECIAL INTEREST

According to the Ecology facilities/sites database, there are no listed facilities or 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 moderate-high to high probability of finding unknown artifacts within this reach,

OPPORTUNITY AREAS (MAP 23)

Protect intact forested riparian areas.

KEY MANAGEMENT ISSUES

8.6 Data Gaps

PLACEHOLDER