Shoreline Restoration Plan

for Shorelines in Skagit County and the Towns of Hamilton and Lyman

SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Prepared for:

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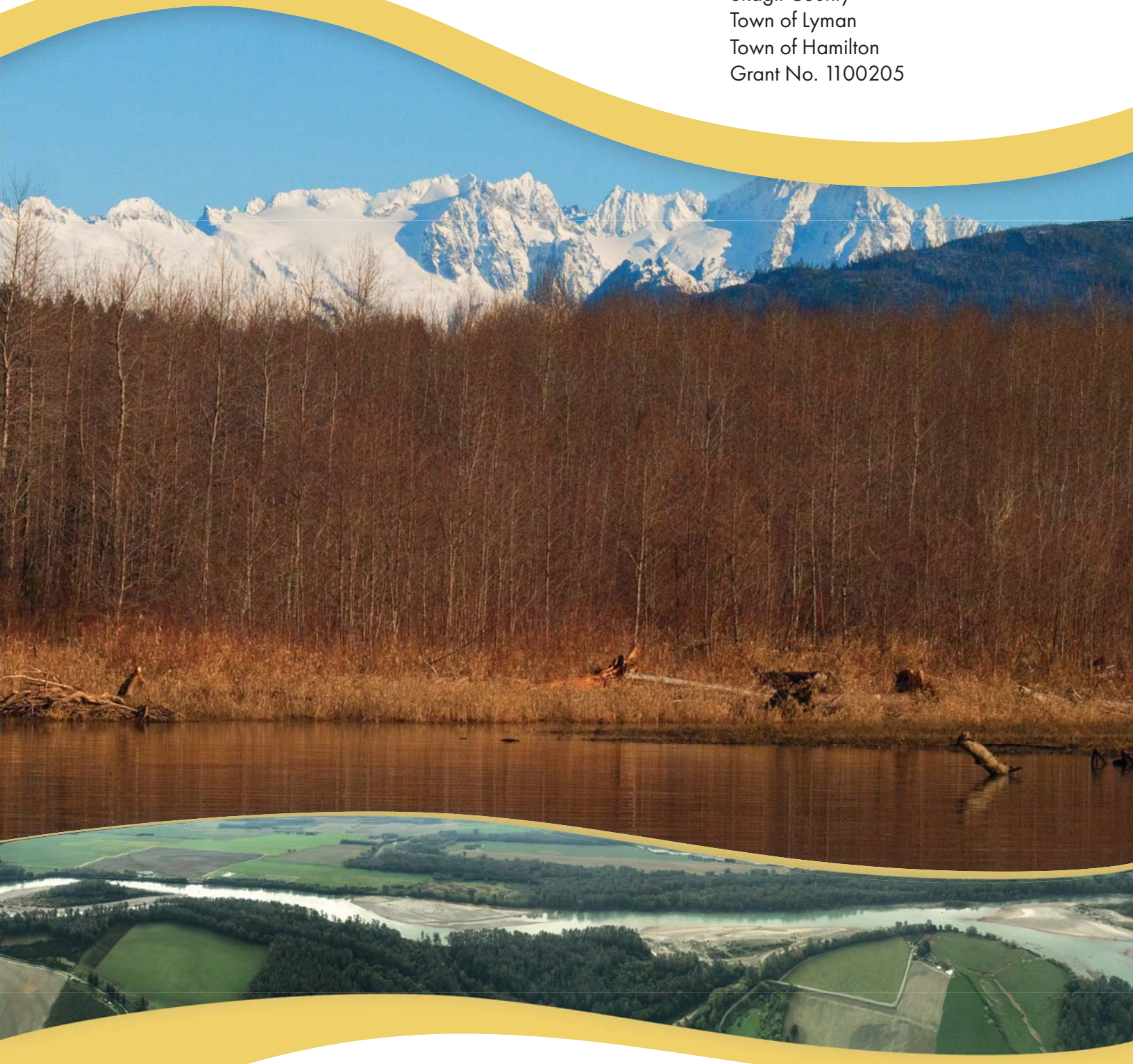

THE WATERSHED COMPANY

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SKAGIT COUNTY
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Shoreline Restoration Plan

for Shorelines in Skagit County and the Towns of Hamilton and Lyman

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1 INTRODUCTION

1.1 Purpose

The primary purpose of the Shoreline Restoration Plan is to plan for "overall improvements in shoreline ecological function over time, when compared to the status upon adoption of the master program" (WAC 173-26-201(2)(f)).

Secondarily, the Shoreline Restoration Plan may enable Skagit County and the Towns of Lyman and Hamilton to ensure that the minimum requirement of no net loss in shoreline ecological function is achieved on a County-wide basis, notwithstanding any shortcomings of individual projects or activities. By law, activities that have adverse effects on the ecological functions and values of the shoreline must be mitigated (WAC 173-26-201(2)(e)). Proponents of such activities are *individually* required to mitigate for impacts to the subject shoreline areas, or agreed upon off-site areas, to conditions equivalent in ecological function to the baseline levels at the time each activity takes place. However, some uses and developments, either new or ongoing, cannot always be mitigated in kind on an individual project basis. A new bulkhead, for example, can be compensated for but not truly mitigated in-kind unless an equivalent area of bulkhead is removed somewhere else. Other impacts may be sufficiently minor on an individual level, such that mitigation is not required, but are cumulatively significant. Additionally, unregulated activities (such as operation and maintenance of existing legal developments) may also degrade baseline conditions.

Finally, the Shoreline Master Program (SMP) applies only to activities in shoreline jurisdiction, yet activities upland of shoreline jurisdiction may have offsite impacts on shoreline functions. Thus, assembly of out-of-jurisdiction actions, programs and policies can be essential for understanding how shoreline jurisdiction fits into the larger watershed context. The latter is critical when establishing realistic goals and objectives for dynamic and highly inter-connected environments.

Together, these different project impacts – out of kind, de minimus, and out of jurisdiction – may result in cumulative, incremental, and unavoidable degradation of the overall baseline condition unless additional restoration of habitat function is undertaken. Accordingly, this Shoreline Restoration Plan is intended to be a source of ecological improvements implemented by the County, Towns, and other government agencies, developers, non-profit groups, and property owners inside and outside of shoreline jurisdiction to ensure no net loss of ecological function, and where possible achieve improvement of ecological function.

In addition to meeting the requirements of the Guidelines, this Restoration Plan is also intended to identify priority focal areas for future restoration and mitigation, support government and other organizations' applications for grant funding, and to identify the

various entities and their roles working within the County to enhance the environment. Many restoration planning efforts have been successfully completed or are underway in Skagit County. This plan will identify and, to the extent feasible, integrate those existing plans to provide a complete framework for conservation (including protection and restoration) of the County's shorelines.

1.2 Restoration Plan Requirements

This Restoration Plan has been prepared to meet the purposes outlined above, as well as specific requirements of the SMP Guidelines. Specifically, WAC Section 173-26-201(2)(f) of the Shoreline Master Program Guidelines (Guidelines)[1] says:

> "master programs shall include goals and policies that provide for restoration of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should make real and meaningful use of established or funded non-regulatory policies and programs that contribute to restoration of ecological functions, and should appropriately consider the direct or indirect effects of other regulatory or non-regulatory programs under other local, state, and federal laws, as well as any restoration effects that may flow indirectly from shoreline development regulations and mitigation standards."

1.3 Types of Restoration Activities

Restoration of shoreline areas, in relation to shoreline processes and functions, commonly refers to a range of methods including, but certainly not limited to, re-vegetation, removal of shoreline modifications such as levees or revetments, and improving fish passage opportunities. Consistent with Ecology's definition, use of the word "restore," or any variations, in this document is not intended to encompass actions that reestablish historic conditions. Instead, it encompasses a suite of strategies that can be approximately delineated into four categories:

- Creation (of a new resource)
- Restoration (of a converted or substantially degraded resource)
- Enhancement (of an existing degraded resource)
- Protection (of an existing high-quality resource).

[1] The Shoreline Master Program Guidelines were prepared by the Washington Department of Ecology and codified as WAC 173-26. The Guidelines translate the broad policies of the Shoreline Management Act (RCW 90.58.020) into standards for regulation of shoreline uses. See http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html for more background.

1.4 Contents of this Restoration Plan

As directed by the Guidelines, the following discussions provide a summary of baseline shoreline conditions, a discussion of restoration goals and objectives, documentation of ongoing County and local plans and programs that facilitate restoration actions, identification of the County's partners in restoration, and ongoing and potential projects that positively impact the shoreline environment. The Restoration Plan also identifies anticipated scheduling and funding of restoration elements.

The restoration opportunities identified in this plan are focused primarily on publicly owned open spaces and natural areas. Any restoration on private property would occur only through voluntary means or through re-development proposals.

2 Summary of Shoreline Inventory and Analysis

2.1 Introduction

The County and Towns recently completed a draft comprehensive inventory and analysis of their shorelines (August 2011) as an element of the Shoreline Master Program update. The purpose of the shoreline inventory and analysis was to gain a greater understanding of the existing condition of Skagit County's shoreline environment to ensure the updated Shoreline Master Program policies and regulations will protect local ecological processes and functions. The inventory describes existing physical and biological conditions in shoreline jurisdiction within the County limits, urban growth areas, and the Towns of Hamilton and Lyman, and includes recommendations for restoration of ecological functions where they are degraded. The *Shoreline Analysis Report for Shorelines in Skagit County and the Towns of Hamilton and Lyman* (The Watershed Company 2011) is summarized below. Figure 1 provides a map of the County's shoreline jurisdiction and the WRIAs within the County.

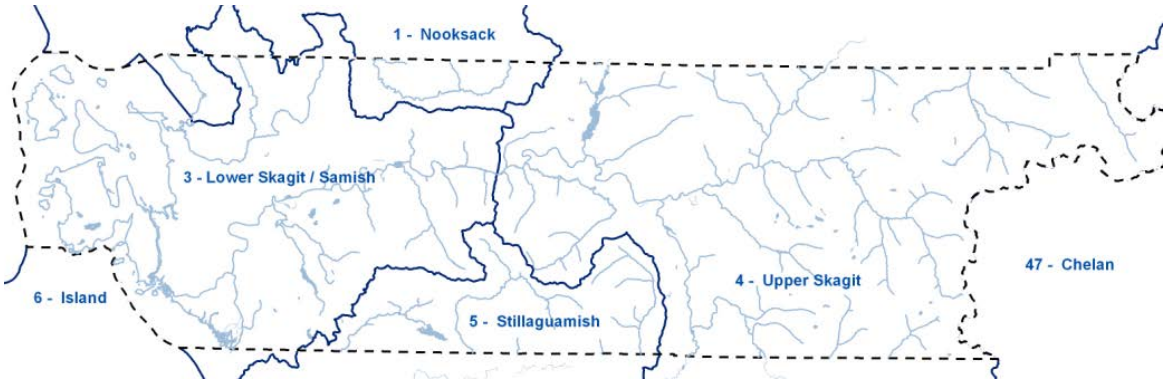

Figure 1. Map of Shoreline Jurisdiction and Water Resource Inventory Areas in Skagit County

2.2 Physical Setting

2.2.1 Lower Skagit/Samish Watershed (WRIA 3)

The Lower Skagit/Samish Water Resource Inventory Area (WRIA) 3 is located entirely within Skagit County, and includes the lower reaches of the Skagit River and the Samish River, as well as the majority of Skagit County's marine shoreline, including Padilla Bay, Skagit Bay, and Similk Bay, and shorelines around Fidalgo Island and other islands in Puget Sound.

The lower Skagit River has the most extensive floodplain area in the watershed at an estimated 108 square miles (Smith 2003). Historically, wood played a large role in the development of the Skagit delta and the distribution of water and channels on the delta. "Snagging," or the systematic removal of large wood in channels to aid navigation, was conducted extensively starting in the late 19th century. Between 1890 and 1910, federal records show that 35,000 snags were removed from the Skagit River, with diameters ranging from 12.1 feet to 17.0 feet (Collins 1998). While most of the wood was likely removed early on in the process, snagging continued through the better part of the 20th century.

As a result of the unconfined nature of the Skagit River delta, the original Skagit River delta historically spanned Samish Bay, Padilla Bay, and the present day Skagit River delta (Puget Sound Action Team 2005). Over time, the construction of dikes and drainage systems converted thousands of acres of marsh, mudflat, and floodplain in the Skagit Valley into prime farmland. Today, Skagit Valley agriculture continues to produce vegetable seeds, tulips, and dairy products, among other goods.

2.2.2 Upper Skagit (WRIA 4)

The upper Skagit watershed stretches across Snohomish, Skagit and Whatcom Counties and extends into Canada. The division between the lower Skagit watershed (WRIA 3)

and the upper Skagit watershed (WRIA 4) occurs just east of the Town of Hamilton. Much of the upper watershed is within the boundaries of the Mt. Baker National Forest and the North Cascades National Park. The Sauk River is the largest tributary to the Skagit River; other major tributaries in the upper watershed include the Cascade, Suiattle, Whitechuck, and Baker Rivers. Over 300 active glaciers contribute to streamflow in the Skagit River watershed.

The Baker River drains the east side of Mount Baker, the south side of Mount Shuksan, and the west side of Mount Challenger in Whatcom County. It flows southward into Skagit County and meets the Skagit River at Concrete. Two hydroelectric dams, the Upper and Lower, impound Baker Lake (in Whatcom County) and Shannon Lake (Skagit County).

The Sauk and Suiattle Rivers drain Glacier Peak, the most active of the Cascade volcanoes, having experienced at least six eruptive episodes in the past 15,000 years. The Sauk flows north into Skagit County to the Skagit River, flowing roughly parallel to, but in the opposite direction of, the Stillaguamish River. The Suiattle joins the Sauk a few miles north of Darrington.

The valley that conveys the Sauk to the Skagit was previously occupied by the Skagit River. Near the end of the last glacial period, ice, and later deposits from ice, blocked the Skagit River and forced flow southward where it joined the Stillaguamish. As a result, the present day Sauk River valley is wider at the upstream end than at the downstream end, when a typical river valley broadens at the downstream end (Booth et al. 2003).

2.2.3 Nooksack Watershed (WRIA 1)

The Nooksack watershed covers over 1,410 square miles across Whatcom County, Skagit County and British Columbia; approximately 21 square miles of the watershed fall within Skagit County. The watershed includes over 1,000 miles of streams and over 100 lakes. The Nooksack River originates in the north Cascade Mountains, and the eastern third of the watershed primarily lies within National Forest and National Park boundaries. The western portion of the watershed supports agricultural, residential, commercial, and industrial development, and forestry.

Historically, the lower mainstem Nooksack River flowed through a broad, low gradient valley bounded by extensive wetlands (Collins and Sheikh 2002). The three forks of the river, the North, Middle, and South Forks are characterized by a relatively steep gradient, except in the lower South Fork Nooksack, which includes an extensive wetland system, as well as small channels and ponds (Collins and Sheikh 2002).

2.2.4 Stillaguamish (WRIA 5)

The Stillaguamish River Basin includes more than 4,618 miles of streams and rivers [Stillaguamish Technical Advisory Group (STAG) 2000] and drains an area of 684 square

miles, making it the fifth largest basin draining to Puget Sound. It extends from the Cascade Mountains along the eastern boundary to Port Susan Bay (Puget Sound) near Stanwood in the west. Elevations within the watershed range from sea level at Stanwood to 6,854 feet at the summit of Three Fingers. Flows within the Stillaguamish are supported by both snow and rain events, with a substantial baseflow from groundwater.

The Stillaguamish River valley once contained the combined flow of the Skagit, Sauk and Stillaguamish rivers, and is sized to accommodate that combined flow. Presently, without the flow from the Sauk or Skagit, the Stillaguamish is considered an "underfit" stream, too small to have created the valley in which it flows. The mainstem of the Stillaguamish is in Snohomish County, but the North Fork and several major tributaries, including Deer Creek and Pilchuck Creek, are in Skagit County.

Sediment loads in the Stillaguamish are predominantly generated by landslide or other mass-wasting events in the upper watersheds (STAG 2000). Large, deep-seated landslides contribute most of this sediment. In total, 1,080 landslides have been inventoried in the Stillaguamish basin; 75 percent of these associated with clear cuts and road building activities (Perkins and Collins 1997).

No dams or reservoirs occur along the Stillaguamish River, so flows in the basin are essentially unregulated.

2.3 Existing Land Use and Associated Impacts

2.3.1 Lower Skagit/Samish Watershed (WRIA 3)

Skagit County's marine shorelines are home to industry, agriculture, recreation, and residential development. Over 117,000 people now reside in the lower Skagit/Samish watershed. As Skagit County has developed, impervious surface and road coverage has also increased. Increases in impervious surface coverage, and the consequent reduction in soil infiltration, have been correlated with increased velocity, volume and frequency of surface water flows. This hydrologic shift alters sediment and pollutant delivery to streams and other receiving bodies (Booth 1991; Arnold and Gibbons 1996). Increased surface water flows associated with 20-30% impervious surface coverage of suburban areas has been linked to decreased bank stability and increased erosion (May et al. 1997). Impervious surfaces replace vegetation and speed the movement of runoff into waterbodies while increasing the volume of the runoff. Similarly, the cumulative impact of roads throughout the county has had a variety of adverse effects on watershed processes and shoreline functions by limiting channel migration, interfering with natural recruitment of gravels and woody debris, eliminating or minimizing riparian vegetation, constricting flows, and providing a source of pollutants such as hydrocarbons and heavy metals.

Shoreline modifications (e.g., bank armoring, dikes, levees) have had a significant impact on the lower Skagit River and the marine nearshore in WRIA 3. Constructed to protect properties and structures, shoreline armoring disrupts sediment transport processes, disconnects habitats, reduces shoreline habitat quality, and is often accompanied by a lack of shoreline riparian vegetation. Diking and draining of wetlands has reduced the area of the delta and the hydrologic connectivity between the Skagit River delta and Padilla Bay. Many diked channels are separated from the full tidal prism by tide gates, which close on the rising tide, preventing salt water from entering farming channels. These tide gates restrict salmon access and limit the tidal flushing that would otherwise occur. Similarly, most of the pocket estuaries in the Whidbey Basin and around the Skagit delta have also been lost due to filling (SRSC and WDFW 2005). The Skagit Chinook Recovery Plan (SRSC and WDFW 2005) estimated that hydromodifications have isolated 31% of the historic river floodplain from the river and altered the shoreline habitat along over 98 km of the lower Skagit River. Studies have found that the density of juvenile Chinook salmon along unarmored banks is greater than along banks with riprap armoring (Beamer and Henderson 1998), and that the density of juvenile Chinook rearing in off-channel habitats is greater than in the mainstem Skagit River (Hayman et al. 1996).

Overwater structures, primarily occurring in the marine and lake systems increase shading from overwater cover, creating unnatural transitions in light intensity. Prey fish, including juvenile salmonids, tend to avoid overwater structures, causing them to move away from shallow water, potentially making them more vulnerable to predation. Overwater shading also reduces the potential for the establishment and growth of aquatic vegetation. Finally, overwater structures require an access point along the shoreline, cleared of vegetation.

Because of the diversity in shorelines and land use in WRIA 3, the WRIA 3 shorelines were divided into eight individual Management Units in the Analysis Report (The Watershed Company 2011) based on biological character, dominant land use, and location within County or Towns.

2.3.2 Upper Skagit (WRIA 4)

Much of the upper Skagit watershed (44%) is within National Forest boundaries or protected in North Cascades National Park, a national recreation area, or a designated wilderness area. Due to the rugged landscape and federally protected lands in much of the upper watershed, the population has remained low (estimated around 7,500 people in 2010).

Over 158 miles of the Skagit River and its tributaries, upstream of the Sedro-Woolley pipeline crossing, are federally designated as “Wild and Scenic Rivers” (WSR). Within the WSR, just over fifty eight miles of the Skagit River are designated “recreational,” which applies to rivers or portions of rivers that are accessible by road or railroad, may have some development along their shorelines, and may have undergone some

impoundment or diversion in the past. Another one hundred miles of the Cascade, Sauk, and Suiattle Rivers are designated as "scenic," meaning that they "are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads." Approximately half of the WSR lies within federal lands, and the other half flows through private property.

The greatest habitat alteration in the upper watershed is from the dams and their operation for flood storage and energy generation. Although the dam operators have worked to minimize impacts on fish by controlling ramping rates and other issues, dam operation has reduced the magnitude of peak flows in the Skagit River by 50% (Beamer et al. 2000). This greatly impacts sediment and water transport processes, as well as the development and maintenance of off-channel habitats, woody debris recruitment, and other functions.

2.3.3 Nooksack Watershed (WRIA 1)

By 1938, logged land had been converted to agriculture in the lower mainstem and parts of the upper mainstem and the forks (Collins and Sheikh 2002). What was not converted to agriculture reverted to forest (Collins and Sheikh 2002).

Today, the eastern half of the Nooksack watershed is primarily under public ownership (primarily by the U.S. Forest Service and Seattle City Light), while the western half is developed with a mix of agriculture, residential, and commercial uses.

2.3.4 Stillaguamish Watershed (WRIA 5)

By 1940, most, if not all, of the anadromous zone riparian areas (those portions of the drainage system available for use by anadromous fish) had been cleared of large conifers that once dominated the Stillaguamish Watershed. Much of this land was converted to agricultural or urban use, and not reforested. This deforestation reduces the amount of large woody debris (LWD) available to the stream, and LWD is an important component for both stream stability and fish habitat (STAG 2000). Along with the deforestation of the riparian areas, most of the logjams in the river were removed between 1877 and 1893 to facilitate rafting of logs to downstream mills. Splash-damming was also used to transport logs downstream, causing the complete destruction of riparian and in-stream structure and habitat in affected areas (STAG 2000).

Population growth in the watershed was relatively high, at 27%, from 2000 to 2010. In 2010, the estimated population of the watershed was approximately 52,800 people. .

2.4 Biological Resources, Critical Areas, and Ecological Functions

2.4.1 Lower Skagit/Samish Watershed (WRIA 3)

The Skagit is the only river system in Washington that supports all five species of salmon. It contains some of the largest runs of threatened wild Chinook salmon

(*Oncorhynchus tshawytscha*) in Puget Sound and the largest chum salmon (*Oncorhynchus keta*) and pink salmon (*Oncorhynchus gorbuscha*) stocks in Washington (Beamer et al. 2000). The Skagit River has six separate stocks of Chinook salmon identified by their spawning location and the season that the adults return to freshwater. All of these stocks migrate through the lower watershed, but only the Lower Skagit Fall Chinook salmon spawn in the lower watershed.

The loss of Skagit estuarine habitat is one of the most important habitat issues for salmonids in the watershed. Beechie et al. (1994) found that coho salmon (*O. kisutch*) smolt production has been significantly reduced in the Skagit River basin due to the loss of side channel sloughs. Within the watershed, restoration of the Skagit delta habitat has been and continues to be a high priority in the basin. Recently, an estuarine restoration project helped begin to reverse the historical trend of losing estuarine marsh in the lower Skagit watershed by restoring tidal inundation to 200 acres of historically diked lands.

Juvenile salmon in the Skagit River system historically used Padilla, Samish, and Fidalgo Bays, which were connected to the Skagit River delta through tidal sloughs. Due to alterations in the delta, these bays are no longer directly accessible to outmigrant Skagit Chinook (PSAT 2005). Juvenile Chinook salmon from the Nooksack populations utilize Padilla, Samish, and Fidalgo bays for feeding and growth, refuge, and physiological adaptation to saltwater.

The historic flow of fine sediments into Padilla Bay created a shallow basin, making almost the entire bay intertidal. Because of the shallow basin and extensive eelgrass beds, primary and secondary productivity is high, and this high productivity may be transported to and support food webs in nearby areas (PSAT 2005). Padilla Bay is designated as a National Estuarine Research Reserve.

Increasing development in the lower Skagit River watershed raises the potential impacts on water quality and flows. Recently, contaminants have forced shellfish harvest closures, and contaminated sediments are a problem in Padilla Bay, Fidalgo Bay, and Guemes Channel. Despite these issues, sediment quality is generally better in the WRIA 3 nearshore environment than many other areas in Puget Sound (Long et al. 1999 cited in Smith 2003).

Most of the lower Skagit tributaries, including Nookachamps, Hansen, Coal, Wiseman, Morgan, Sorensen, Mannser, Red Cabin, Day, Cumberland, lower Finney, Grandy, and Jackman Creeks and Gages and Hart Sloughs, have very warm water temperatures in the summer months (Smith 2003). These elevated temperatures are generally associated with poor riparian cover (Smith 2003) and low flows. The Nookachamps watershed has numerous other types of water quality problems, including elevated nutrients, low dissolved oxygen levels, and elevated turbidity (Smith 2003). Excess sedimentation is also suspected in the Miller, Alder, Day, Grandy, Nookachamps, Hansen, Finney,

Loretta, and Gilligan WAUs (Beechie and Feist, NMFS, unpublished data in Smith 2003). Most of the lower Skagit tributary watersheds, including the lower Skagit River, Gages Slough, and Nookachamps, Hansen, Gilligan, Day, Alder, Grandy, and Finney Creeks, are also impaired for flow conditions (Beamer et al. 2000).

2.4.2 Upper Skagit (WRIA 4)

The Upper Skagit Water Resource Inventory Area (WRIA 4) has been identified in the statewide Habitat Limiting Factors report as the only WRIA within the state with overall "good" habitat ratings in all complete (i.e. no data gaps) categories (Smith 2003). These categories include floodplain, large woody debris (LWD), riparian, high flow, and sedimentation conditions. Five different stocks of Chinook salmon spawn in the upper watershed, including the Upper Skagit Summer, Lower Sauk Summer, Upper Sauk Spring, Suiattle Spring, and Upper Cascade Spring Chinook. The upper Skagit watershed also features one of the largest bald eagle concentrations in the lower 48 states.

2.4.3 Nooksack Watershed (WRIA 1)

The Nooksack watershed supports three distinct runs of Chinook salmon, including two native early run stocks and one mainstem run of hatchery origin. Chinook salmon production in the South Fork Nooksack River is notable, because unlike in most other rivers in the state of Washington, the majority of juvenile Chinook salmon overwinter in the river and migrate to the ocean as yearlings.

Much of the extensive wetlands that historically occurred along the margins of the Nooksack River and the lower South Fork had been drained or filled for conversion to agriculture by 1910 (Collins and Sheikh 2002).

2.4.4 Stillaguamish (WRIA 5)

Several priority species occur in the shorelines of the Stillaguamish Management Unit, including marbled murrelet, northern goshawk, bald eagle, spotted owl, and tailed frog. The NWI identifies 4.1% of the shoreline area as wetlands. Steep slopes cover another 3.6% of the shoreline. Only 2 percent of the shoreline area is within the mapped floodplain.

3 Restoration Goals and Objectives

The overarching goal for restoring the County's shorelines is presented as the conservation component in the County's 2012 Shoreline Master Program, written as follows:

To preserve, protect, and restore the natural resources of Skagit County's shorelines in the public interest and for future generations. These natural resources include but are not necessarily limited to fish, wildlife, vegetation, and natural features found in shoreline regions.

Specific objectives were developed based on policies in the proposed SMP and existing conditions. Objectives refer to specific actions, ideally measurable, that can be taken to achieve the stated goal.

1. *Restoration and enhancement of shorelines should be designed using principles of landscape and conservation ecology and should restore or enhance chemical, physical, and biological watershed processes that create and sustain shoreline habitat structures and functions.*

2. *Restoration and enhancement actions should improve shoreline ecological functions and processes and should target meeting the needs of sensitive plant, fish and wildlife species as identified by Washington Department of Fish and Wildlife, Washington Department of Natural Resources, National Marine Fisheries Service and/or U.S. Fish and Wildlife Service.*

3. *The County should, and private entities are encouraged to, seek funding from State, Federal, private and other sources to implement restoration, enhancement, and acquisition projects, particularly those that are identified in the Restoration Plan of this SMP or the local watershed plans.*

4. *Restoration and enhancement projects should be coordinated with local public utility and conservation districts.*

5. *The County should develop processing guidelines that will streamline the review of restoration-only projects.*

6. *Allow for the use of tax incentive programs, mitigation banking, grants, land swaps, or other programs, as they are developed, to encourage restoration and enhancement of shoreline ecological functions and to protect habitat for fish, wildlife and plants.*

These objectives provide direction and guidance for developing and focusing the restoration plan. The objectives identified above apply generally to the protection and restoration of ecological processes in the County's watersheds, and are not specific to a single species or species assemblage. Successful achievement of the goals and objectives identified above will require involvement and leadership from the County, as well as coordination with its many public, non-profit, and private partners.

Measurable performance standards may be developed in the future based on the goals and objectives to quantify ecological change. These performance standards go beyond the scope of this document, but may be developed and monitored as individual projects and programs are implemented.

4 ONGOING PLANS AND PROGRAMS

Many plans and programs are already in place or underway within the County and the towns of Hamilton and Lyman that provide a basic framework to implement ecological protection and restoration strategies. These plans and programs are described briefly in this section.

4.1 Skagit County

Skagit County implements elements of the Growth Management Act through the adoption of the Comprehensive Plan and the County Code, which includes Critical Areas Regulations that apply outside of shoreline jurisdiction. These critical areas regulations are geared toward the protection of such areas.

4.1.1 Comprehensive Plan

The County Comprehensive Plan provides goals and policies that have been used in development of the County's regulations, such as those found in Title 14 of the Skagit County Code (including critical areas regulations) and the Shoreline Master Program. The Natural Resource Lands Element of the County's Comprehensive Plan contains Countywide Planning Policies (CPPs) that are intended to balance protection and restoration of the County's shorelines with continued commercial resource development. For example, these include:

- Identified critical areas, shorelands, aquatic resource areas and natural resource lands shall be protected by restricting conversion. Encroachment by incompatible uses shall be prevented by maintenance of adequate buffering between conflicting activities. (CPP 8.1)

- Long term commercially significant natural resource lands and designated aquatic resource areas shall be protected and conserved. Skagit County shall adopt policies and regulations that encourage and facilitate the retention and enhancement of natural resource areas in perpetuity. (CPP 8.5)

- Fishery resources, including the county's river systems inclusive of their tributaries, as well as the area's lakes, associated wetlands, and marine waters, shall be protected and enhanced for continued productivity. (CPP 8.7)

4.1.2 Habitat Improvement Plan

The Natural Resources Division of Skagit County Public Works Department completed a Habitat Improvement Plan in 2012. The mission presented in the Plan is, "To create and advance restoration strategies that support Skagit County goals for promoting the health of our watershed, improved water quality and enhanced habitat for salmon." The Plan

identifies four restoration goals and relevant measures of success (listed below). It also includes potential agency funding sources and a list of site-specific County projects prioritized for implementation (see Section 6).

Goal 1. Restore streamside riparian land

- Measures of success:
  - Total area of restored riparian areas along Skagit County streams.
  - Water quality improvements (including water temperature) determined by monitoring data.
  - Removal of water bodies from Washington State's Water Quality Assessment and 303(d) List
  - Miles of stream riparian planting and livestock fencing installed on Skagit County streams.
  - Progress on riparian milestones for Voluntary Stewardship Program.
  - Resolved Critical Areas Ordinance violations

Goal 2. Enhance fish passage under County roads

- Measures of success:
  - Completed projects
  - Improved spawning numbers
  - Linear feet of stream habitat opened above County culverts.

Goal 3. Coordinate drainage and flood damage reduction with restoration efforts

- Measures of success:
  - Completed projects with restoration components that improve drainage.
  - Participation by Skagit County landowners in the Hazard Mitigation Grant programs.

Goal 4. Participate as an active member in Puget Sound clean-up and restoration efforts

4.1.3 Stormwater Management

Surface Water Management Plan and Design Manual

In compliance with the National Pollutant Discharge Elimination System (NPDES) phase II permit requirements, the County has an adopted surface water management and surface water design manual.

The County has developed an interlocal agreement with the Skagit Conservation District (SCD) to meet many of the Phase II Permit education and outreach requirements. The SCD programs focus on the general public, residents/ homeowners, businesses,

developers, contractors, engineers and some industries, and include but are not limited to:

- General outreach
- Storm drain labeling
- Watershed Masters Volunteer Training Program
- Volunteer Water Quality Monitoring Program
- Stormwater Education Program for Local Businesses
- Backyard Conservation Stewardship Program
- Resource Materials and Education for Local Schools
- Stormwater Poster Contest for Local Youth
- Creation and Distribution of Stormwater Educational Brochures
- Educating the public on the impacts of outdoor car washing, and providing car wash kits for charity car wash fundraisers

National Pollution Discharge Elimination System (NPDES)

Since February 2007, Skagit County has been the holder of a Phase II National Pollutant Discharge Elimination System (NPDES) permit issued by the Department of Ecology. The NPDES permit is intended to improve water quality by focusing efforts on illicit discharge detection and elimination, operations and maintenance activities, outreach and education, monitoring, and reporting. Skagit County adopted a permanent ordinance (#O20100002) amending the drainage ordinance to be compliant with NPDES Phase II Permit requirements. Table 1 shows the general permit activities performed by Skagit County staff and partners (activities performed by Skagit County unless otherwise notes).

Table 1. Skagit County NPDES requirements and activities.

Stormwater Management Program Administration Requirements: Update SWMP and submit documentation 3/31 annually; Annual compliance reports due 3/31.	
Current Activities	**Planned Activities**
• Submittal of annual compliance report • Submittal of updates SWMP documentation	• Hold regular NPDES Coordination Group meeting • Refine and adjust SWMP cost accounting strategy • Continue improvements to permit training program and tracking system • Define roles in completing SWMP updates and annual reports
Public Education and Outreach Requirements: Prioritize education and outreach activities to specified audiences; Maintain outreach program designed to improve understand of problem and solutions; track and maintain records of educational and outreach activities	
Current Activities	**Planned Activities**

• Interlocal agreement with SCD to perform outreach and education efforts (storm drain labeling, water quality monitoring, stormwater education for businesses, facility maintenance workshop, backyard stewardship, school outreach, stormwater educational brochures, car wash kits, Stream Team workshops) • Public presentations by Surface Water Section staff • Hosted NSPC meeting • Coordinated Northern Stormwater Outreach Group education efforts • Active in STORM meetings • Surface Water staff presentation to Watershed Masters group • Aired numerous PSAs on local television • Installed interpretive sign at Dave Brookings Memorial Rain Garden • County Health Department LSC program provides stormwater education to businesses • Water Resources Section coordinates activities of SMRC in partnership with Northwest Straits Commission • Led Clean Samish and Pollution Identification and Correction Program • Supports activities of SCEA through the Clean Water program	• Continue regional collaboration with other NPDES municipalities • Evaluate and adopt target behaviors to reach specific groups • Meet regularly with SCD staff • Continue to coordinate with Health Department LSC • Provide educational presentations to interest groups, officials, and stakeholders • Summarize activities for annual report • Participate in regional outreach groups (STORM, Skagit County Eco-net, PSSH) • Staff PSSH display board at local events • Continue to air PSAs and other media • Participate in SMRC • Hold public workshop(s) on maintenance of private stormwater facilities • Develop SCEA education and outreach partnership
Public Involvement Requirements: Provide opportunities for public involvement through advisory boards and commissions, watershed committees, public participation in rate structure and budget development, stewardship programs, and environmental activities; Make SWMP document and annual compliance report publically available.	
Current Activities	**Planned Activities**
• Interlocal agreement with SCD to deliver public workshops on stormwater • Watershed Masters program in effect • Stream Team water quality monitoring program in effect • SWMP document and annual report made available to public	• Define public involvement opportunities • Make future SWMP documents and annual reports available to public • Notify public of 2012 SWMP and request input • Participate in workshops to gather SWMP input
Illicit Discharge Detection and Elimination Requirements: Implement program to detect and removed illicit discharges, connections, and disposals in County owned operated sewers; develop storm infrastructure map, prohibit illicit discharges by ordinance, create program, to detect and address illicit discharges; train staff on IDDE response; summarize illicit discharges and actions provide updates in SWMP document	
Current Activities	**Planned Activities**

• Adopted permanent drainage ordinance • Maintains Water Pollution Hotline • Developed and implemented IDDE program and technical guidelines • Prioritized receiving waters for inspection and conducted inventories on 4 high priority areas • Provided IDDE training to staff • Informed businesses and public of discharge hazards • Documented and tracked illicit discharges and responses • Trained staff on procedure and policies • Developed intranet training program for staff	• Make IDDE guideline revisions as needed • Review education and outreach efforts and develop materials for pollutant minimization • Update staff IDDE training as needed • Summarize IDDE activities for annual report • Provide spill training for road operations staff • Coordinate with SCD to advertise hotline • Make stormwater asset maps available to public and secondary permittees • Perform education and outreach on discharge hazards • Adopt and implement procedures for IDDE program evaluation

Controlling Runoff from New Development, Redevelopment, and Construction Sites
Requirements: Implement and enforce program to reduce illicit discharges to municipal storm system from new development, redevelopment, and construction sites; adopt regulations and implement plan review and enforcement needed to comply with permit requirements; provide provisions and procedures to allow preventative actions and source reduction; adopt regulations and provide provisions to verify long-term maintenance of stormwater facilities, including annual inspection and maintenance standards; train staff on new codes and procedures and create education and outreach materials; define process to record and maintain inspections and enforcement actions; summarize activities in annual report

Current Activities	Planned Activities
• Adopted permanent drainage ordinance • Established program to address stormwater runoff • Perform site assessments for erosion and runoff control • Developed list and inspection schedule for stormwater facilities • Developed private stormwater facility maintenance guidelines document • Organized Certified Erosion Control and Sedimentation Lead training • Records and maintains inspection and enforcement actions • Provided staff training on implementation of 2005 Stormwater Management Manual	• Continue annual inspection of stormwater facilities • Continue staff training and public outreach on implementing 2005 Stormwater Management Manual • Revise and update stormwater facility maintenance guidelines document • Make copies of Notices of Intent for construction and industrial activities available • Continue to apply stormwater runoff program on site that disturb >1ac and perform site assessments as required by permit • Summarize activities for annual report

Pollution Prevention and Operation and Maintenance for Municipal Operations
Requirements: Develop and implement operations and maintenance program; establish maintenance standards at least as restrictive as 2005 Stormwater Management Manual; perform required inspection frequency of stormwater flow control and treatment facilities; have processes to reduce runoff impacts from municipal activities; train staff to implement modified processes; prepare SWPPPs for heavy equipment maintenance and storage facilities
Summarize activities in annual report

Current Activities	Planned Activities
• Issued maintenance standards in accordance with 2005 Stormwater Management Manual	• Updating inspection, operation, maintenance processes, and procedures for County stormwater facilities

• Initiated annual inspection program for stormwater control facilities • Performed post-storm inspections • Coordinated with PW Roads Operations staff to develop and implement BMPs • PW Roads Operations staff follows Vegetation Management on controlling vegetation • Conducted stormwater pollution prevention training with PW Roads staff • Developed stormwater pollution control plan for PW road maintenance facility • Developed and adopted Integrated Pest Management Plan and Property and Facility Management Plan for Pollution Reduction • Distributed ~40 stormwater BMP handbooks to Roads Operations staff	• Continue implementation of 2005 Ecology maintenance standards • Implement and update SWPPP at PW Road Shop facility • Provide staff training at PW Road Shop facility • Utilize interlocal agreement with Mount Vernon for street maintenance waste disposal • Implement BMPs for activities listed in Permit S.5.C.5.f • Continue staff trainings and refreshers • Summarize activities in annual report
Monitoring Requirements: Water quality monitoring for TMDL compliance; sampling and testing pursuant to Program conditions; preparation for future monitoring efforts consistent with Phase I requirements; identification or two outfalls for permanent sampling stations; identification of two program questions and sites where effectiveness can be monitored; a description of monitoring or studies conducted by the County during reporting period	
Current Activities	**Planned Activities**
• Conducts water quality monitoring program in agricultural area streams • Staff participate in stormwater workgroup meetings • Developed a future monitoring program per permit requirements • Identified two monitoring questions	• Continue to participate in stormwater workgroup meetings • Hold regular NPDES coordination group meetings • Participate in agricultural runoff subgroup of stormwater workgroup • Summarize activities in annual report

NSPC – North Sound Permit Coordinators
NSOG – Northern Stormwater Outreach Group
STORM - STormwater Outreach for Regional Municipalities
PSA - public service announcement
LSC – Local Source Control
SMRC - Skagit Marine Resources Commission
SCEA - Skagit Conservation Education Alliance
PSSH – Puget Sound Starts Here
SMRC – Skagit Marine Resources Committee
SWPPP – Stormwater Pollution Prevention Plan
PW – Public Works

4.1.4 Total Maximum Daily Loads (TMDL)

Total Maximum Daily Loads have been established for the following water bodies and water quality parameters in Skagit County. A description of the status of each TMDL is provided below.

Table 2. TMDL waterbodies and summary of water quality improvement status.

Waterbody Name	Pollutants	Status

• Campbell Lake • Erie Lake	Total Phosphorus	Treatments were applied to the lake for phosphorus control. Monitoring showed that the process was a success, but must be repeated on a recurring basis to maintain the water quality standard.
• Samish Watershed	Fecal Coliform	Ecology completed a study of the Samish watershed to determine the sources of bacteria and develop a plan for cleanup. Skagit County monitoring of the river during storm events suggests that the load carried by the river has decreased over the past four years.
• Carpenter Creek • Fisher Creek • Fisher Slough • Nookachamps Creek	Fecal Coliform	The TMDL determined wasteload allocations (WLAs) for dischargers covered by a national pollution discharge elimination system (NPDES) permit, and load allocations (LAs) for the part of the river upstream of Sedro-Woolley.
• Carpenter Creek • Fisher Creek • Hansen Creek • Red Creek • Nookachamps Creek • Turner Creek • Lake Creek • Otter Pond	Temperature	Ecology and a local advisory committee developed a draft Water Quality Improvement Report (WQIR). The report describes recommendations for reducing water temperatures. It proposes a strategy of outreach, education, and financial and technical assistance to private landowners to encourage them to increase riparian shading along these creeks.

4.1.5 Flood Management

The Skagit Flood Control Zone District began the process of updating the Skagit River Comprehensive Flood Hazard Management Plan in February of 2008. The process is continuing; however, disagreements over proposed flood maps have slowed the process.

Sauk River Comprehensive Flood/Erosion Hazard Management Plan

The Sauk River Flood/Erosion Hazard Management Plan is a management plan for 26 miles of the Sauk River. The Plan was adopted by Snohomish and Skagit Counties in December 2010. After collecting site-specific data about the Sauk, the project team developed a User's Guide to assessing site conditions and alternative actions. The Users' Guide is intended to provide information to "help Stakeholders make informed decisions about proposed river actions; particularly for bank protection, fisheries enhancement, infrastructure protection and construction." As such, the plan did not identify site specific prioritized actions.

4.1.6 Envision Skagit Project

Skagit County's Envision Skagit 2060 Citizen Committee was formed to develop and implement a 50-year plan to maintain the natural resources of the Skagit and Samish River watersheds while accommodating population growth in vibrant communities.

The committee made its final recommendations in October, 2011, defining nine general "goal statements." The recommendations are the culmination of 10 months of gathering input from local, regional, and national experts; hosting community meetings; reviewing comments from a wide variety of service and interest groups; and meeting with specific groups, including agricultural, youth, and Spanish-speaking communities.

The 2011 Final Recommendations document collates the results of this effort in nine goal statements:

1. A Regional Vision: Stronger Regional Coordination, Collaboration and Cooperation
2. Protect Natural Resource Lands, Aquatic Resources and Industries (Agriculture, Forestry, Fish, and Shellfish)
3. Protect, Preserve, Restore Environmental Resources and Values
4. Compact Communities and Conservation Development
5. Sustainable Transportation
6. Water/ Wastewater
7. Housing Variety and Affordability
8. Economic Vitality
9. Climate Change

The document further presents recommendations specific to each goal statement. Goal statements 2 and 3 are particularly relevant to shoreline restoration in Skagit County.

Specifically, selected recommendations to address Goal 2 that are relevant to restoration planning include the following:

- Skagit County should strive for no net loss of acreage and total agricultural productivity potential from land zoned for agriculture (Ag-NRL) in Skagit County over coming generations with a goal to preserve agriculture and food production.
- Manage stormwater effectively to protect fish, shellfish, and agriculture.
- Encourage local/regional efforts to support natural resource industries and the ecosystem, forged by those with the greatest on-the-ground knowledge of how to meet the needs of both.

- Seek state, federal or international designation for Skagit Valley as a Cultural and Natural Heritage Site.
- Maintain existing zoning protections for forestry.
- Reform the Conservation and Reserve Development (CaRD) program, particularly on Natural Resource Lands.

Recommendations to address Goal 3 are summarized below:

- Skagit County and its partners develop and implement a long-range conservation vision and plan.
- Identify funding sources for open space protection within and between Urban Growth Areas, and to implement a "bottom up" approach for allocating funds and prioritizing proposed open space projects.
- Complete the federal General Investigation study of flood hazard management options on the Skagit River, and related local flood hazard management planning. This should be done as soon as possible, using best available science. Included in this effort should be a watershed-based floodplain management plan to help inform land use planning decisions.
- Purchase and remove rural and urban residences from the Skagit River floodway and other parts of the "functional floodplain" – such as Hamilton and Cape Horn – that experience repeated flood damage.
- Purchase or transfer development rights from the floodplain outside of UGAs.
- Maintain the current pace of restoration in the middle Skagit floodplain.
- Investigate opportunities to widen the Skagit and Samish River corridors to regain floodplain ecological functioning and improve flood storage and conveyance.
- Implement the Tidegate Fish Initiative, which authorizes the conversion of 2,700 acres of delta farmland to salmon habitat in return for regulatory certainty necessary to operate and maintain the dike and drainage system.
- If sea level increases begin to cause significant salinity and drainage impacts to farmland in the Delta such that the costs of those impacts become economically unsustainable for dike and drainage districts and landowners, then develop a proactive plan for returning affected farmland to tidal salt marsh or wetland.

- Identify pollution sources and follow up with education, technical assistance, and if necessary, enforcement actions to get problems corrected as soon as possible.
- Take advantage of the opportunity to clean up the Samish Watershed through the Clean Samish Initiative and keep it clean for the future.
- Apply lessons and techniques from the Clean Samish effort to other rivers and bays suffering from non-point source pollution.
- Use of a variety of tools, including regulation, incentives, education, and voluntary partnerships to protect critical areas on those rural and resource lands that develop in the future.
- Heighten protections to maintain the ecological functions and values of riparian areas.

4.1.7 Clean Samish Initiative (CSI)

The CSI is a joint partnership effort involving Skagit County, the State Departments of Ecology and Health, the Skagit Conservation District, the Skagit Conservation Education Alliance, the Samish Tribe, the Western Washington Agricultural Association, the Washington State Dairy Federation, EPA, and Taylor Shellfish, among others. The CSI's goal is to achieve both short and long-term pollution reductions in the Samish Basin. The Clean Samish Initiative workplan includes outreach and education, incentives, monitoring, and inspections.

In 2010, the EPA awarded the CSI a $960,000 grant to improve water quality in the Samish Basin through a Pollution Identification and Correction (PIC) project. The approach is a concentrated water quality sampling measure that locates likely sources of pollution. In affected parts of the basin, sampling is followed up with landowner contact to determine if septic tank or manure management problems are leading to the pollution.

4.1.8 Parks

The 2012 Skagit County Comprehensive Parks and Recreation Plan identifies the following natural resource goals relevant to shoreline restoration:

- Promote acquisition, preservation and responsible stewardship of suitable habitat on county park lands.
- Coordinate public and private efforts to identify and acquire key habitat parcels that help to preserve critical corridors.
- Explore techniques to preserve and protect forest lands in County ownership.

- Encourage partnerships with public and private organizations to assist in implementation, monitoring and research of impacts on sensitive county park lands.
- Utilize parklands, facilities, and programs to promote environmental education and encourage park visitors to become stewards of Skagit County's natural resources.
- Provide appropriate park access to natural resource areas to support environmental education programs.
- Provide interpretive facilities that make it possible for visitors to learn about natural resources through self-guided exploration.
- Provide outdoor classrooms and gathering places where appropriate in county parks to facilitate environmental learning programs.
- Encourage partnerships with local environmental education providers to promote programs and ensure that educational resources are efficiently employed.
- Provide natural resource information and environmental education messages at recreation sites to promote understanding and encourage responsible recreational use.

The following Fish and Wildlife goals are also identified in the Comprehensive Parks and Recreation Plan:

- Incorporate potential fish and wildlife habitat enhancements into site development and redevelopment, where possible.
- Where relevant, the Department will coordinate with Washington State Department of Fish and Wildlife to develop and operate Department lands and facilities in accordance with management recommendations for Washington's Priority Habitats and Species.
- Provide educational and interpretive opportunities on existing and proposed recreation and open space lands, focusing on ecological processes, fish and wildlife resources, viewing tips, and conservation strategies.
- Work with the County Planning Department to define and protect valuable fish and wildlife habitat resources.
- Work closely with current and potential providers of interpretive and environmental education opportunities to help ensure a comprehensive and effective offering of these programs throughout the County.

These goals are reflected in the future plans for the County's shoreline parks, including Howard Miller Steelhead Park (included in section 6.9), which calls for routing a small channelized tributary stream back into its natural course and retaining the existing forested portion of the site as a wildlife corridor (Skagit County 2012a).

4.1.9 Education and Outreach Programs

In addition to outreach and education programs implemented by non-profit and other government entities discussed in Section 5, Skagit County supports and/or staffs the following programs in order to limit stormwater impacts in the County:

- Skagit County Natural Resources Stewardship Program is intended to improve water quality by increasing community awareness and encouraging landowners to protect and enhance water quality. The County, in coordination with the Skagit Fisheries Enhancement Group, Skagit Conservation District, received a four-year grant to provide grants to streamside landowners interested in enhancing their shoreline. Projects may include streamside plantings, livestock fencing, and restoring fish habitat.

- STormwater Outreach for Regional Municipalities (STORM) meetings. STORM's mission is to improve surface water quality by reducing non-point source pollution. STORM is responsible for the Puget Sound Starts Here Campaign (PSSH). The EPA production "After the Storm" was aired on the public television channel Skagit21 over 200 times in 2010. Skagit21 is available to all Skagit County Comcast cable customers. The PSSH outreach commercials were aired on Skagit21 over 800 times since August 2010.

- Skagit County Health Department's Local Source Control program provides education and outreach to businesses in Skagit County.

- Skagit Marine Resources Committee (MRC) in partnership with the Northwest Straits Commission. The purpose of the Skagit MRC is to develop and pursue opportunities to enhance and protect local marine habitat. A key role of the committee is public outreach and education on marine issues. Ongoing activities include distributing 'green' car wash kits, evaluating storm drain filters (in coordination with Skagit County Public Works, the City of Anacortes, and the Swinomish Tribe, and sponsoring several studies of marine systems.

- Skagit Conservation Education Alliance (SCEA) through the Clean Water program.

4.1.10 Skagit County Natural Resource Stewardship Program

The Skagit County Natural Resource Stewardship Program is designed to improve water quality in Skagit County streams by furthering community awareness and inspiring landowners to participate in protecting and enhancing water quality for the benefit of all the citizens of Skagit County.

This program works in conjunction with The Skagit Fisheries Enhancement Group, Skagit Conservation District and Washington State Department of Ecology. The

Washington State Department of Ecology and the Skagit County Clean Water fund are providing up to a total of $100,000 per year for four years.

4.2 Hamilton

4.2.1 Comprehensive Plan

The Town of Hamilton's 1994 Comprehensive Plan outlines a plan to reduce development in the approximately 300 acres within the Skagit River floodway. The floodway area would be restored for fish and wildlife habitat, and the town would be relocated out of the floodway.

4.2.2 Hamilton Public Development Authority

The Hamilton Public Development Authority (PDA) was established in 2005 to assist in moving Town facilities, infrastructure and residences out of the floodway within the Town limits and in unincorporated Skagit County. The Hamilton PDA created the Skagit County Floodway Mitigation and Hamilton Relocation Program to address repetitive losses from flood-prone areas of the County and enhance riparian resources.

4.3 Lyman

4.3.1 Comprehensive Plan

Lyman's Comprehensive Plan and Code was adopted in 2002 and amended in 2005.

4.4 Salmon Recovery Plans

4.4.1 WRIA 3-4

The Skagit Chinook Recovery Plan was finalized in 2005 through a multi-year collaboration between the Skagit River System Cooperative (SRSC) and Washington Department of Fish and Wildlife (WDFW), in consultation with other interested groups. The purpose of the Skagit Chinook Recovery Plan is to:

- Define biologically-based recovery goals
- Identify what is known or assumed about factors that limit production of Skagit River Chinook
- Propose scientifically-based actions that will restore Skagit River Chinook to optimum levels, including fisheries management, artificial production, habitat protection, habitat restoration, effectiveness monitoring, and applied research.

The Plan establishes a path forward to recovering Chinook salmon in the Skagit River watershed through harvest management, habitat protection, habitat restoration, artificial

hatchery production, research, and monitoring. Restoration priorities were established in the plan to address specific, known limiting factors for various life stages and life-history strategies of Chinook salmon. Identified restoration actions were also based on the specific location of existing or potentially restorable habitat.

The plan proposed 56 recommendations to address habitat protection. Recommendations address topics including instream flow, hydropower, agriculture, forestry and commercial uses, impervious surfaces, climate change, channel complexity, shoreline modifications, fish passage, and monitoring.

Habitat restoration recommendations focus on the following four limiting factors:

1. *Spawning habitat and egg incubation conditions.* Actions include: (1) areas that have been isolated or impaired as a result of human disturbance; and (2) impaired physical processes that lead to degradation or loss of spawning habitats.

2. *Freshwater rearing habitat in large river floodplains, tributaries, and non-tidal delta.* Projects focus on restoration of freshwater rearing habitat by removing mainstem hydromodifications, planting riparian vegetation, restoring natural floodplain processes, and/or re-connecting historic floodplain channels.

3. *Tidal delta rearing habitat.* Recommendations include reestablishment of historic estuarine wetlands through dike and levee removal or setbacks, and the reestablishment of migration corridors to allow access to diverse rearing habitats.

4. *Nearshore rearing habitat (primarily pocket estuary restoration).* Projects include the following approaches: (1) increase accessible pocket estuary habitat close to natal rivers and throughout the Whidbey Basin, and (2) ensure functioning nearshore beaches that provide connectivity between estuarine rearing areas and provide rearing habitat for alternative Chinook life history strategies that do not directly utilize pocket estuaries.

4.4.2 Skagit Watershed Council Plan for Habitat Protection and Restoration in the Middle Reach of the Skagit River

In 2008 through a grant from the Puget Sound Acquisition and Restoration (PSAR) fund and financial support from Skagit County and Seattle City Light (SCL), the Skagit Watershed Council began developing a restoration plan and list of projects in the middle Skagit River. The plan compiled existing data and collected additional data to prioritize reach-based protection and restoration strategies. A prioritized list of projects from the report is included below in Table 11.

4.4.3 WRIA 1

The WRIA 1 Salmonid Recovery Plan was released in 2005 by Whatcom County Public Works, through collaboration with the Lummi Tribe, Nooksack Natural Resources, and

WDFW, as well as Whatcom County cities. Its purpose is to outline a local strategy of projects, programs, and timelines to recover salmonid populations, with a particular focus on Chinook salmon.

The Plan focuses on addressing nine limiting factors for early Chinook productivity, abundance, diversity, and spatial structure including: channel stability, sediment load, habitat diversity, key habitat quantity, obstructions, withdrawal structures, flow, temperature, and chemicals.

The Plan identifies geographic priorities for restoration and protection of habitats for each early Chinook population. In the South Fork, the highest priority area for restoration is the lower South Fork, followed by the upper South Fork, the upper mainstem, and the Nooksack/Lummi estuary. The highest priority areas for protection are the Nooksack/Lummi estuary, the upper South Fork, the lower South Fork, and the upper mainstem Nooksack.

The WRIA 1 plan identifies both programmatic and project specific recommendations for habitat restoration and protection. The plan also addresses hatcheries and harvest, and the plan provides a framework for adaptive management through research and monitoring.

Projects that have been identified for near-term implementation along the upper South Fork Nooksack River within Skagit County are included below in Table 13.

4.4.4 WRIA 5

Snohomish County and the Stillaguamish Tribe are co-leads in the Stillaguamish Watershed conservation planning, with the goal of restoring healthy, viable populations of Chinook salmon to a level where natural population production is healthy enough to support recreational and commercial fisheries. The Stillaguamish Watershed Chinook Salmon Recovery Plan (Stillaguamish Implementation Review Committee 2005) outlines a plan for recovering Chinook salmon through the integrated management of hatchery, harvest, and habitat. Habitat strategies are as follows:

1) Prevent further fragmentation of habitat;

2) Improve connectivity between isolated habitat patches;

3) Protect and restore areas surrounding critical salmon habitat from further degradation.

The Stillaguamish Technical Advisory Group (2000), which develops technical recommendations for the watershed, also identified the following habitat recovery goals:

1) Maintain and restore natural watershed processes;

2) Maintain a well-dispersed and well-connected network of high quality habitat that addresses the needs of all life history stages; and

3) Develop, evaluate, and adapt land use activities using monitoring and assessment in order to achieve the objectives listed above.

In addition to the general habitat strategies and goals, the plan identifies recommended actions for sub-basins, including the North Fork Stillaguamish River. Recommended restoration actions applicable to the upper North Fork Stillaguamish include: riparian restoration, large woody debris (LWD) enhancement, floodplain reconnection, and restoration of natural hydrological and sediment transport regimes. The plan also identifies habitat protection tools, including: land use planning and policy recommendations, outreach opportunities, acquisitions, and enforcement. Finally, the plan outlines the approach to monitoring progress toward recovery through implementation monitoring (is the plan being implemented?), effectiveness monitoring (are the projects functioning as intended?), and validation monitoring (are the fish responding as anticipated?), as well as a process for adaptive management.

The plan provides general project and program recommendations listed below that apply to cities, counties, state and federal agencies, tribes, and stakeholder organizations:

- Support low density/low impact land uses in rural areas outside of urban growth areas;
- Protect and restore appropriate riparian areas;
- Maintain and restore natural streambank conditions;
- Protect and restore natural watershed functions in the floodplain and channel migration zone;
- Retain large woody debris in streams to support salmon habitat and restore natural watershed processes;
- Eliminate existing fish passage barriers such as culverts and tide gates and prevent the creation of new barriers;
- Achieve no net loss of wetland functions and values, and restore degraded wetlands where possible;
- Avoid cumulative adverse impacts to streams, riparian corridors, and wetlands throughout the watershed; and
- Address salmon habitat protection in management plans for natural areas and open spaces.

5 Existing and Potential Partnerships

In addition to County programs and local programs in the Towns of Lyman and Hamilton, state, regional, and local agencies, tribes, and organizations are active in the restoration of Skagit County shorelines. The County's SMP represents an important vehicle for facilitating and guiding restoration projects and programs in partnership with other government agencies, tribes, or private and/or non-profit entities. The County can provide cooperation, direction, and leadership to assure that project/program designs meet identified goals. The County's current and potential partners and their local roles in shoreline protection and/or restoration are identified below and generally organized in order by the scope of the organization, from the larger state and watershed scale to the County and local scale.

5.1 Federal

5.1.1 United States Army Corps of Engineers (Corps)

The Corps has worked on flood and river management in the County since the late 1800s. A federal General Investigation study conducted by the Corps, in partnership with Skagit County, and in coordination with numerous agencies and local entities, on flooding in the Skagit River basin began in 1997. The Corps conducted public outreach on preliminary alternatives in the spring of 2012 (http://pse.com/aboutpse/HydroLicensing/Documents/2012_Resource_Group_Documents/Aquatic%20Resources%20Group/USACE%20Skagit%20River%20Preliminary%20Investigation/Aquatic%20Resources%20Group_FINAL_May%207_%202012.pdf). Preliminary alternatives include opportunities for dam modifications, levee setbacks and modifications, dike construction, flood bypass channels, estuarine restoration, riparian restoration, relocation of flood-prone structures and other non-structural approaches to flood hazard reduction. Final recommendations are anticipated in 2015 through an integrated feasibility report and environmental impact statement.

5.1.2 United States Forest Service

Pacific Coast Watershed Partnership

The Mt. Baker-Snoqualmie National Forest participates in the Pacific Coast Watershed Partnership (PCWP), one of 12 national Largescale Watershed Restoration Demonstration Projects funded by the Forest Service. The purpose of the program is to address large-scale watershed restoration partnerships rather than focusing restoration solely within the boundaries of Forest Service lands.

Skagit Wild and Scenic River

The Skagit Wild and Scenic River System is managed to protect and enhance the free-flowing condition, water quality, views, and access to the upper Skagit River.

Approximately 50 percent of the Skagit Wild and Scenic River System is in private ownership. The role of the Forest Service on nonfederal lands is to monitor activities along the river corridor and to work cooperatively with state and local agencies, and landowner(s) to address any issues likely to have an adverse effect of river conditions. The Forest Service may provide technical assistance to assist landowners in avoiding adverse impacts, and the Forest Service has the authority for limited purchase of private lands in fee title or a scenic or access easement.

Skagit River Stewards

Skagit River Stewards is a volunteer monitoring program coordinated by the Forest Service and North Cascades Institute in partnership with the National Park Service and the Skagit Fisheries Enhancement Group (SFEG). Volunteers collect aquatic insect samples, which are used to develop a regional index of aquatic conditions.

5.1.3 National Park Service

The National Park Service manages lands within the North Cascades National Park. Recent efforts to restore lands and aquatic resources in North Cascades National Park include invasive non-native plant management and development of the Mountain Lakes Fisheries Management Plan. The North Coast and Cascades Network (NCCN) operates an ongoing Inventory and Monitoring (I&M) Program to develop, implement, and communicate status and trends monitoring.

5.2 State

5.2.1 Washington State Department of Ecology

Skagit County and the Towns of Lyman and Hamilton continue to utilize Ecology staff as a resource for technical support and regulatory assistance when needed. The County and Towns refer to Ecology's 2005 Stormwater Management Manual for Western Washington for minimum stormwater standards.

5.2.2 Washington State Department of Fish and Wildlife

In addition to its role reviewing applications for in-water work and issuing Hydraulic Project Approvals (HPAs), the WDFW has conducted assessments of off-channel habitat and fish-passage blocking culverts on streams throughout the Skagit Basin. In addition, the WDFW monitors the status of all fish stocks in the basin.

5.2.3 Washington State Parks and Recreation Commission

Several state parks lie within shoreline jurisdiction. The Washington State Parks and Recreation Commission completed a management plan for Rasar Park in the middle Skagit River management unit. The management plan addresses the preservation of riparian ecosystem and plant diversity. A management plan has also been completed for Rockport Park, which lies just outside of shoreline jurisdiction.

5.2.4 Washington Department of Natural Resources (DNR)

Washington DNR owns and manages several properties within Skagit County, including tidelands and forestlands. DNR has partnered with entities within the County to facilitate aquatic and forest land conservation. DNR facilitated the transfer of more than 530 acres of submerged lands in Fidalgo Bay into public ownership and encumbered by a conservation easement held by Skagit Land Trust (SLT). DNR has also purchased working forestlands in Skagit County at risk of conversion to non-forestry uses. Additionally, DNR manages large areas of Cypress Island as both a Natural Resources Conservation Area and Natural Area Preserve, and in coordination with the Samish Island Nation, the agency is pursuing restoration of Secret Harbor on Cypress Island (See Section 6.4 for additional project details).

5.2.5 Puget Sound Nearshore Ecosystem Restoration Project (PSNERP)

In 2010, PSNERP developed conceptual designs for 36 potential restoration projects. These projects (actions) were identified using the Nearshore Database, a database of known project ideas throughout Puget Sound. Spatial data of existing nearshore processes and function were used to identify locations among know project areas where process-based restoration is likely to be successful. Five projects within the Skagit River delta were identified among the 36 potential projects, and conceptual designs were developed for each project.

The five projects, described in Section 6, below, include:

- Deepwater Slough Phase 2
- McGlinn Island Causeway
- Milltown Island
- North Fork Levee Setback
- Telegraph Slough- Phase 1 and 2

5.2.6 Puget Sound Partnership

The Puget Sound Partnership consists of representatives from a variety of interests from the Puget Sound region, including business, agriculture, the shellfish industry, environmental organizations, local governments, tribal governments, and the Washington state legislature. Some of the Partnership's key tasks are as follows:

- Develop a set of recommendations for the Governor, the Legislature and Congress to preserve the health of Puget Sound by 2020 and ensure that marine and freshwaters support healthy populations of native species as well as water quality and quantity to support both human needs and ecosystem functions.

- Engage citizens, watershed groups, local governments, tribes, state and federal agencies, businesses and the environmental community in the development of recommendations.

- Review current and potential funding sources for protection and restoration of the ecosystem and, where possible, make recommendations for the priority of expenditures to achieve the desired 2020 outcomes.

The Partnership through the Leadership Council released an Action Agenda in December 2008. Implementation of this Action Agenda has resulted in State and Federal funding of restoration and protection initiatives and projects. The Puget Sound Partnership, in coordination with local governments and non-profits, is sponsoring the 'Puget Sound Starts Here' campaign to educate the public in the region about non-point source stormwater impacts on water quality. The campaign is focused on simple, clear messaging and marketing to raise awareness and affect behavior change.

5.3 Regional

5.3.1 Skagit Watershed Council

The Skagit Watershed Council is the lead entity for salmon recovery in WRIAs 3 and 4. The Watershed Council is a non-profit organization that supports and endorses voluntary restoration and protection of natural landscape processes. Through its collaboration, technical assistance, and education, the Council facilitate partnerships and collaborative approaches to achieving salmon recovery and ecosystem restoration. Voluntary restoration supported by the Council is based on a watershed approach and guided by the Skagit Chinook Recovery Plan (SRSC and WDFW 2005) and the Council's 2010 Strategic Approach (Beechie and Raines 2010).

The 2010 Strategic Approach document (Beechie and Raines 2010) refines the principles for salmon recovery actions as follows:

1. Restore processes that form and sustain salmon habitats;

2. Protect functioning processes and habitats from degradation;

3. Focus protection and restoration on the most biologically important areas;

The Strategic Approach and the Skagit Chinook Recovery Plan identify three tiers of target areas for restoration and protection depending on the area's significance for salmon recovery and the number of populations using a given area. The three tiers and their respective priority objectives are described below:

Tier 1 Areas:

- Skagit estuary, riverine tidal delta, and river floodplains that provide rearing habitats for juveniles of multiple Chinook salmon populations.

  Objectives:

  - Restore distributary channels connecting the North Fork of the Skagit River to the Skagit bayfront.
  - Restore connectivity between the North Fork and the Swinomish Channel/Padilla Bay area by addressing the barriers created by the McGlinn Island Causeway, jetties, levees, and Highway 20.
  - Restore estuarine emergent and scrub-shrub wetlands that are directly connected to the North or South Fork Skagit River or a major distributary channel.
  - Restore functioning riverine tidal forested and scrub shrub wetland habitat through actions such as dike removal and/or set back.
  - Implement actions to improve water quality in areas identified as impaired.
  - Protect existing high quality habitat and contribute to restoration actions through acquisition or permanent conservation easement.

- Mainstem river, floodplain, and tributaries within the floodplains of the Skagit and Sauk Rivers that provide rearing habitat for multiple Chinook populations

  Objectives:

  - Reconnect isolated floodplain areas and restoring mainstem edge habitat by removing, relocating, or improving hydromodifications and floodplain structures or roads that restrict natural floodplain and fan functions.
  - Acquire lands or conservation easements to permanently protect high priority parcels or facilitate restoration actions.

Tier 2 Areas:

- Twelve pocket estuaries bordering Skagit Bay within one day's travel distance from the delta for fry migrant Chinook

  Objectives:

  - Protect and/or restore natural landscape processes, connectivity, and habitat functions at the identified pocket estuaries in WRIA 3 (including acquisition of land necessary to achieve this objective).

- Mainstem and large floodplains of the upper Skagit, upper Sauk, upper Cascade, and Suiattle Rivers. Key tributary floodplains that contain significant habitat for Chinook salmon: Day Creek above the Skagit floodplain, Finney Creek, Illabot Creek, and Bacon Creek. Floodplain-adjacent unstable slopes, alluvial fans, and riparian areas (generally not more than 2 site-potential tree heights in width).

  Objectives:

  - Reconnecting isolated floodplain areas and restoring mainstem edge habitat by removing, relocating, or improving hydromodifications and floodplain structures or roads that restrict natural floodplain and fan functions.

  - Acquire lands or conservation easements to permanently protect high priority parcels or facilitate restoration actions.

  - Restore natural riparian structure and processes (including shade, large woody debris recruitment, and root reinforcement of banks and adjacent unstable slopes) by reforesting impaired riparian zones and LWD supplementation where necessary to recover pool-riffle habitat until trees mature.

Tier 3 Areas:

- Watersheds that have been identified as having impaired (elevated) sediment supply or peak flows.

  Objectives:

  - Reduce land use impacts on sediment supply and peak flows.

  - Repair, relocate, or remove roads, bridges, culverts and other man-made structures that contribute to (or are at high risk of contributing to) significantly increased erosion or peak flows.

A complete list and description of proposed projects to improve habitat conditions and harvest and hatchery management can be found in the Skagit Chinook Recovery Plan (SRSC and WDFW 2005). Projects that have been completed or are planned for implementation are included in the State's Habitat Work Schedule database (hws.ekosystem.us), which is updated by the Skagit Watershed Council. Ongoing projects, projects in development, as well as projects identified on the Watershed Council's 3-year work plan for near-term implementation are described in Section 6.

5.3.2 Skagit Conservation District

Washington State conservation districts are self-governed by volunteer boards that establish priorities and set policy. The Skagit Conservation District (SCD) Board includes landowners, agriculturists, and other citizens with an interest in managing and maintaining the County's natural resources.

The specific priorities and goals of the SCD are:

- Protection and improvement of surface and groundwater quality
- Watershed planning and implementation
- Riparian restoration and enhancement
- Forest stewardship
- Wildlife habitat enhancement
- Conservation education
- Protection and preservation of prime agricultural land
- County government assistance

To achieve goals, SCD staff work with private partners, state and federal government agencies, agricultural and environmental organizations, and other conservation districts to provide education and on-the-ground assistance to local landowners. Skagit County partners with the SCD's Stream Team to conduct citizen water quality monitoring and encourage implementation of BMPs by landowners and land users. The Stream Team, in partnership with the County, conducts wildfire awareness outreach and risk assessment, promotes environmental education, and organizes and implements other volunteer-based water and soil conservation projects. The Skagit Conservation District also coordinates and supports implementation of several restoration projects, described in Section 6 of this report.

Other volunteer programs managed by SCD are Watershed Masters and Beach Monitors, and the organization's other partnerships extend to a number of schools. Current SCD programs, in addition to those managed by the Stream Team, target reduction of soil erosion, prevention of sediment build-up, achievement of nutrient management standards by dairies, development of wildlife habitat on private land, enhancement of riparian areas, protection of shellfish through cleanup of nonpoint pollution, and education of citizens.

5.3.3 Skagit Delta Tidegates and Fish Initiative

The Skagit Delta Tidegates and Fish Initiative was convened by the Western Washington Agricultural Association (WWAA) in March 2006 for the purpose of identifying pathways and protocols for federal, state and local permitting of tidegate and floodgate repair and replacement activities within the Skagit and Samish River deltas. An Agreement resulting from this process was finalized in April 2010. Parties to the Agreement include the Western Washington Agricultural Association (WWAA) (representing the collective interests of the participating Drainage, Irrigation and Diking Districts within the Skagit and Samish River deltas); NOAA's National Marine Fisheries

Service (NMFS); United States Fish and Wildlife Service (USFWS); and the Washington Department of Fish and Wildlife (WDFW). Additional participants in developing the Agreement include the U.S. Army Corps of Engineers (Corps), the Washington Department of Ecology (WDOE), and the Governor's Office of Regulatory Assistance.

The Agreement employs a delta-wide landscape approach to address regulatory approval of maintenance needs and other actions at tidegate and floodgate sites under the ownership of the participating parties in conjunction with the estuarine habitat restoration goals for recovery of Endangered Species Act (ESA) listed Chinook salmon in the Skagit River system. It is intended to facilitate the achievement of functional estuarine habitat restoration within the Skagit delta area in a manner that also minimizes impacts to and losses of established agricultural lands in the Skagit Delta, including related drainage infrastructure. The Agreement stipulates that up to 2,700 acres of delta agricultural lands may be converted back to estuarine habitat, and that such conversion would be undertaken in a manner consistent with and providing a direct contribution to achieving the goals and the objectives of the Skagit Chinook Recovery Plan.

5.3.4 Fisheries Enhancement Groups

Skagit Fisheries Enhancement Group

The Skagit Fisheries Enhancement (SFEG) is a nonprofit organization formed in 1990 to engage communities in habitat restoration and watershed stewardship in order to enhance salmon populations. Working in partnership with local landowners, conservation groups, government agencies and tribes, the SFEG sponsors and supports implementation of several restoration projects in the County (See section 6 for specific project information).

In addition to sponsoring restoration projects, the SFEG collects monitoring data on stream habitat, stream macro-invertebrates, spawning salmon, and vegetation. The SFEG is partnering with the Nature Conservancy to implement a program to strategically address and eliminate Japanese knotweed in the upper Skagit watershed.

Sound Salmon Solutions

Sound Salmon Solutions (formerly the Stilly-Snohomish Fisheries Enhancement Task Force) is a non-profit organization whose mission is to ensure the future of healthy salmon runs in the Stillaguamish and Snohomish River basins and Island County watersheds. Sound Salmon Solutions partners with agencies, organizations, and local landowners to implement restoration projects and conduct educational outreach or stewardship events.

5.3.5 Land Trusts

Skagit Land Trust

Skagit Land Trust (SLT) is a non-profit organization Founded in 1992 with the objective of protecting natural lands, open space, and wildlife habitat. The Trust works under a Conservation Strategy that guides the organization's projects. Primary methods of protection promoted and implemented by the Trust are conservation easements, land donation, and land acquisitions. The Trust also assists landowners and other conservation groups and agencies in protecting natural lands. Projects have been undertaken with the cooperation and input of residents, ranchers, farmers, businesses, and other landowners, and in partnership with a wide range of municipalities, government agencies, non-profit groups, committees, private conservation interests, and other land trusts. Ongoing and proposed restoration projects in the upper Skagit watershed that are facilitated or co-sponsored by the SLT are identified in Section 6.9.

Whidbey Camano Land Trust

The Whidbey Camano Trust protects critical areas and wildlife habitat by acquiring land and conservation easements through donations and purchase. Numerous Trust lands, easements, and other properties have been protected by the Trust in Skagit County. The Trust focuses on lands critical to the islands resource needs and cultural heritage, providing ongoing stewardship on owned lands and easements. The Trust also provides expertise to landowners on how to permanently protect the conservation values of private land, and works with local, State, and federal agencies and community organizations on land conservation projects.

Forterra

Forterra (formerly known as the Cascade Land Conservancy) focuses on conservation of forests, farms, shorelines, parks, and natural areas, through collaborations with local jurisdictions, residents, and communities. Efforts include implementing community stewardship programs, partnering with local jurisdictions, providing technical assistance on low-impact development and living, informing policy, and acquiring lands and easements for conservation. Skagit County projects include a 313-acre private wetland mitigation bank on the Lower Skagit River outside Mount Vernon and Burlington.

5.3.6 Tribes

Skagit River System Cooperative

The Skagit River System Cooperative (SRSC) works on behalf of the Sauk-Suiattle Indian Tribe and the Swinomish Indian Tribal Community to actively improve fisheries management within their usual and accustomed fishing areas, including the Skagit and Samish River basins. Fisheries management activities include harvest and hatchery management, research, environmental review, habitat restoration, and a range of other activities.

SRSC, with WDFW, completed the 2005 Skagit Chinook Recovery Plan. Skagit County was involved in the Skagit Chinook Workshop Group during the years, beginning in 1994, when it formed and met to work toward fulfilling the goals of designing habitat protection and restoration, harvest management, enforcement, and other strategies to restore Skagit River Chinook. The plan includes recovery goals, limiting factors, management actions, habitat and restoration actions, current research and monitoring, and recommendations. Recommendations include continuing to develop an effective partnership with interested entities, including Skagit County. Restoration projects sponsored by the SRSC that are underway or proposed are identified in Section 6.

The SRSC is also actively engaged in monitoring of ecological conditions in the Skagit River delta. Beginning in 1994, the SRSC began collecting data on the following:

- Juvenile life history types.
- Current and historic habitat conditions.
- Fish use patterns for freshwater, estuarine delta, and Skagit Bay nearshore life stages.

Results from ongoing monitoring indicate:

- A strong negative relationship between the magnitude of peak flows during incubation and egg-fry survival.
- A historical loss of estuarine habitat and a high percentage of wild ocean type Chinook salmon, which use estuarine rearing habitats extensively.
- Density-dependent movement.
- Seasonal preferences in nearshore habitat utilization.

Swinomish Indian Tribal Community

In addition to the SRSC, the Swinomish Indian Tribal Community manages water, air, and land resources on its tribal lands. Water quality monitoring and shellfish toxin monitoring are part of an integrated, reservation-wide environmental protection effort, and monitoring results are used to inform resource management and planning. The tribe also operates programs to remove invasive *Spartina angelica* and educate the public about the environment. Restoration projects sponsored by the SRSC that are underway or proposed are identified in Section 6.3.

Upper Skagit Indian Tribe

The Upper Skagit Indian Tribe (USIT) is active in shellfish/fisheries research and management in Skagit County, having worked in local and community partnerships to complete restoration projects in the County. A recent partnership effort between the Tribe and the County resulted in the restoration of 140 acres of salmon habitat around Hansen Creek, including 87 acres of forested wetland in the County-owned Northern State Recreation Area. Ongoing monitoring and restoration in Hansen Creek is proposed (See Section 6.9).

Samish Indian Nation

The mission of the Samish Indian Nation Natural Resource Department is to preserve, protect and enhance all natural resources within the Samish historical and cultural territory by helping integrate community values, and ecosystem health in every decision that upholds the Tribe's Sovereign right for protection of all natural resources. The Samish Indian Nation Department of Natural Resources supports beach restoration projects, invasive species removal projects, water quality studies, and volunteer events. In 2010, the Natural Resource Department received a grant from the EPA to assess the increasing problem of Japanese Knotweed in the Samish River Watershed (Section 6.7).

Lummi Nation

The Lummi Nation Reservation is located near the Nooksack River delta in Whatcom County. The Lummi Nation is an active sponsor of habitat restoration in the Upper Nooksack basin, including the upper South Fork Nooksack River in Skagit County. Ongoing and proposed projects in the South Fork Nooksack sponsored by the Lummi Nation are described in Section 6.10.

5.3.7 Energy Partners

Puget Sound Energy

Puget Sound Energy (PSE) operates two hydroelectric power plants on the Baker River near Concrete. As part of its 2008 FERC relicensing agreement, PSE developed and funded an Aquatic Riparian Habitat Protection, Restoration, and Enhancement Plan (PSE 2010). The plan established an initial budget of $8.6 million to conduct habitat protection, restoration, and enhancement, and includes a provision for an additional $1.6 million contingent on future dam development. The plan does not identify specific projects for funding, but instead it establishes standards and guidelines to "protect and enhance low-elevation bottomland ecosystems in the Skagit River basin, including the Baker River sub-basin, that have habitats similar to those which might be available if the project were not relicensed." It should be noted that the settlement agreement was established to mitigate for damages to aquatic resources caused by ongoing operation of the hydropower facilities, so restoration activities conducted with these funds should be viewed as mitigation (compensating for impacts), rather than strictly restoration.

Seattle City Light

Seattle City Light (SCL) operates three major hydroelectric dams on the Upper Skagit River. SCL has been managing flows for fish since 1985 under an interim flow management agreement, and since 1995 under the Skagit Hydroelectric Project Fisheries Settlement Agreement as part of SCL's Federal Energy Regulatory Commission (FERC) operating license. The settlement agreement requires fish management flow measures that minimize stranding impacts to juvenile salmon and steelhead, and protect salmon and steelhead eggs and embryos from dewatering during low flow periods, and scouring during peak flow events. Also as a result of the settlement agreement, SCL is engaged in a program to restore side channels to the upper Skagit River. As noted

above, since these restoration actions are required to mitigate for impacts from ongoing hydroelectric operations, these actions should be viewed as mitigation rather than strictly restoration.

SCL developed an Early Action Plan to address Endangered Species Act concerns and help in species recovery. Implemented through the Skagit Watershed Council, SCL provides funding to protect and restore high quality habitat in watersheds where the County has an interest. Projects sponsored and funded by SCL are identified in Section 6.

5.3.8 National Non-governmental Organizations

The Nature Conservancy

The Nature Conservancy (TNC) works primarily to preserve and protect habitat and rare and sensitive ecosystems. TNC partners with governments, businesses, Tribes, institutions, and other non-profits to acquire land, plan and implement research and restoration, and protect habitat in perpetuity. The organization has worked on and around the Skagit River for more than 30 years, identifying restoration and protection needs with the help of many partnering entities.

Examples of TNC's work in Skagit County include the Skagit River Bald Eagle Natural Area, created in partnership with WDFW. The project includes an additional six landowning partners and encompasses more than 9,000 acres of river and forest. In the pioneering Farming for Wildlife program, TNC is partnering with Skagit Delta farmers to incorporate flooding into their crop rotations to create important wetland habitat. Other projects sponsored by TNC include restoration on Fisher Slough and acquisitions and restoration in the upper Skagit watershed. These projects are described in Section 6.

Ducks Unlimited

Habitat conservation is the mission of Ducks Unlimited (DU). In western Washington, DU designs projects to provide wintering and migration habitat to waterfowl and facilitate fish passage and use. Projects often involve local, State, federal, and private landowners and partners. A Skagit County example is a 270-acre wetland restoration project on the Skagit Wildlife Area between Samish and Padilla Bays, managed by WDFW, made possible through a partnership with WDFW and USFWS. DU has also restored habitat on adjacent and nearby properties, and plans for additional restoration are underway.

North Cascades Institute

The non-profit North Cascades Institute works to conserve and restore northwest environments through education. As part of their work in the Pacific Northwest, the Institute created the Skagit Watershed Education Project for elementary school students and their parents. Skagit County Parks and Recreation is one of the Institute's collaborating partners, and Skagit County is an Institute donor.

6 ONGOING AND POTENTIAL PROJECTS

6.1 Introduction

Numerous potential projects are either ongoing or have been identified for implementation along Skagit County's shorelines. Projects identified below and mapped in Appendix A represent opportunities that have been identified in planning documents for specific watershed areas or site specific projects. Many of the ongoing and potential projects focus on restoration of salmonid habitat, and other projects are focused on water quality improvement and restoration of overall ecological functions. Potential and ongoing projects are briefly described in the tables below, including an approximate timeframe for implementation, likely sponsor, potential funding source, and project/action codes.

In addition to identifying projects that are proposed or underway within the County's shorelines, as a part of this shoreline restoration plan, several projects throughout the County were identified for additional conceptual development to facilitate future restoration actions. A total of four projects were identified based on input from County staff and many of the County's restoration partners. Selection criteria for these projects included:

- Projects that have been identified, but for which conceptual designs had not yet been developed;
- Projects on public lands or projects that would have a significant public benefit;
- Projects representing diverse areas and restoration activities within the County.

Projects selected for additional conceptual development include the following, described briefly below. Additional details on restoration strategies and conceptual elements are provided in Appendix B.

- Baker River Alluvial Fan Enhancement

  Restore riverine, shoreline, and riparian functions to provide fish and wildlife habitat, while providing shoreline access and low-impact recreational opportunities.

- Barney Lake/Logan Creek Restoration

  Restore a naturalized, low gradient stream/wetland complex within a native riparian forest. Restore the scrub-shrub and forested vegetation components which formerly existed around and upslope from Barney Lake.

- Samish Island Tidal Restoration

Restore hydrologic connectivity between Samish Bay and Padilla Bay. Restore estuarine habitat, and reduce flooding risks and impacts to Samish Island Road and nearby properties.

- South Fork Skagit River Side Channel and Riverine Wetland Restoration

  Restore or create a network of interconnected side channels and off -channel wetland habitat for use by a variety of fish and wildlife species, with an emphasis on rearing habitat for juvenile Puget Sound Chinook salmon.

6.1.1 Timeframe

Estimates of the timeframe for project completion are included in Tables 4 through 14; however, prediction of the timing for project implementation is complicated by the following factors. Project development is often phased by feasibility, conceptual design, permit design, and construction, so projects frequently take several years to complete from start to finish. In other cases, one project may involve several site locations that are addressed sequentially in time. Additionally, project implementation is often subject to the availability of funding. Therefore timeframes identified in this document are only estimates of potential timing, and they are left deliberately broad. Project timeframes are described as follows.

- Short term: Project implementation/completion 2013-2016
- Near term: Project implementation/completion 2016-2021
- Long term: Project implementation/completion after 2021

6.1.2 Potential Funding Sources

Some restoration projects and programs within the County could be funded by County general funds, utilities funds, or parks funding; however, many of the proposed habitat restoration projects are likely to be conducted by the County's partners in restoration identified in Section 5. These entities are likely to pursue funding through federal or state grants, as well as local, private, or non-profit matching funds. Projects may be funded in multiple phases, with different funding sources appropriate for each phase. Many of the projects listed below have already received grant funding for preliminary stages of project development and design. Where possible, in the Tables 4 through 14, already secured and/or possible funding sources are indicated in parentheses, although funding is not limited to the source listed. Because funding sources and the availability of grants change over time, projects identified for implementation in the long-term timeframe frequently do not have a funding source identified. Abbreviations of funding sources in the tables refer to the following grant programs:

- ALEA: Aquatic Lands Enhancement Account
  Provides funding to buy, protect, and restore aquatic lands habitat and to provide public access to the waterfront.

- CREP: Conservation Reserve Enhancement Program
  CREP is a voluntary program to establish forested buffers along streams on private lands. The program pays all the expenses to establish the buffer, in addition to annual rental payments and a signing bonus to the landowner. Land enrolled in CREP is removed from production and grazing under 10 to 15-year rental contracts.

- ESRP: Estuary and Salmon Restoration Program
  Funding and technical assistance for nearshore restoration and protection efforts in Puget Sound. Projects must within Puget Sound, identified by a salmon recovery lead entity or Marine Resource Committee, and identified in a current salmon recovery, watershed, or near-shore habitat restoration or protection plan.

- NFWF: National Fish and Wildlife Foundation
  Non-profit organization that sponsors several resource-focused grants, including Conservation Partners program, which provides technical assistance to farmers, ranchers, foresters and other private landowners to optimize wildlife habitat conservation on private lands.

- PSAR: Puget Sound Restoration and Acquisition Fund
  State funds aimed at protecting and restoring Puget Sound by 2020.

- SRFB: Salmon Recovery Funding Board
  Provides funding to improve important habitat conditions or watershed processes to benefit salmon and bull trout. Projects must go through selection by local lead entities and must address goals and actions defined in regional recovery plans or lead entity strategies.

- WWRP: Washington Wildlife and Recreation Program
  Provides funding to protect habitat for wildlife including habitat for endangered, threatened, or sensitive species. Provides funds to restore riparian vegetation.

6.1.3 Project or Action Codes

In order to provide a quick reference to the different types of restoration actions proposed throughout the County's shorelines, project/action "type" codes were assigned for each potential project. When more than one type of action applies to a single project, all are listed within the type code.

Project/action types and codes are as follows:

- Habitat-related restoration action (Code H): The project or action is intended to improve habitat in jurisdictional shorelines.

  - Subcode f = floodplain/off-channel work such as side/off-channel creation or enhancement, meandering, adding spawning gravels, and oxbow reconnection
  - Subcode w = wetland creation, restoration, or enhancement
  - Subcode i = instream work such as LWD placement, dredging, and bank armor removal
  - Subcode r = riparian work, including planting, removing invasive vegetation, and gravel bar creation
  - Subcode t = intertidal work in areas typically not associated with an estuary
  - Subcode e = estuarine work in intertidal areas associated with the mouth of a river or stream
  - Subcode m = marine shoreline work at or immediately landward of a marine shoreline, as distinguished from riparian work along freshwater shorelines

- Water quality related actions (Code W): Improving water quality is a primary goal of these actions. They may include a habitat component (for example, when riparian restoration is intended to impact water temperatures) or may be aimed solely at water quality, such as completion of a TMDL or restriction of contaminant use.

- Management actions (Code M): This category describes actions that usually require a greater degree of decision-making and research to implement than most habitat actions. It includes management or manipulation of fish or predator populations, nutrient enhancement, and fish population monitoring. This code also includes most habitat, hydrologic, and water quality monitoring, except where monitoring is implemented as part of a particular habitat restoration project.

- Hydrologic actions (Code Y): This category addresses hydrologic processes and functions that affect the shoreline, and specifically fish habitat. It includes actions that impact flow levels where they affect or impede fish passage or where they affect habitat.

- Fish passage (Code P): Projects related to fish passage include culvert replacement, tributary access, and improvements to dams and other water control devices,

- Habitat acquisition and/or protection (Code A): This code applies where the acquisition of land for the primary purpose of habitat protection, or the use of easements or protective covenants for the same purpose. It includes non-regulatory land use policy changes that apply to specific areas, such as cattle exclusion.

- Research and investigation (Code R): Both formal research projects and less formal gathering of information and literature review are considered in this category.

- Regulatory actions (Code G): Actions in this category include regulatory enforcement and proposed or recommended changes to existing regulations.

- Outreach (Code O): Conducting educational outreach to the public and other entities, identifying potential partners in conservation efforts, pursuing collaborative relationships with other entities, and disseminating information are considered outreach.

6.2 Samish Bay Management Area

Diking along the shorelines limits the extent and quality of shoreline habitat available in Samish Bay, particularly during flood tides. The Puget Sound Action Team identified dike removal as a significant action for restoring habitat in the Samish River and Samish Bay (PSAT 2005). Riparian restoration would improve shoreline habitat functions, and vegetation along the shoreline could help filter bacterial contaminants before reaching the sound. If fecal coliform bacteria originate from agricultural sources, agricultural best management practices to control runoff could improve water quality. Shoreline protection efforts would be most effective where riparian vegetation exists with little armoring, particularly in the northern reaches. A shoreline assessment of northern Skagit County bays and shoreline habitats also identified the northern shoreline of Samish Bay ranked highly as a conservation priority (People for Puget Sound 2006).

Table 3. Samish Bay Management Area 1 Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Samish Bay			
SaB-1 Ht	**Remove agricultural dikes where feasible:** Remove agricultural dikes, where feasible to support rearing and foraging opportunities for juvenile Chinook salmon (PSAT 2005)	Conceptual-Long-term	Unknown/ Grant funding (SRFB)

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.3 Samish Island, Padilla Bay and East Side of Swinomish Channel Management Area

Opportunities for restoration in the management unit include improving riparian vegetation and removing or reducing the impacts of shoreline armoring. Reducing shoreline armoring would allow for increased habitat and hydrologic connectivity, particularly at the southern end of Padilla Bay and Telegraph Slough, where dikes now isolate Padilla Bay from the Skagit River delta. Historically, tidal channels connecting the Skagit delta to Padilla Bay allowed delta rearing Chinook salmon from the Skagit River to access and utilize habitat in Padilla Bay. Today, those connections have been lost due to diking and development. The Skagit Chinook Recovery Plan (SRSC and WDFW 2005) emphasizes process based restoration in order to restore functions to the Skagit nearshore. Actions to restore connectivity between Padilla Bay and the Skagit River and to reduce diking impacts along the southern shoreline of Padilla Bay would restore fundamental processes that improve juvenile salmonid rearing opportunities (PSAT 2005).

The west end of Samish Island and the area north of Bayview State Park provide opportunities for conservation of shoreline processes and functions. A rapid inventory assessment of Samish Island was completed to assess conditions and identify conservation and restoration priorities (People for Puget Sound 2002). Based on the analysis, the areas highlighted for conservation were Scott's Point, points northwest of Wharf Road, points north and east of Samish Point, and several areas along Samish Island Road. The areas prioritized for restoration were Scott Road, west Samish Beach, points north and east of Samish Point, and a few areas along Samish Island Road. Three general areas of focus for combined conservation and restoration consideration were recommended based on these scores and local knowledge of Samish Island and the surrounding areas. These areas were: 1) The Samish Point area; 2) The Wharf Road area, and, 3) The Scott Road area (People for Puget Sound 2002). A broader survey of Northern Skagit County bays and shorelines identified similar priorities along Samish

Island, as well as conservation and restoration opportunities near Bayview State Park (People for Puget Sound 2006).

Table 4. Samish Island, Padilla Bay and East Side of Swinomish Channel Management Area 2 Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Telegraph Slough			
PB-1 Hw	**Telegraph-Phase 2:** Following restoration actions described in Telegraph Slough Phase 1 to restore approximately 90 hectares of marsh, this Phase 2 project will re-establish connectivity and estuarine marsh habitat through the historic footprint of the former Telegraph Slough corridor. This project will necessitate concurrence from the WSDOT and local landowners. (SRSC and WDFW 2005; PSAT 2005, PSNERP 2010)	Feasibility Pending-Long-term	WDFW/ Grants (ESRP, SRFB)
Padilla Bay			
PB-2 Hwte	**Remove agricultural dikes in Southern Padilla Bay:** Remove agricultural dikes, where feasible to support rearing and foraging opportunities for juvenile Chinook salmon. This would require concurrence from the diking district(s) and affected landowners. (PSAT 2005)	Conceptual-Long-term	Unknown/ Unknown
PB-3 Hwe,M	**Continue to remove Spartina colonies:** Remove spartina to improve native vegetation cover and habitat. (PSAT 2005)	Ongoing	Swinomish Tribe/ Unknown
PB-4 Htm,M	**Conservation and restoration around Bayview State Park shoreline:** Conserve area north of Bayview State Park for marine bird and juvenile salmon habitat. Restore the Bayview shoreline for forage fish and marine bird habitat. (People for Puget Sound 2006)	Conceptual-Long-term	Washington State Parks/ State funding; grants
PB-5 W,Y	**Bayview Stormwater Management:** Conduct capital improvements and stormwater management strategies identified in the Bayview Watershed Stormwater Management Plan. (Skagit County 2010a)	Feasibility-Near-term	Skagit County Public Works/ County Public Works funding
Samish Island			
SI-1 Htw,O	**Restore Freestad Lake:** Restore nearshore processes in an historic barrier lagoon located on the southeast shore of Samish Island. A feasibility study outlined a conceptual design that will restore 26.5 acres of tidal wetland habitat including 4793 linear feet of tide channel and 12.1 acres of mudflats. (PSNERP 2010, Skagit County Public Works 2012)	Conceptual design- Near-term	Skagit County Public Works, USIT, SRSC/ Drainage Fund, Clean Water Fund, Grants (ESRP), volunteer labor
SI-2 Htm,O,A	**Conservation on Samish Island:** Work with landowners to conserve northwest point of Samish Island and Camp Kirby on the southwest end of Samish Island. (People for Puget Sound 2006)	Conceptual-Long-term	Unknown/ Grants (CREP, NFWF)

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
SI-3 Htm,O,A	**Restore Samish Island shoreline:** Restore aquatic vegetation, forage fish, salmon, and marine bird habitat at the northeast point and north shore of Samish Island, and Alice Bay, on the southeast end of Samish Island. This would require concurrence from affected landowners. (People for Puget Sound 2006)	Conceptual-Long-term	Unknown/ Grants (NFWF)
SI-4 Hwt,A	**Samish Island Tidal Restoration:** Property acquisition and construction of a new cross dike along the southern boundary of the project. Samish Island Road would be raised above the high tide and river flooding elevations. Culverts under Samish Island Road, or bridges, will be installed to connect intertidal channels between Samish Bay and Padilla Bay. New intertidal channels would be created in the acquired properties to facilitate tidal flows in and out of the area. The old dike would be breached in key locations for tidal connection, with sections remaining as islands of upland vegetation to provide habitat diversity. Native riparian species would be planted in the areas with appropriate elevation. (Appendix B)	Conceptual design-Intermediate-term	Skagit County/ Grants, Skagit County Public Works

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.4 Swinomish Tribal Reservation and Fidalgo and Other Islands Management Areas

The Skagit Chinook Recovery Plan includes a significant focus on process based restoration (e.g., sediment erosion and sediment and water transport processes) in the nearshore ecosystem. The Skagit Chinook Recovery Plan also identified the significance of habitat provided by pocket estuaries to juvenile Chinook salmon during their migration to the ocean (Skagit Watershed Council). A report on habitat and fish use within pocket estuaries identified the Bowman Bay pocket estuary as having significant restoration potential (Beamer et al. 2006).

Opportunities for shoreline enhancement, particularly along the Swinomish Channel, include the removal of shoreline armoring and planting of native tree species. Conservation of shoreline functions along the western side of the management unit will allow for continued shoreline functions there.

Table 5. Swinomish Tribal Reservation and Fidalgo and Other Islands Management Areas Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Sources
Fidalgo Island			
FI-1 Hwem	**Similk Beach:** The objectives of the Similk Beach project are to: • Characterize the restoration potential for this site. • Restore intertidal pocket estuary habitat by removing fill to open up the outlet channel to the marsh, replacing the road fill with a bridge, and constructing channels in the existing golf course wet areas. • Protect and restore sediment source beaches in adjacent drift cell that historically maintained the lagoon spit. (SRSC and WDFW 2005, Skagit County Public Works 2012)	Feasibility Pending-Short-Term	Skagit Public Works, SRSC, Skagit County Parks/ Grants (SRFB, PSAR, ESRP)
FI-2 Hwe,P	**Bowman Bay Pocket Estuary:** Wetland creation to expand the existing pocket estuary. The wetland outlet to Bowman Bay, which appears to be fish passable during high tides, could be reconstructed for better fish passage. Some of the mowed lawn area adjacent to the estuary could be excavated to expand the wetland. (SRSC and WDFW 2005; Beamer et al. 2006)	Conceptual Long-term	SFEG/ Grants (SRFB, PSAR, ESRP)
FI-3 W,Y	**Fidalgo Island Stormwater Management:** Conduct project recommendations identified in the South Fidalgo Stormwater Management Plan. (Skagit County 2010b)	Feasibility-Near-term	Skagit County Public Works/ Skagit County Public Works funds
Swinomish Tribal Reservation			
FI-4 Hem,W	**SneeOosh Lagoon:** The objectives of the SneeOosh Lagoon project are to: • Restore intertidal pocket estuary habitat by removing fill and creating a new outlet channel. • Protect and restore sediment source beaches in the adjacent drift cell that historically maintained the lagoon spit. Address water quality issues related to the sewer pump station in the isolated marsh. (SRSC and WDFW 2005)	Feasibility Pending-Long-term	Unknown/ Grants (SRFB, PSAR, ESRP)
FI-5 Hem	**Kiket Lagoon:** The objectives of the Kiket Lagoon project are to: • Restore intertidal pocket estuary habitat by removing fill and bank armoring. Protect and restore sediment source beaches in the adjacent drift cells that historically maintained the lagoon spit and tombolo (a deposition landform in which an island is attached to the mainland by a narrow piece of land such as a spit or bar). (SRSC and WDFW 2005; PSP and RITT 2011)	Concept-Long-term	Swinomish Tribe, WA State Parks/ Grants (SRFB, PSAR, ESRP)_

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Sources
March's Point			
FI-6 Hwt,R	**East shore of March's Point**: In follow-up to the restoration of tidal influence and freshwater sources at Whitmarsh marsh, investigate relocating or removing portions of March's Point Rd landward so that there is a greater setback between the road and the bluff crest. (McBride et al. 2006; People for Puget Sound 2006; Johannessen and MacLennan 2007)	Conceptual-Long-term	Skagit County Dike District #12/ Grants (ALEA)
FI-7 Hwe	**March's Point cusp:** Relocate structures and reopen channel at Longshore Lagoon. Plant overhanging vegetation. Beach nourishment to enhance beach habitats on both sides of the March's Point cusp. Bluff restoration actions to enhance coastal processes and habitat conditions along the shores surrounding the cusp and restore sediment processes over the long term. (McBride et al. 2006; People for Puget Sound 2006; Johannessen and MacLennan 2007)	Conceptual-Long-term	Unknown/ Grants
FI-8 Htm	**North shore of March's Point:** Remove intertidal structures, remove or reconfigure boat ramps. Plant overhanging vegetation to shade upper beach. (McBride et al. 2006; People for Puget Sound 2006)	Conceptual-Long-term	Unknown/ Grants
FI-9 Hwt,W	**Crandall Spit:** Restore sediment sources. Consider removing or replacing dike road with bridge or culvert to restore water circulation in tidal channel and increasing marsh area. Replace the numerous creosoted piles that support the Shell pipeline inside the Crandall Spit salt marsh and adjacent to the tidal channel. (Antrim et al. 2003; McBride et al. 2006; People for Puget Sound 2006; Johannessen and MacLennan 2007)	Conceptual-Long-term	Unknown/ Grants
FI-10 Ht,W	**Remove derelict barge dock west of the Tesoro Pier:** Remove the structure, which has been out of use for many years and has rock and concrete debris covering the backshore and upper intertidal beach. This action would restore between 70-90 ft of beach and documented surf smelt spawning habitat. (Antrim et al. 2003; Johannessen and MacLennan 2007)	Conceptual-Long-term	Unknown/ Grants
Guemes Island			
GI-1 Htm,W, M,O	**Guemes Island Restoration and Conservation:** Focus conservation on the Starfish Rock, North Beach, and West Beach areas. Focus restoration actions on North Beach, Young's Park, Seaway Hollow, and West Beach areas. Continue Spartina surveys; conserve and restore south shore feeder bluffs; restore Cooks Cove Marsh; and remove derelict creosote pilings in Peach Preserve and Kelly's Point. Would require concurrence of affected landowners. (People for Puget Sound 2003)	Conceptual-Long-term	Unknown/ Grants
Cypress Island			
CI-1 Hwem,M	**Cypress Island Restoration and Conservation:** Restore 28 acres of estuarine, riverine, and palustrine wetlands and adjacent upland habitats. Restoration of the site will	Design completed-Near-term	DNR and Samish Indian Nation/ Grants

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Sources
	include removing fill and a tidal dike, and filling ditches to restore hydrology. Pre- and post- project monitoring will be used to inform future projects on the benefits of similar restoration projects. (DNR 2012)		

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.5 Skagit Bay/Delta Management Area

Restoration opportunities in the Skagit River delta primarily focus on restoring tidal influence to restore landscape ecological processes, expand connectivity between the Skagit River and nearshore marsh, and increase Chinook rearing habitat. The restoration of delta processes is significant for salmon because the delta provides a transitional zone between freshwater rearing in the Skagit River and the marine environment of Puget Sound.

Table 6. Skagit Bay Delta Management Area Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Skagit Bay			
SB-1 Hwe	**Deepwater Slough-Phase 2:** Deepwater Slough Phase 2 involves the complete removal of dikes around each of the two islands of diked, farmed and managed wetland left after Phase 1. Together with complete removal of the dikes, the existing drainage network would be filled, a new blind channel network would be excavated, and new distributary channels created. (SRSC and WDFW 2005; PSP and RITT 2011, PSNERP 2010)	Phase 1 - Complete - Short-term	SFEG, WDFW, SRSC/ Grants (ESRP, SRFB)
SB-2 Hwe	**Fir Island Farms Estuary Restoration (Davis/Dry Slough):** 5,800 foot-long coastal dike setback to restore 126.6 acres of tidal marsh. The project will restore the natural tidal prism of Skagit Bay to 126.6 acres of WDFW's 250 acre Fir Island Farm restoring 126.6 acres of tidal marsh habitat and creating 17.4 acres of new tidal channel habitat resulting in additional carrying capacity for an estimated 65,000 juvenile Chinook annually. The project is also designed to maintain snow goose management, public access, and agriculture capabilities at the farm. Drainage and flood protection for the remaining and neighboring farmland will also be maintained. (SRSC and WDFW 2005)	Design/ Permitting- Short-term	WDFW/ Grants (PSAR)
North Fork Skagit River			
SB-3 P	**McGlinn Island Causeway:** The objective of this project is to improve the hydraulic connection between the North Fork of the Skagit River and the Swinomish	Feasibility- Near-term	SRSC/ Grants (PSAR); donated labor

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
	Channel north of McGlinn Island. This action is expected to improve access by juvenile Chinook to estuarine rearing habitat in Padilla Bay. The current access, through a small opening in the rock jetty (known as the "Fish Hole") is limited because river flow is directed away from Swinomish Channel, and the opening is inaccessible at low tides. (SRSC and WDFW 2005; PSP and RITT 2011, PSNERP 2010)		
SB-4 Hwe,O	**Blake's Bottleneck, Thein Farm, Rawlins Road Dike Setback:** These projects would setback levees to create additional emergent marsh and riverine wetlands. The projects will depend on the willingness of private landowners to engage and the incentives provided. (SRSC and WDFW 2005)	Feasibility - Long-term	Skagit Watershed Council/ Federal, State, and local grants (SRFB)
SB-5 P	**Cross Island Connector:** The objective of this project is to re-establish connectivity between the North Fork of the Skagit and the central bay front along Fir Island. This connection could be achieved through a corridor that follows one of two historic pathways (Browns Slough and/or Dry Slough) or through low-lying farmland. (SRSC and WDFW 2005; PSP and RITT 2011)	Feasibility Pending-Long-term	Unknown/ Grants (SRFB)
SB-6 Hwe	**Sullivan's Hacienda:** The objective of this project is to setback levees to a pre-1956 footprint, allowing for the reestablishment of emergent marsh and blind channel networks in the vicinity of Sullivan's Slough. (SRSC and WDFW 2005)	Feasibility Pending-Long-term	Unknown/ Grants (SRFB)
SB-7 Hwe	**North Fork Levee Setback:** The objective of this project is to setback levees along the North Fork of the Skagit from the former inlet of Dry Slough to the western terminus of the levee system near Rawlins Road. This project would require modifications to the North Fork bridge. (SRSC and WDFW 2005, PSNERP 2010, Skagit County Public Works 2012)	Concept-Short-term	Skagit County Public Works/ Grants (ESRP, SRFB, ALEA)
South Fork Skagit River			
SB-8 Hwe	**South Fork Pole Yard:** The objective of this project is to restore tidal and riverine processes that will scour and maintain on-site tidal channels providing rearing habitat for juvenile Chinook and other salmonids. Similar projects described in the Skagit Chapter include Fisher Slough and South Fork Dike Setback. (PSP and RITT 2011, Skagit County Public Works 2012)	Short-term	Skagit County Public Works, Drainage District #3/ Grants (SRFB)
SB-9 He	**South Fork Dike Setback**: 2500' of existing levee would be removed and regraded down to the existing "bank top level" at the top end and the lower end will be graded for off-channel connectivity. The main river levee will be relocated and constructed approximately 700' (maximum) from the riverbank at the mid-point of the project. 1800' of new levee will be built adjacent to the County road with the keyway located along the riverward toe slope of the levee. (SRSC and WDFW 2005, Skagit County Public Works 2012)	Short-term	Skagit County Public Works, Drainage District #3/ Grants (SRFB, ALEA)

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
SB-10 Hwe	**Milltown Island:** Continue to remove dikes and restore estuarine connectivity and tidal marsh habitat complexity across the middle and north sections of Milltown Island. (PSNERP 2010)	Ongoing-Short-term	SRSC/ Grants (ESRP)
SB-11 Hfi	**Sandy Creek:** Alluvial fan reestablishment in the Hill Ditch/Carpenter Creek area (Skagit Conservation District 2006)	Near-term	Skagit County Public Works, SRSC, Drainage District #3/ Drainage Fund, Road Fund
SB-12 P	**Fisher Creek Fish Passage:** Correct priority fish passage barriers, including culverts at English Road and Franklin Road. (Skagit County Public Works 2012)	Near-term	Skagit County Public Works/ Unknown
SB-13 Hwe	**South Fork Skagit River Side Channel and Riverine Wetland Restoration:** Restore or create a network of interconnected side channels and off-channel wetland habitat for beneficial use by a variety of fish and wildlife habitat species, with emphasis on rearing habitat for juvenile Puget Sound Chinook salmon. Creation of substantial off-channel rearing habitat in the form of a constructed wetland/slough feature. (The Nature Conservancy, 2008, The Watershed Company 2013-Appendix B)	Concept-Short-term	The Nature Conservancy

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6.6 Lower Skagit Diking Districts Management Area

Restoration priorities in the lower Skagit management unit focus on reconnecting habitats that have become hydrologically isolated because of historic and ongoing land uses. The Skagit Chinook Recovery Plan (2005) supports this type of restoration and reconnection, which could expand rearing opportunities for juvenile Chinook salmon. Such expanded rearing opportunities could allow for the redevelopment of more diverse life history strategies for juvenile Chinook that are not presently possible because of the simplification of habitat opportunities within the lower Skagit River. An increase in juvenile life history diversity could increase the resilience of Chinook salmon populations to local disturbances.

Table 7. Lower Skagit Diking Districts Management Area Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
LS-1 Hfw	**Britt Slough:** This project seeks to re-establish a historic riverine wetland near the southern portion of the site and examine potential for a distributary connection to the mainstem using the remaining	Feasibility Complete-Near- term	Unknown/ Grants (SRFB)

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
	portion of the historic Britt Slough channel. (SRSC and WDFW 2005)		
LS-2 Hif	**Nookachamps Confluence:** This project would split mainstem flow by excavating a channel through the oxbow at the Nookachamps confluence. (SRSC and WDFW 2005)	Concept-Long-term	Unknown/ Grants (SRFB)
LS-3 Hf	**Sterling Reach Restoration:** This project would reestablish hydraulic connections to the mainstem river throughout the historic oxbows in the vicinity of Sterling. These oxbows, now known as Debay's and Hart's sloughs would be reconnected such that mainstem flows could re-establish historic channel networks. This would require partial removal of a Corps training levee south of Highway 9 and the excavation of historic channels in the present day floodplain. (SRSC and WDFW 2005)	Feasibility Pending-Long-term	Unknown/ Grants (SRFB)
LS-4 Hf	**River Bend:** Conceptual restoration actions at this site focus on actions that restore connectivity to remaining low topographic depressions and oxbow channels. (SRSC and WDFW 2005)	Concept-Long-term	Unknown/ Grants (SRFB)
LS-5 P	**Sorenson Creek Fish Passage:** Correct priority fish passage barriers. (Skagit County Public Works 2012)	Near-term	Skagit County Public Works/ Unknown
LS-6 Hfwir	**Barney Lake/Logan Creek Restoration:** The project will involve grading a new channel for Nookachamps tributary Logan Creek to approximate the historic profile, section, and planform, placing woody debris and restoring vegetation. The project will restore riparian wetland hydrology, decrease instream temperature, improve water quality, and in the process provide valuable habitat for salmonid fish and other wildlife species. The downstream section of the old, ditched channel will remain as a backwater, and the rest will be plugged at various locations to form a series of ponded wetland areas. Revegetation will occur around the Barney Lake oxbow, and areas of pasture enhanced as forage and cover for waterfowl and other wildlife. (Appendix B)	Near-term	Skagit Land Trust, Ducks Unlimited

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6.7 Samish River Management Area

The lower portion of the Samish River would benefit from a reduction in armoring coverage. Enhancement of existing riparian vegetation with conifers and shade trees could help reduce temperatures in Friday Creek and the upper portion of the Samish River. Furthermore, an examination of contaminant sources and land use practices associated with water quality issues being conducted through the Clean Samish Initiative would allow targeted actions to improve water quality throughout the

management unit. The Skagit Chinook Recovery Plan (SRSC and WDFW 2005) does not identify projects in the Samish River because Chinook salmon populations in the Samish River are genetically influenced by hatchery production, rather than wild origin Skagit River Chinook populations; however, a focus on restoring hydrologic connectivity and fish passage would contribute to the diversity of in-stream habitat available to all anadromous salmonid species in the Samish River.

Table 8. Samish River Management Area Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
SR-1 W,O	**Clean Samish Initiative - Samish Pollution Identification and Correction Program:** The purpose of the PIC program is to identify and correct sources of bacterial contamination in the watershed. The program provides a multifaceted approach to address fecal coliform pollution problems, including intensive monitoring, incentives, compliance and enforcement, and a comprehensive education program. (Skagit County 2012b)	Underway-Short-term	Skagit County Public Works/ Federal grants (EPA); County Clean Water fund
SR-2 P	**Fish Passage Projects** Correct priority fish passage barriers at Pipeline Road.	Underway-Short-term	Skagit County Public Works/ Skagit County Public Works funds
SR-3 Hr,M	**Samish River Knotweed Control and Revegetation-** Continue program to control knotweed infestations and Revegetate affected areas in the Samish River Basin.	Ongoing-Short-term	Skagit Fisheries Enhancement Group, Samish Indian Nation/ EPA grant
SR-4 Hir	**Prairie Road/ Ware Creek-** Relocate creek out of Prairie Road ditch	Proposed-Short- term	Skagit County Public Works/ Unknown
SR-5 Hir	**Reroute Thomas Creek away from Kelleher Rd.**	Proposed-Short-term	Skagit County Public Works/ County roads funds

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.8 Middle Skagit Management Area

For the mainstem Skagit River, the Skagit Chinook Recovery plan prioritizes the removal of riprap armoring and the restoration of floodplain connectivity wherever feasible. The Recovery Plan strategy is to extend bridge crossings where they cross the floodplain, remove shoreline modifications where they interfere with floodplain functions, and soften shoreline armoring by incorporating wood and complex structures along the edge of the floodplain. Within the Middle Skagit Management Unit, there are several opportunities to improve floodplain function with little impact to infrastructure

(SRSC and WDFW 2005). By increasing floodplain area and function and enhancing channel shorelines, the Chinook Recovery Plan recommendations are meant to improve flood refuge habitat and Chinook productivity (SRSC and WDFW 2005).

Table 9. Middle Skagit Management Area Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Skagit River (Listed in prioritized order based on Skagit Watershed Council 2011)			
MS-1 Hfr	**Cockreham Island:** This project ranked as the highest priority for restoration in the Middle Reach of the Skagit River (Skagit Watershed Council 2011). The objective of the project is to evaluate and implement habitat restoration at Cockreham Island on the right bank (north side) of the Skagit River just downstream from the town of Hamilton. Approximately 2,470 linear meters of bank armoring on the right bank limits connectivity between the river and floodplain on the north side. Restoration actions could include removing or setting back bank protection structures, relocating homes, removing or relocating roads, and planting native vegetation in the floodplain. (SRSC and WDFW 2005; Skagit Watershed Council 2011, Skagit County Public Works 2012)	Feasibility-Near-term	Skagit County Public Works, USIT, SRSC, WDFW, SLT, PSE, SCL/ Grants (SRFB, FEMA, ALEA), SCL, PSE, SLT
MS-2 Hr	**Hamilton Floodplain Restoration:** This project ranked as the second highest priority for restoration in the Middle Reach of the Skagit River (Skagit Watershed Council 2011). The project would occur through the Hamilton Public Development Authority process to move existing development out of the floodway (see section 4.2.3). (Skagit Watershed Council 2011)	Long-term	Hamilton Public Development Authority/ Grants
MS-3Hf	**Skiyou Slough:** Skiyou Island was recently acquired by the USFS as a part of the Wild and Scenic River Corridor. Surrounded by a relic slough, if the levee at Gilligan can be removed, then hydraulic controls at the inlet of Skiyou should be considered for removal. The implementation timing of this project should follow the Gilligan project. (Skagit Watershed Council 2011)	Feasibility Pending-Long-Term	SRSC, USFS/ Grants (SRFB), USFS labor
MS-4 Hf	**Etach Slough Interim Reconnection:** The objective of the project is to implement an interim reconnection of the habitat of Etach Slough. (Skagit Watershed Council 2011, Skagit County Public Works 2012)	Near-term	Skagit County Public Works, SRSC/ Grants (SRFB)
MS-5 Hf	**Youngs Slough reconnection and restoration** (former Wiseman Creek channel). Risk to landowners will need to be assessed. (Shaw Environmental 2006, Skagit Watershed Council 2011, Skagit County Public Works 2012))	Long-term	SFEG, Skagit County Public Works/ Grants (SRFB)
MS-6 Hf	**Ross Island off-channel reconnection at SK060A-13 (**Skagit Watershed Council 2011)	Short-term	Unknown/ Unknown
MS-7 Hf	**Careys Slough interim off-channel reconnection & restoration (**Skagit Watershed Council 2011)	Near-term	Unknown/ Unknown
MS-8 Hf	**Savage-Mill Creeks off-channel reconnection complex (**Skagit Watershed Council 2011)	Near-term	Unknown/ Unknown

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
MS-9 Hf	**Black Slough floodplain restoration (**Skagit Watershed Council 2011, Skagit County Public Works 2012)	Near-term	Skagit County Public Works, SFEG/ Road funds and Drainage funds
MS-10 Hf	**Robinson Rd floodplain restoration-** Work with adjacent landowner to acquire additional Skagit River shoreline. Remove armoring, restore floodplain connectivity, and revegetate **(**Skagit Watershed Council 2011, Skagit County Public Works 2012)	Near-term	Skagit County Public Works, SLT/ Grants (SRFB)
MS-11 Hfi	**Day Creek Meadows off-channel reconnection (**Skagit Watershed Council 2011)	Short-term	Unknown/ Unknown
MS-12 Hfir	**Cascade Trail Relocation:** This project involves relocating a portion of the Cascade Trail on the right bank (north side) of the Skagit River just downstream from Lyman Slough. The project would remove hard shoreline armoring and allow for increased floodplain connectivity (PSP and RITT 2011, Skagit County Public Works 2012)	Short-term	Skagit County Public Works and Parks, USIT, SRSC, SLT/ SRFB, Skagit County Parks, ALEA
MS-13 Hf	**Utopia Rd at Minkler Rd floodplain restoration** (Skagit Watershed Council 2011)	Near-term	Unknown/ Unknown
MS-14 Hf	**Ross Island Slough inlet improvement at SK060A-14** (Skagit Watershed Council 2011)	Short-term	Unknown/ Unknown
MS-15 Hf	**Coal Creek tributary junction floodplain restoration at SK060A-1** (Skagit Watershed Council 2011)	Long-term	Unknown/ Unknown
MS-16 Hf	**Thunderbird Lane floodplain restoration** (Skagit Watershed Council 2011)	Long-term	Unknown/ Unknown
MS-17 Hf	**Off-channel habitat improvement** (Skagit Watershed Council 2011)	Near-term	Seattle City Light, Skagit County, SLT, SRSC/ Corps
MS-18 Hf	**Lyman side channel habitat improvement** (Skagit Watershed Council 2011)	Short-term	Unknown/ Unknown
MS-19 P	**Pipeline Road Fish Passage** Correct priority fish passage barriers. (Skagit County Public Works 2012	Proposed-Near-term	Skagit County Public Works, SFEG/ Unknown
MS-20 Hfi	**Upper Wiseman Creek:** Alluvial fan creation at Minkler Road area (Shaw Environmental 2006)	Short-term	Skagit County Public Works, SFEG/ Unknown
Hansen Creek			
MS-21 Hfir,A	**Hansen Creek Reach 5 Acquisition and Restoration:** Continue to implement habitat improvements and flood control solutions identified in the 2001 Hansen Creek Management Plan (Skagit County Public Works 2012)	Underway-Near-term	Skagit County Public Works, SRSC, Upper Skagit Tribe/ Grants (Unknown)
MS-22 P	**Dairy Tributary Fish Passage Project** Correct priority fish passage barriers. (Skagit County Public Works 2012)	Proposed-Near-term	Skagit County Public Works, / Unknown

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Baker River			
MS-23 Hfir,O	**Baker River Alluvial Fan Enhancement:** 1. Substitute pervious pedestrian trails for impervious vehicular access road and parking areas where feasible in areas adjacent to the Baker and Skagit Rivers. 2. Remove invasive plant species and replace them with native trees and shrubs to provide riparian functions over the long term. 3. Provide for monitoring and maintenance of restoration actions to assure success over the long term including provisions for replacement plantings as needed. 4. Improve shoreline and river access and other recreational opportunities. (Town of Concrete SMP update 2013, Appendix B)	Long-term	Skagit County, Town of Concrete, Puget Power and other stakeholders/ landowners,

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.9 Upper Skagit Management Area (WRIA 4)

The Skagit Watershed Council Strategic Application Report identified several priorities for restoration in the Skagit watershed that are particularly applicable to the upper Skagit. Along the mainstem Skagit River, restoration recommendations include extending bridges where they cross the floodplain and removing or reconfiguring shoreline modifications to minimize impacts on floodplain functions.

Additionally, Beamer et al. (2000) identified several overall priorities for the upper watershed that generally fall into the following three categories: sediment reduction, riparian restoration, and fish passage barrier restoration. Prioritized lists of projects throughout the entire Skagit River watershed may be found in the Strategic Application document (Beamer et al. 2000).

Table 10. Upper Skagit Management Area (WRIA 4) Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Sauk River			
US-1 Hi,W	**Upper Sauk Erosion Control:** Replace worn out and undersized culverts for 7 miles of road; replace Chockwich Fish Passage; and under separate effort replace Bedal Bridge, an undersized structure. (PSP and RITT 2011)	Concept-Long-term	Skagit County Public Works/ Skagit County Public Works funds
US-2 Hf	**Government Bridge:** Government Bridge and associated bank protection projects limit floodplain connectivity and function for approximately 22 hectares (54 ac) of floodplain. A project in this location would involve constructing a bridge to span at least a portion of the floodplain, which extends approximately 215 meters	Feasibility Pending-Long-term	Unknown/ Grants (SRFB)

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
	on the left bank side of the Sauk River. (SRSC and WDFW 2005)		
Suiattle River			
US-3 Hfi,W	**Downey Creek Crossing:** This project involves closing the Suiattle River Road at the Downey Creek Crossing, or expanding the bridge crossing over Downey Creek to a length that would minimize impacts to approximately 1.2 hectares (3 ac) of the alluvial fan associated with Downey Creek near the confluence with the Suiattle River. (SRSC and WDFW 2005; PSP and RITT 2011)	Design-Near-term	SRSC/ Grants (SRFB, PSAR)
US-4, Hi	**Suiattle River Riprap Removal:** The purpose of this project is to remove approximately 1100 linear feet of rip-rap bank protection from the Suiattle River to improve mainstem edge habitat complexity for the benefit of Chinook salmon and other species. The rip-rap structure is located on US Forest Service Road 25 approximately one mile upstream from Circle Creek, where the road has been closed to motorized access.	Underway-Near-term	USFS/ SRFB
Cascade River			
US-5 Hr,W	**Lower Cascade Roads:** This sediment reduction project would result in the removal of a 1.1 mile section of forest road, revegetation of the obliterated road surface, and the treatment of approximately 10 water bars (abandoned culvert crossings) that pose a mass wasting hazard in Cascade River sub-basin. (PSP and RITT 2011)	Concept-Long-term	Unknown/ Unknown
US-6 P	**Fish Passage Improvement:** A fish passage barrier occurs on a left bank tributary to the Cascade River at Cascade River Mile 1.25. This drainage supports Chinook salmon as indicated by the Limiting factors fish distribution. The crossing consists of an overgrown road crossing to the south side Cascade River Road at mile post 1. The land is privately owned and has no improvements. (PSP and RITT 2011)	Feasibility Pending-Long-term	Unknown/ Unknown
Illabot Creek			
US-7 Hi,W	**Culvert Replacement:** Project to reduce the risk of road failure and its negative effects to fish habitat in the upper Illabot Creek basin. (PSP and RITT 2011)	Proposed-Long-term	Skagit Conservation District and USFS/ Grants (SRFB, PSAR)
US-8 Hfi	**Illabot Creek Floodplain Connectivity:** Alternatives to restore Illabot Creek floodplain function include: 1) relocating the road and bridge to the historic crossing further upstream on Illabot Creek and removing all riprap bank armoring in the floodplain reach, 2) constructing an additional bridge span at its present location to accommodate an historic secondary channel and removing most of the riprap upstream and downstream of the bridge, or 3) removing some of the excess riprap (270 m in length) downstream of the current bridge crossing. (SRSC and WDFW 2005; PSP	Underway-Short-term	SRSC/ Grants (PSAR)

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
	and RITT 2011)		
Skagit River			
US-9 Hfr,A	**Savage Slough Restoration:** Acquire and restore approximately 212 acres along the Skagit River in the Savage Slough area including 3,461 linear feet of Skagit River edge habitat, the lower portion of Savage creek, Savage Slough, and associated off-channel habitats. Acquisition of the Savage Slough properties will create opportunities for both near and long-term habitat restoration. (PSP and RITT 2011)	Acquisition Ongoing, future restoration-Near-term	SCL/ Grants (PSAR) and SCL funds
US-10 Hr	**Barnaby Reach Restoration:** Pursue alternatives for improving habitat conditions, restoring natural processes, and reducing maintenance costs. (PSP and RITT 2011)	Feasibility-Near-term	SRSC/ Grants (PSAR)
US-11 A,O	**Skagit Watershed Tier 1 and Tier 2 Floodplain Acquisition:** The project area includes Tier 1 floodplains of the mainstem Skagit and Sauk rivers, and Tier 2 floodplains of major tributaries located upstream of Sedro-Woolley as identified in the Skagit Watershed Council's Year 2010 Strategic Approach. The acquisition process involves the identification and evaluation of individual properties as needed; landowner outreach; site inspection; appraisals and typical due diligence associated with land acquisition. Restoration needs will be evaluated on a per property basis, as project sponsors are identified and new funding secured as necessary. (PSP and RITT 2011, Skagit County Public Works 2012)	Concept-Short-term	SCL, SLT, and Skagit County Public Works/ Grants (SRFB); SCL funds
US-12 Hf	**Upper Skagit Floodplain Restoration:** This project proposes to conduct small scale restoration work on lands purchased for conservation purposes in the floodplains of the Upper Skagit, Sauk, Suiattle and Cascade Rivers. Restoration work is anticipated to occur mostly within the floodplains of protected lands, but could also include tributary streams, alluvial fans and upland riparian areas (PSP and RITT 2011)	Feasibility Completed-Near-term	SFEG/ Grants (SRFB, PSAR)
US-13 Hf	**Marblemount Bridge:** The habitat gap analysis indicates that there is very little natural off-channel or backwater habitat in the two kilometer reach of the Skagit River just upstream from the bridge in Marblemount, and that almost 200 ac of the floodplain is isolated or shadowed by roads and riprap bank protection. No specific project has been identified for this area, but the analysis indicates that reconnecting channels or floodplain in this area to the river should be a high priority. This could be accomplished through acquisitions, setting back dikes, and relocating roads. (SRSC and WDFW 2005)	Feasibility Pending-Long-term	Unknown/ Unknown
US-14 Hfir	**Car Body Hole:** The objective of this project is to remove approximately 550 linear meters of riprap bank armoring (and associated car bodies) at Car Body Hole,	Feasibility Pending-Long-term	Unknown/ Unknown

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
	which is located on the right bank of the Skagit River across from Illabot Creek. This section of the Skagit River was identified in the floodplain analysis as having a gap in off-channel habitat and there are a number of historic channels that would likely become wetted if the bank armoring were removed. Additionally approximately 20 hectares (50 acres) of native riparian and floodplain vegetation will be restored. (SRSC and WDFW 2005; PSP and RITT 2011)		
US-15 Hir	**Finney Riparian:** Decrease sediment loads and improve long-term channel complexity by restoring conifers to the Finney Creek riparian forest and adding large woody debris to the stream. The presence of conifer stands on historic aerial photographs, and other historic information indicates that conifers have been greatly reduced in the Finney Creek riparian forest. (SFEG 2012, PSP and RITT 2011)	Feasibility Completed-Near-term	SFEG, USFS, NPS, Private landowners/ Grants (PSAR); donated materials
US-16 Hf,A	**Upper Skagit Acquisitions:** Purchase parcels to protect and restore diverse floodplain functions and habitats important for Chinook salmon. (PSP and RITT 2011)	Underway-Near-term	The Nature Conservancy and Trust for Public Lands/ Grants (SRFB)
Bacon Creek			
US-17 Hf,P	**Bacon Creek Fish Passage:** The purpose of this project is to restore complete fish passage to Cub Creek and restore the development of off-channel habitat on 11 hectares (27 ac) in the floodplain and alluvial fan of Bacon Creek. A project was recently completed upstream of SR 20 to restore lateral channel migration by relocating approximately one mile of a Forest Service road outside of the floodplain and alluvial fan of Bacon Creek. (SRSC and WDFW 2005)	Feasibility Pending-Near-term	Skagit Conservation District and USFS/ Grants (SRFB, PSAR)

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.10 Nooksack Management Area (WRIA 1)

The Nooksack Watershed (WRIA 1) identifies the recovery of the South Fork Nooksack early Chinook salmon population as one of its near-term priorities. In addition to the captive broodstock program to increase population numbers, habitat restoration in the lower South Fork (Whatcom County) is a primary concern and focus of near-term actions. In the upper South Fork, which includes lands in Skagit County, the retention and recovery of riparian zones are identified as priority actions (WRIA 1 2010). The development of a strategic plan to sequence and prioritize actions in the South Fork Nooksack is also underway (WRIA 1 2010). A summary of restoration opportunities that have been identified in the Nooksack Watershed Management Unit is provided in Table 13.

A watershed analysis of the upper middle and south forks of the Nooksack River identified several areas of concern and corresponding opportunities for shoreline restoration (USFS 2006). Restoration opportunities primarily focus on sediment load control through forest road improvements and decommissioning and habitat enhancement through the addition of key pieces of large woody debris.

Table 11. Nooksack Management Area (WRIA 1) Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Nook-1 Hf	**Larson's Floodplain Refuge Project:** Improve connectivity with cool water side-channel. This site is a series of groundwater-fed floodplain channels located just above the Larson's Bridge at RM 20.9. A relic South Fork channel, dating from the 1940s, runs through the forested floodplain and mixes with the main channel. This is the sixth highest ranked project in the Upper South Fork Nooksack River Habitat Assessment (Nooksack 3-year work plan 2010)	Preliminary Design-Short-term	Lummi Nation/ Grants (SRFB)
Nook-2 P	**Fish Passage Projects** Correct priority fish passage barriers in Skagit County.	Underway-Short-term	Skagit County Public Works/ Skagit County Public Works funds

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

6.11 Stillaguamish Management Area (WRIA 5)

Although forest cover is relatively high in the Stillaguamish Management Unit, riparian forest cover is below the 80% cover threshold identified by the Stillaguamish Technical Advisory Group as properly functioning conditions. Riparian restoration could improve large wood recruitment potential, reduce sediment inputs, and reduce elevated stream temperatures. The installation of large woody debris would help accelerate the development of in-stream habitat cover, pool development, and side channel connectivity. Forestry management practices that protect existing mature forests and allow immature forests to mature would also improve overall shoreline function in this management unit.

Table 12. Stillaguamish Management Area (WRIA 5) Restoration Opportunities

SMP ID/ TYPE*	Project Name/Description (Source)	Timeframe	Project Sponsor(s)/ Potential Funding Source
Stilly-1 Hir	**Stillaguamish Watershed Stewardship Pilot Project**: The project would relocate 0.5 to 1.0 mile of Forest Service Road 28 where it impinges on the upper North Fork Stillaguamish and also place 15-20 large wood complexes along a 1.5-mile, low gradient braided reach between RM 39 and 40.5. High summer temperatures and degradation of downstream spawning and rearing habitat for Chinook will be addressed. Riparian vegetation will re-establish as width to depth ratio decreases. Wood complexes will form deep pools for rearing and adult holding. (Conservation NW 2012)	Concept-Long-term	USFS/ Grants (SRFB)

*TYPE = project type: H=habitat (f=floodplain, w=wetland, i-instream, r=riparian, t=intertidal, e=estuarine, m=marine shoreline), M=management, W=water quality, Y=hydrology, P=fish passage, A=acquisition/protection, R=research/investigation, G=regulatory, O=outreach

7 Proposed Implementation Targets and Monitoring Methods

7.1 Implementation Strategy

In order to achieve maximum value from restoration efforts and investments, prospective County-led projects should be evaluated to determine if the project warrants implementation above other candidate projects. It is recognized that specific programs and funding sources may have inherent priorities or objectives that limit the range of potential projects. It is also expected that the list of potential projects may change over time, that new projects will be identified and some existing opportunities will become less relevant as restoration occurs and as other environmental conditions, or our knowledge of them, change. Nevertheless, the following criteria outline an overarching strategy for evaluation and implementation of restoration projects in Skagit County. These criteria draw from the Skagit Watershed Council's 2010 Strategic Approach (Beechie and Raines 2010), but apply more generally to restoration of shoreline functions as a whole.

When evaluating potential projects, priority should be given to projects that best meet the following criteria:

- Restore processes that form and sustain shoreline functions;
- Protect functioning processes and habitats from degradation;

- Focus protection and restoration on the most biologically important areas (refer to Priority tiers for salmon recovery (Beechie and Raines 2010);
- Avoid residual impacts to other functions or processes or actions that preclude future, more comprehensive restoration of processes.
- Address multiple functions or processes.
- High benefit to cost ratio.
- High feasibility and probability of success.
- Design considers impacts to adjacent properties.
- The project is supported by and consistent with other restoration plans, including existing priorities identified in Skagit Watershed Council (2011) and Beechie and Raines (2010).

7.2 Monitoring and Adaptive Management

Project monitoring is required for individual restoration and mitigation projects consistent with the Shoreline Critical Areas Regulations. The County is also engaged in monitoring restoration projects, including a recently completed tidegate restoration at McElroy Slough, and ongoing monitoring of projects associated with the Conservation Reserves Enhancement Program (CREP).

In addition, to the degree practical, the County should track development activity that occurs outside of critical areas and their buffers, recognizing that individual project monitoring does not provide an assessment of overall shoreline ecological health. The following approach is suggested:

1. Activities to be tracked using the County's permit system include development, conservation, restoration and mitigation, such as:
   a. New shoreline development
   b. Shoreline variances and the nature of the variance
   c. Compliance issues
   d. Net change in impervious surface areas, including associated stormwater management
   e. Net change in fill or armoring
   f. Net change in linear feet of levee and/or distance between OHWM and any levees
   g. Net change in vegetation (area, character)
2. The County will require project proponents to monitor mitigation success, and monitoring results could be incorporated into County-wide tracking.
3. The County and its partners should seek to monitor shoreline conditions to determine whether both project-specific and overall watershed goals are being achieved.
4. Review status of environmental processes and functions at the time of periodic SMP updates to, at a minimum, validate the effectiveness of the SMP. Review should

consider what restoration activities actually occurred compared to stated goals, objectives and priorities, and whether restoration projects resulted in a net improvement of shoreline resources.

5. Under the Shoreline Management Act, the SMP is required to result in no net loss of shoreline ecological functions. If this standard is found to not be met at the time of review, the County will be required to take corrective actions. The goal for restoration is to achieve a net improvement. The cumulative effect of restoration over time between reviews should be evaluated along with an assessment of impacts of development that is not fully mitigated to determine effectiveness at achieving a net improvement to shoreline ecological functions.
6. Evaluation of shoreline conditions, permit activity, policy, and regulatory effectiveness should occur at varying levels of detail consistent with the Comprehensive Plan update cycle. A complete reassessment of conditions, policies and regulations should be considered every eight years. To conduct a valid reassessment of the shoreline conditions every eight years, it is necessary to monitor, record and maintain key environmental metrics to allow a comparison with baseline conditions. As monitoring occurs, the County should reassess environmental conditions and restoration objectives. Those ecological processes and functions that are found to be worsening may need to become elevated in priority to prevent loss of critical resources. Alternatively, successful restoration may reduce the importance of some restoration objectives in the future.
7. County planning staff is encouraged to track all land use and development activity, including exemptions, within shoreline jurisdiction, and may incorporate actions and programs of the other departments or restoration partners as well. A report may be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding stream bank stabilized through plantings, or linear feet of shoreline armoring removed. The report would also outline implementation of various programs and restoration actions (by the County or other groups) that relate to watershed health.
8. The staff report may be assembled to coincide with Comprehensive Plan updates and may be used, in light of the goals and objectives of the Shoreline Master Program, to determine whether implementation of the SMP is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the *Shoreline Analysis Report*. In the long term, the County should be able to demonstrate a net improvement in the County's shoreline environment.

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9 LIST OF ACRONYMS AND ABBREVIATIONS

ALEA .....Aquatic Lands Enhancement Account

Cfs…… cubic feet per second

CIP.....Capital Investment Program

Corps.....U.S. Army Corps of Engineers

DNR .....Washington Department of Natural Resources

Ecology .....Washington Department of Ecology

ESRP.....Estuary and Salmon Restoration Program

FEMA.....Federal Emergency Management Administration

GMA.....Growth Management Act

NFWF.....National Fish and Wildlife Foundation

NGPA.....Native Growth Protection Area

NGPE .....Native Growth Protection Easement

NPDES.....National Pollutant Discharge Elimination System

OHW/M.....ordinary high water/mark

PSAR .....Puget Sound Acquisition and Restoration Fund

PSE.....Puget Sound Energy

PSNERP .....Puget Sound Nearshore Ecosystem Restoration Project

PSP.....Puget Sound Partnership

RITT.....Recovery Implementation Technical Team

SCL .....Seattle City Light

SFEG.....Skagit Fisheries Enhancement Group

SLT .....Skagit Land Trust

SRFB .....Salmon Recovery Funding Board

TNC.....The Nature Conservancy

USGS.....U.S. Geological Survey

USIT .....Upper Skagit Indian Tribe

WDFW .....Washington Department of Fish and Wildlife

WDOE.....Washington Department of Ecology

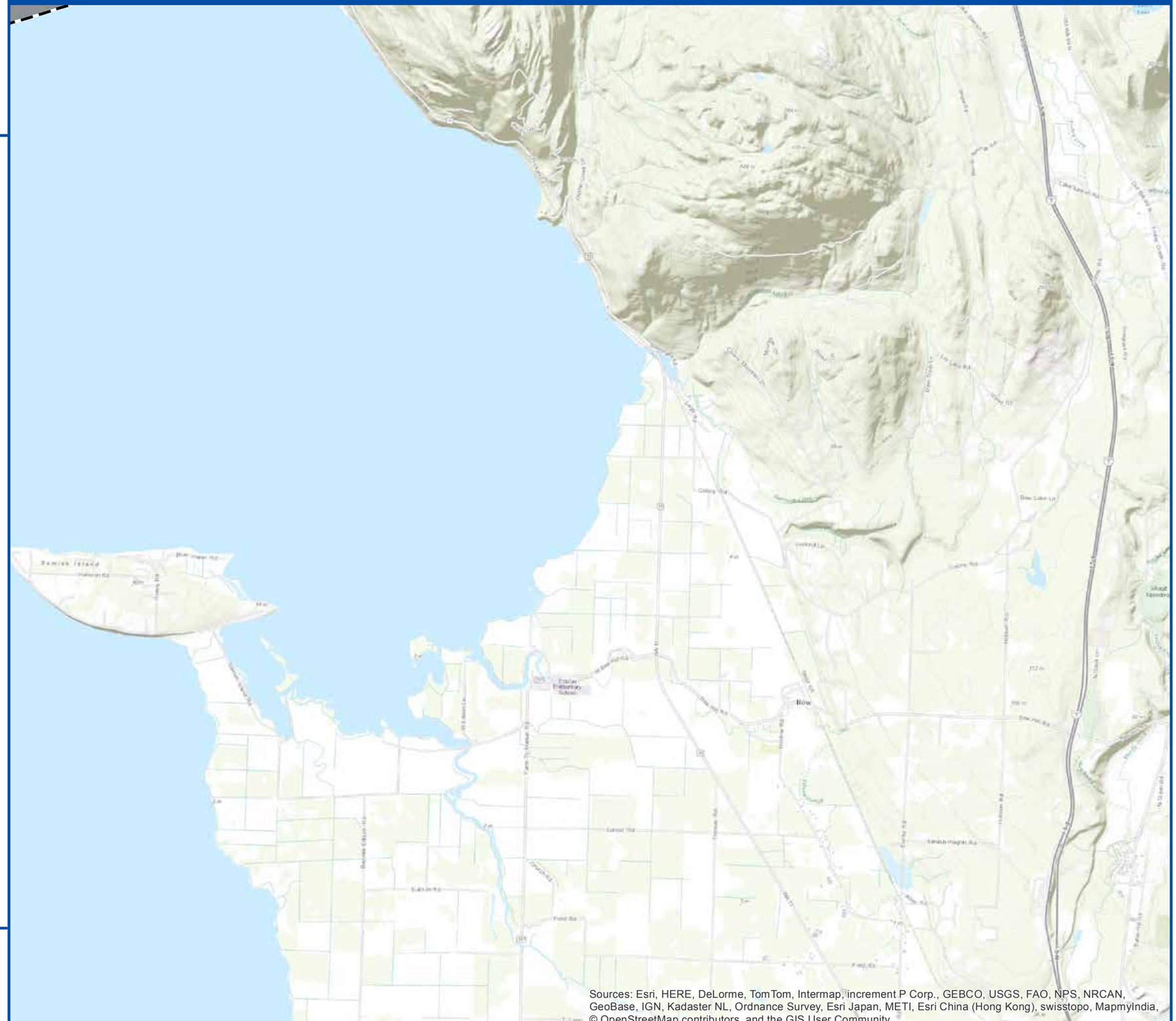
WWRP .....Washington Wildlife and Recreation Program

APPENDIX A: MAPS OF ONGOING AND POTENTIAL PROJECTS

SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Samish Bay Management Area 1 (SAB - Samish Bay)

1. Remove agricultural dikes where feasible H



00 Site specific project (mapped)

00. Non-site specific project (unmapped)

Restoration Action Types

- H Habitat-related
- W Water quality
- M Management
- Y Hydrologic
- P Fish passage
- A Habitat acquisition and/or protection
- R Research and investigation
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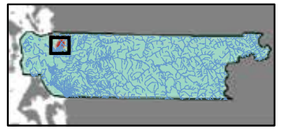

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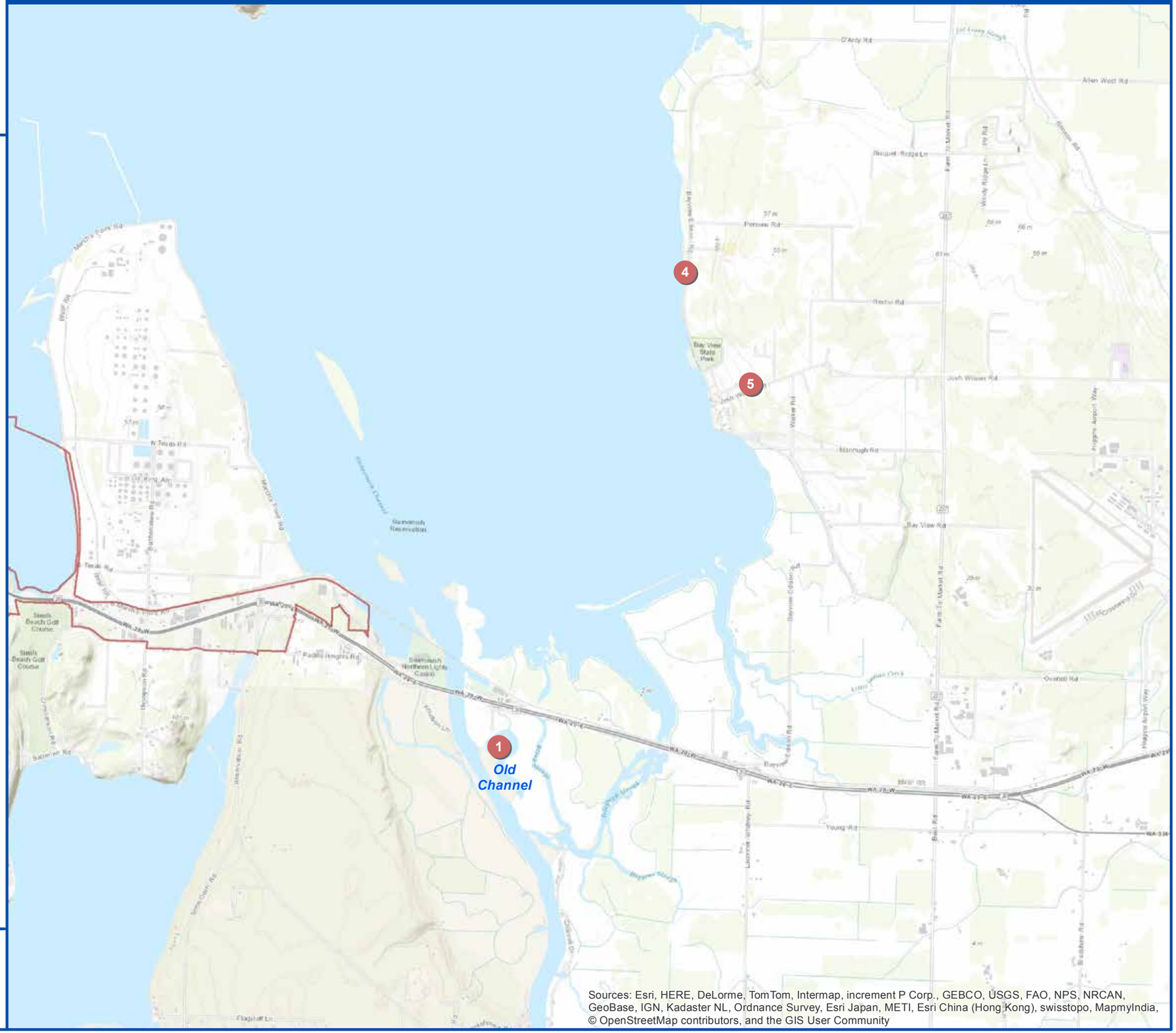
SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Samish Island, Padilla Bay & East Side of Swinomish Channel Management Area 2 (PB - Padilla Bay)

1. Telegraph-Phase 2 [H]
2. Remove agricultural dikes in Southern Padilla Bay [H]
3. Continue to remove Spartina colonies [H M]
4. Conservation and restoration around Bayview State Park shoreline [H M]
5. Bayview Stormwater Management [W Y]



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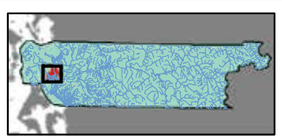

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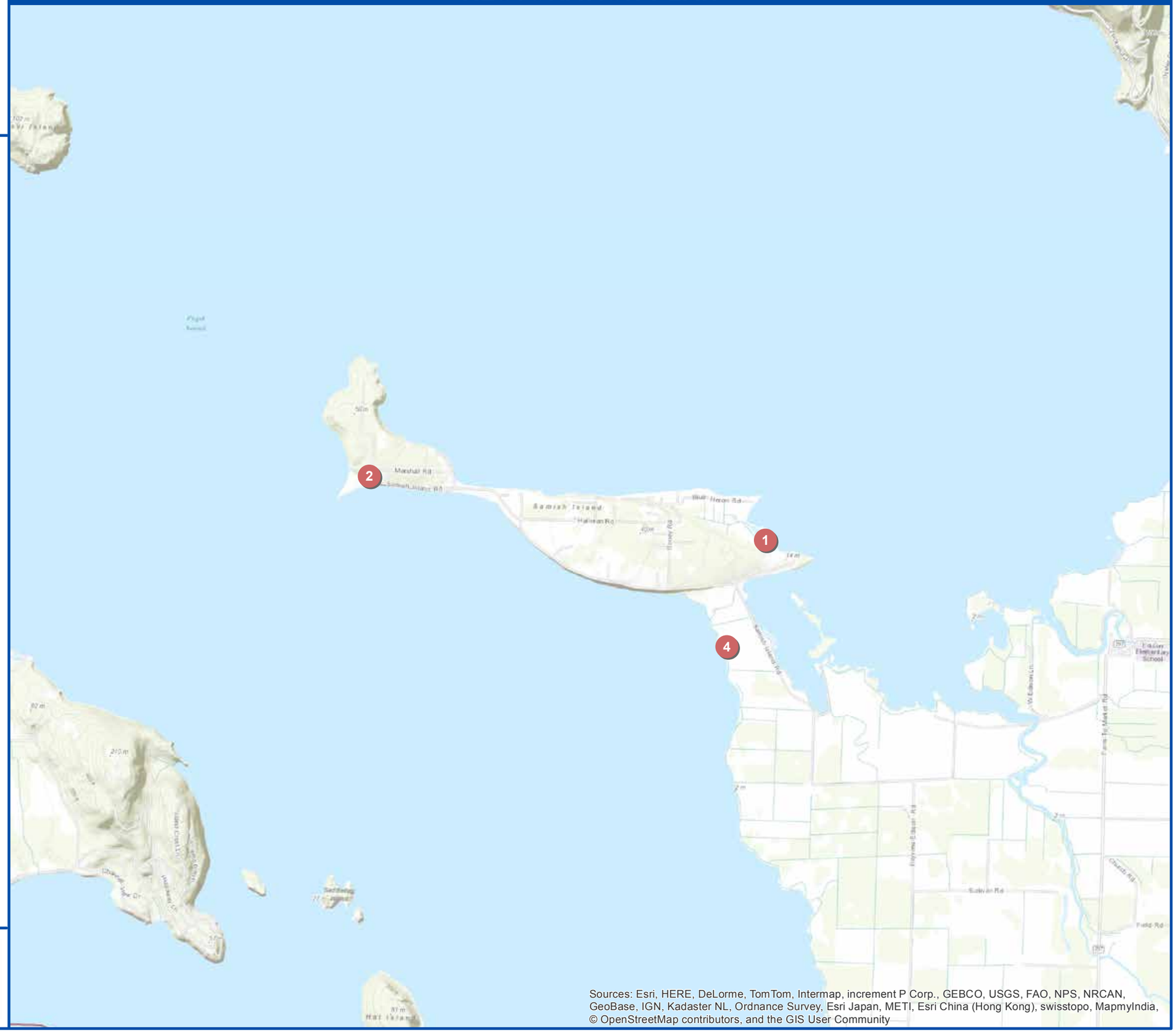
SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Samish Island, Padilla Bay & East Side of Swinomish Channel Management Area 2 (SI - Samish Island)

1. Restore Freestad Lake H O
2. Conservation on Samish Island H O A
3. Restore Samish Island shoreline H O A
4. Restore estuary along Samish Island Road H A



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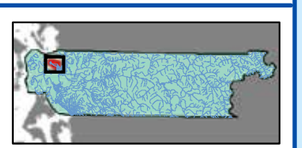

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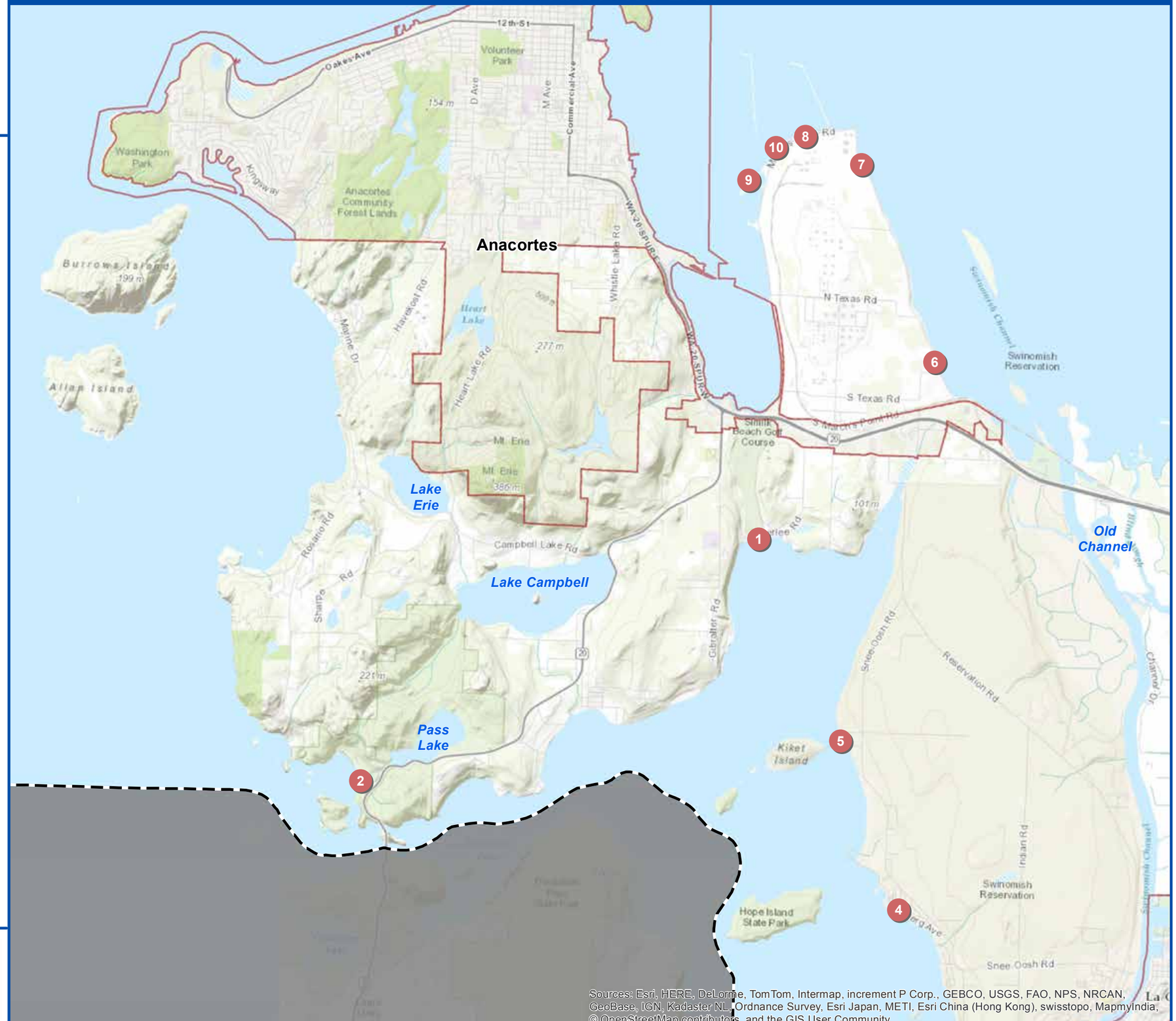
SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Fidalgo Island and Other Islands Management Area 4 (FI - Fidalgo Island)

1. Similk Beach H
2. Bowman Bay Pocket Estuary H P
3. Fidalgo Island Stormwater Management W Y
4. SneeOosh Lagoon H W
5. Kiket Lagoon H
6. East shore of March's Point H R
7. March's Point cusp H
8. North shore of March's Point H
9. Crandall Spit H W
10. Remove derelict barge dock west of the Tesoro Pier H W



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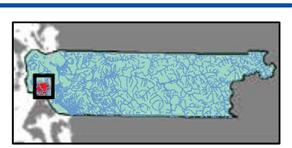

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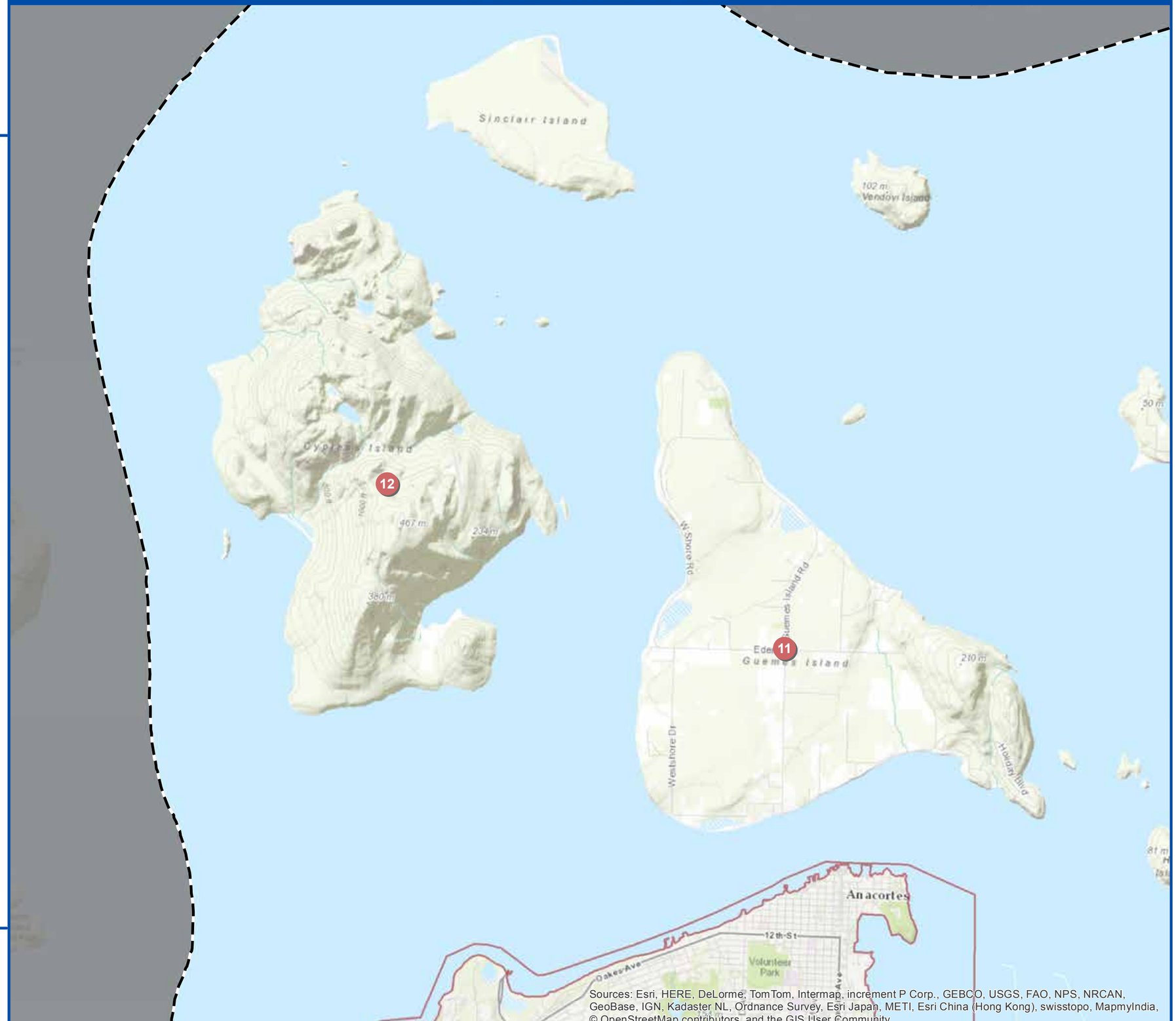
SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Fidalgo Island and Other Islands Management Area 4 (FI - Fidalgo Island)

11 Guemes Island Restoration and Conservation H W M O
12 Cypress Island Restoration and Conservation H M



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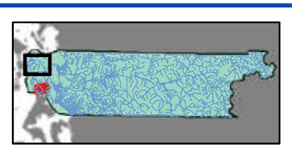

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SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Skagit Bay/Delta Management Area 5 (SB - North Fork Skagit River)

1. Deepwater Slough-Phase 2 [H]
2. Fir Island Farms Estuary Restoration (Davis/Dry Slough) [H]
3. McGlinn Island Causeway [P]
4. Blake's Bottleneck, Thein Farm, Rawlins Road Dike Setback [H] [O]
5. Cross Island Connector [P]
6. Sullivan's Hacienda: Setback levees to a pre-1956 footprint, allowing for reestablishment of emergent marsh and blind channel networks by Sullivan's Slough. [H]
7. North Fork Levee Setback: Setback levees along Skagit North Fork from former inlet of Dry Slough to the western end of Rawlins Road levees. Requires modification of North Fork bridge. [H]
8. South Fork Pole Yard: Restore tidal and riverine processes that will scour and maintain on-site tidal channels providing rearing habitat for juvenile Chinook and other salmonids. [H]
9. South Fork Dike Setback: Remove 2500' of existing levee, regrade top end down to existing "bank top level," regrade lower end for off-channel connectivity. Relocate main river levee approximately 700' (maximum) from the riverbank at the mid-point of the project. Build 1800' of new levee adjacent to the County road, with keyway located along the riverward toe slope of the levee. [H]
10. Milltown Island: Continue to remove dikes and restore estuarine connectivity and tidal marsh habitat complexity across the middle and north sections of Milltown Island. [H]
11. Sandy Creek: Reestablish alluvial fan in Hill Ditch/Carpenter Creek area [H]
12. Fisher Creek Fish Passage: Correct priority fish passage barriers, including culverts English and Franklin roads. [P]
13. Upper South Fork Skagit River (Needs work) [H]

00 Site specific project (mapped)

00. Non-site specific project (unmapped)

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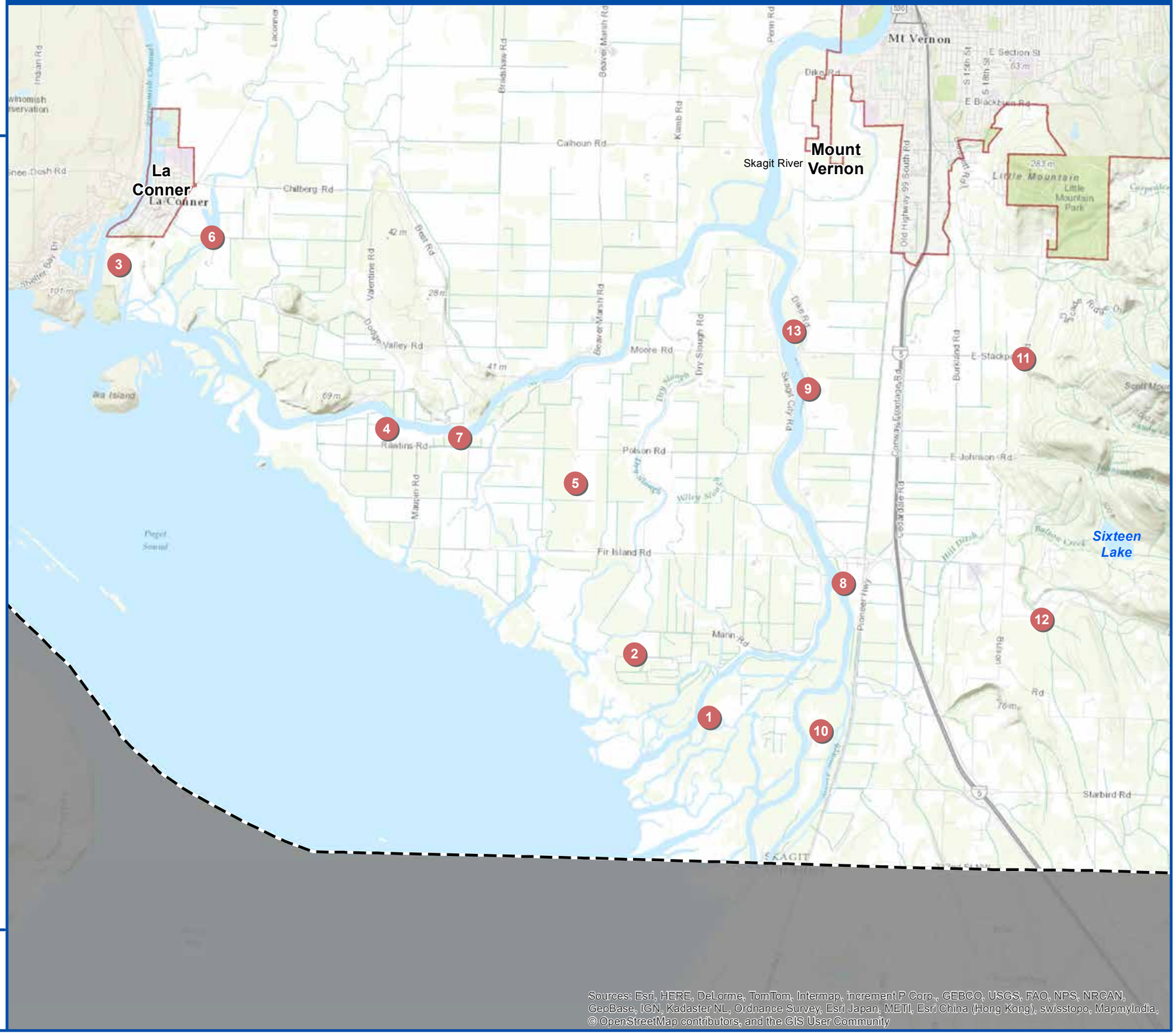

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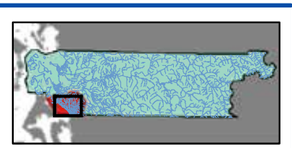

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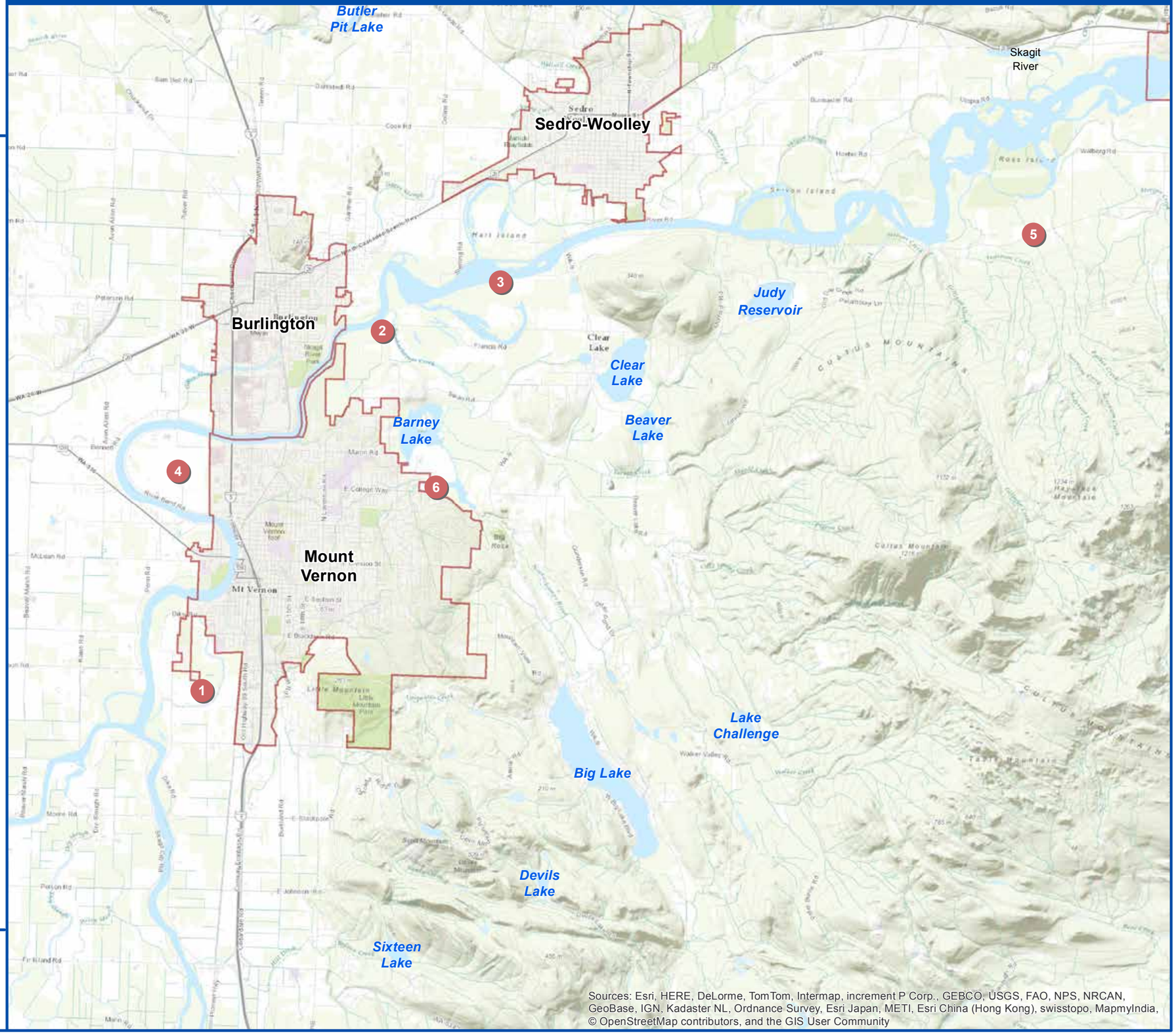
SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Lower Skagit Diking Districts Management Area 6 (LS - Lower Skagit)

1. Britt Slough: This project seeks to re-establish a historic riverine wetland near the southern portion of the site and examine potential for a distributary connection to the mainstem using the remaining portion of the historic Britt Slough channel. H
2. Nookachamps Confluence: This project would split mainstem flow by excavating a channel through the oxbow at the Nookachamps confluence. H
3. Sterling Reach Restoration: This project would reestablish hydraulic connections to the mainstem river throughout the historic oxbows in the vicinity of Sterling. These oxbows, now known as Debay's and Hart's sloughs would be reconnected such that mainstem flows could re-establish historic channel networks. This would require partial removal of a Corps training levee south of Highway 9 and the excavation of historic channels in the present day floodplain. H
4. River Bend: Conceptual restoration actions at this site focus on actions that restore connectivity to remaining low topographic depressions and oxbow channels. H
5. Sorenson Creek Fish Passage: Correct priority fish passage barriers. P
6. Barney Lake-Logan-Nookachamps H



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0 1.25 2.5 5 Miles

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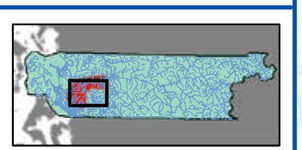

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SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Samish River Management Area 7 (SR - Samish River)

1. Clean Samish Initiative - Samish Pollution Identification and Correction Program: The purpose of the PIC program is to identify and correct sources of bacterial contamination in the watershed. The program provides a multifaceted approach to address fecal coliform pollution problems, including intensive monitoring, incentives, compliance and enforcement, and a comprehensive education program. W O

2 Fish Passage Projects Correct priority fish passage barriers at Pipeline Road. P

3. Samish River Knotweed Control and Revegetation - Continue program to identify and treat knotweed infestations in the Samish River Basin. H M

4 Prairie Road/ Ware Creek - Relocate creek out of Prairie Road ditch H

5 Reroute Thomas Creek away from Kelleher Rd. H

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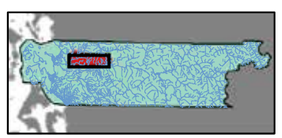

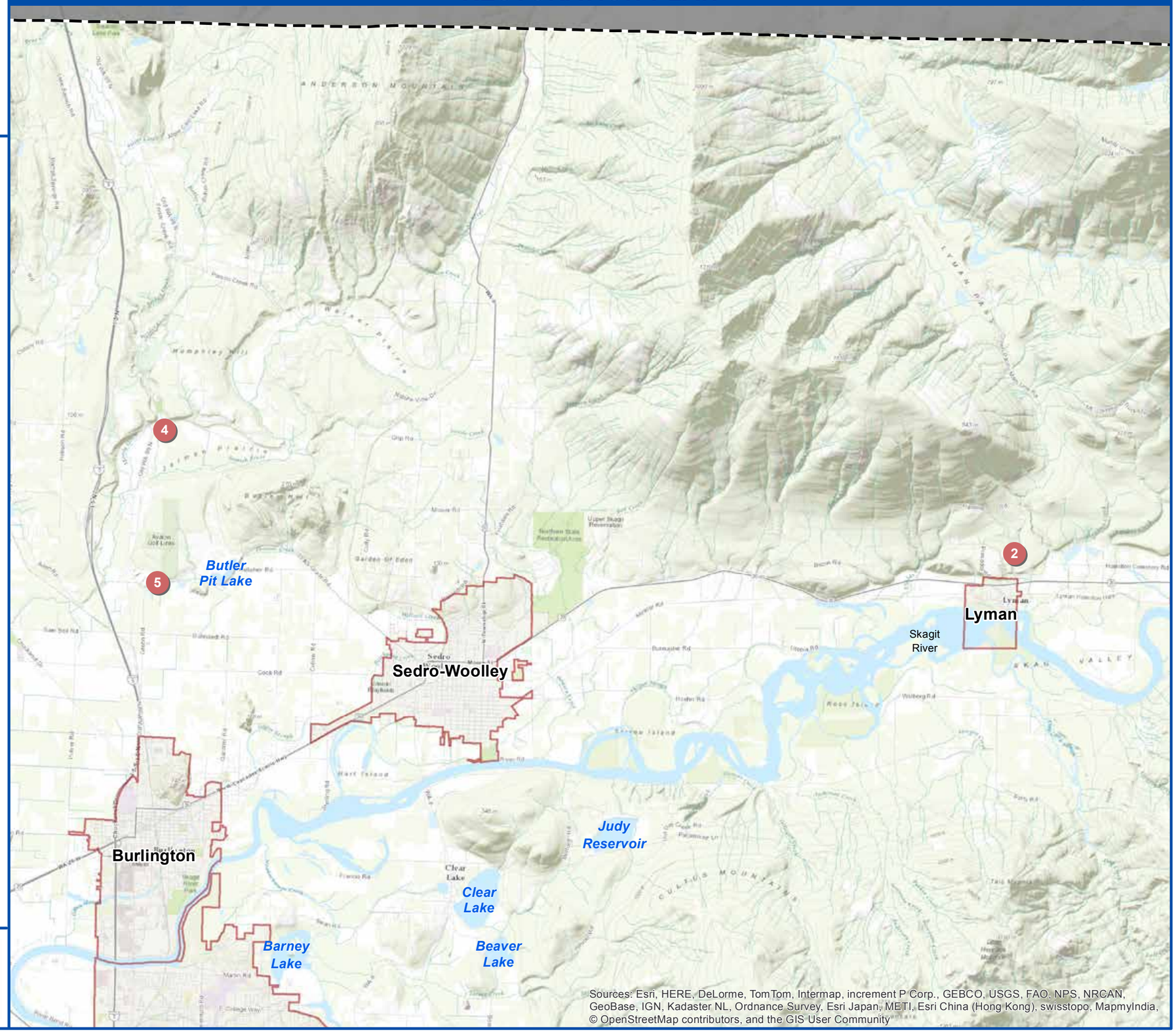

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SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Middle Skagit Management Area 8 (MS - Skagit River)

1. Cockreham Island: Evaluate and implement habitat restoration on right bank Skagit River, downstream of Hamilton. H
2. Hamilton Floodplain Restoration: Move existing development from floodway (with Hamilton Public Development Authority). H
3. Skiyou Slough: Levee removal at Gilligan, consider removal of hydraulic controls at Skiyou inlet. H
4. Etach Slough Interim Reconnection: Interim reconnection at Etach Slough. H
5. Youngs Slough reconnection and restoration. H
6. Ross Island off-channel reconnection at SK060A-13 H
7. Careys Slough interim off-channel reconnection & restoration H
8. Savage-Mill Creeks off-channel reconnection complex H
9. Black Slough floodplain restoration H
10. Robinson Rd floodplain restoration: Landowner coordination, remove armoring, restore floodplain connectivity, and revegetate H
11. Day Creek Meadows off-channel reconnection H
12. Cascade Trail Relocation: Relocating a portion of the Cascade Trail, remove shoreline armoring, and increase floodplain connectivity H
13. Utopia Rd at Minker Rd floodplain restoration H
14. Ross Island Slough inlet improvement at SK060A-14 H
15. Coal Creek tributary junction floodplain restoration at SK060A-1 H
16. Thunderbird Lane floodplain restoration H
17. Off-channel habitat improvement H
18. Lyman side channel habitat improvement H
19. Pipeline Road Fish Passage Correct priority fish passage barriers. P
20. Upper Wiseman Creek: Alluvial fan creation at Minkler Rd H
21. Hansen Creek Reach 5 Acquisition and Restoration H A
22. Dairy Tributary Fish Passage Project Correct priority fish passage barriers. P
23. Lower Baker River H O

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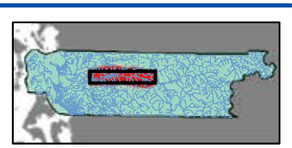

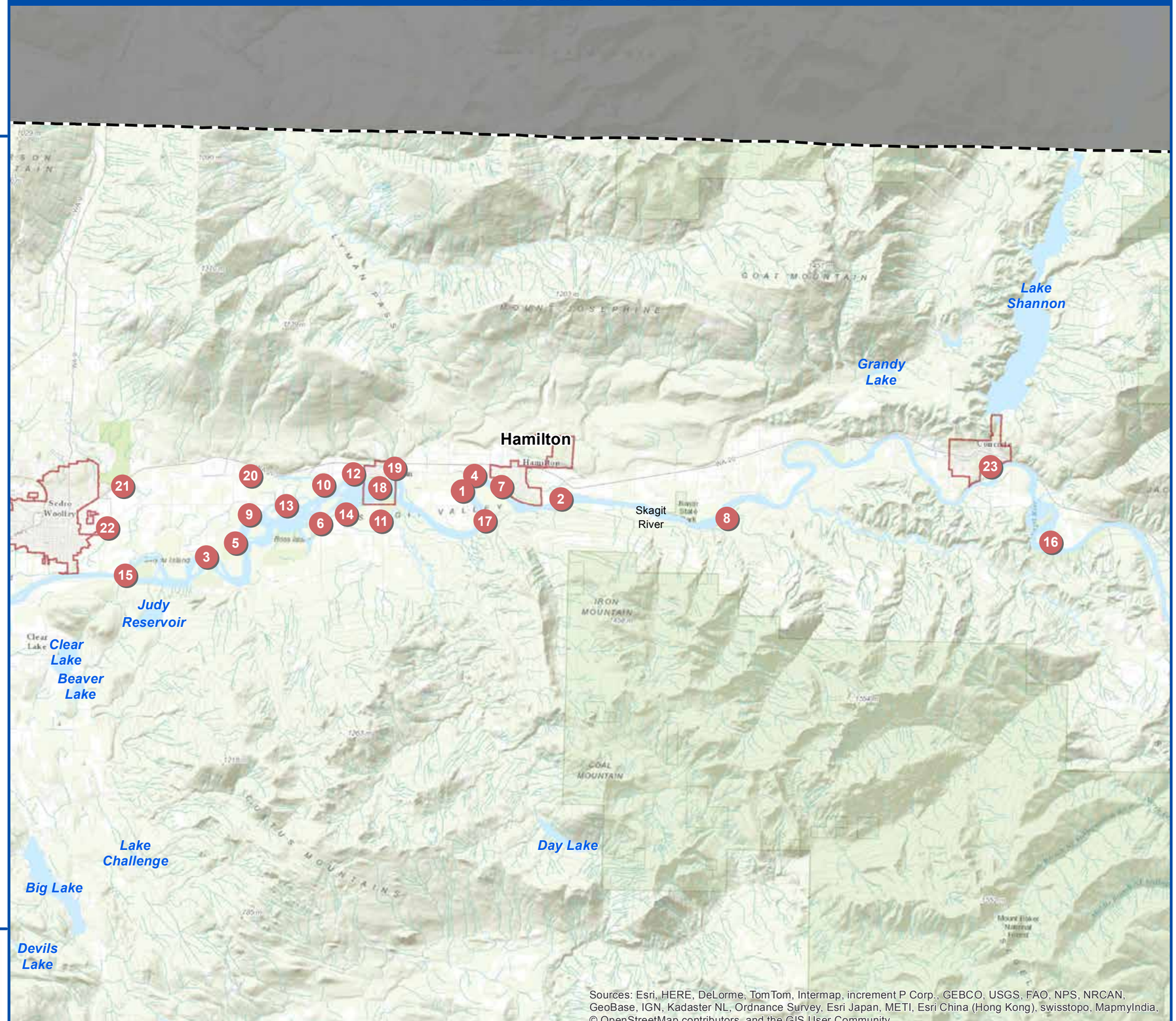

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SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Upper Skagit Management Area 9 (US - Skagit River)

1. Upper Sauk Erosion Control: Replace worn out and undersized culverts, replace Chockwich Fish Passage, and replace undersized Bedal Bridge. W H
2. Government Bridge: Construct bridge to span a portion of the floodplain, which extends ~215 meters on the left bank side of the Sauk River. H
3. Downey Creek Crossing: Close Suiattle River Rd at Downey Creek Crossing, or expand bridge over Downey Creek to a minimize impacts to the associated alluvial fan. H W
4. Suiattle River Riprap Removal: Remove bank protection to improve mainstem edge habitat complexity. H
5. Lower Cascade Roads: Remove and revegetate section of forest road, and treat abandoned culvert crossings. W H
6. Fish Passage Improvement: Resolve fish passage barrier on left bank tributary to the Cascade River at Cascade River Mile 1.25. P
7. Culvert Replacement: Reduce the risk and negative effects of road failure. W H
8. Illabot Creek Floodplain Connectivity: Restore floodplain function H
9. Savage Slough Restoration: Acquire and restore area near Savage Slough. H
10. Barnaby Reach Restoration: Pursue alternatives for improving habitat conditions, restoring natural processes, and reducing maintenance costs. H
11. Skagit Watershed Tier 1 and Tier 2 Floodplain Acquisition. A O
12. Upper Skagit Floodplain Restoration: Conduct small-scale restoration work in the floodplains of the Upper Skagit, Sauk, Suiattle and Cascade Rivers. H
13. Marblemount Bridge: Reconnect channels or floodplain to the river. H
14. Car Body Hole: Remove armoring and debris at Car Body Hole, and restore native riparian and floodplain vegetation. H
15. Finney Riparian: Restoring riparian forest and add LWD. H
16. Upper Skagit Acquisitions. A H
17. Bacon Creek Fish Passage P H

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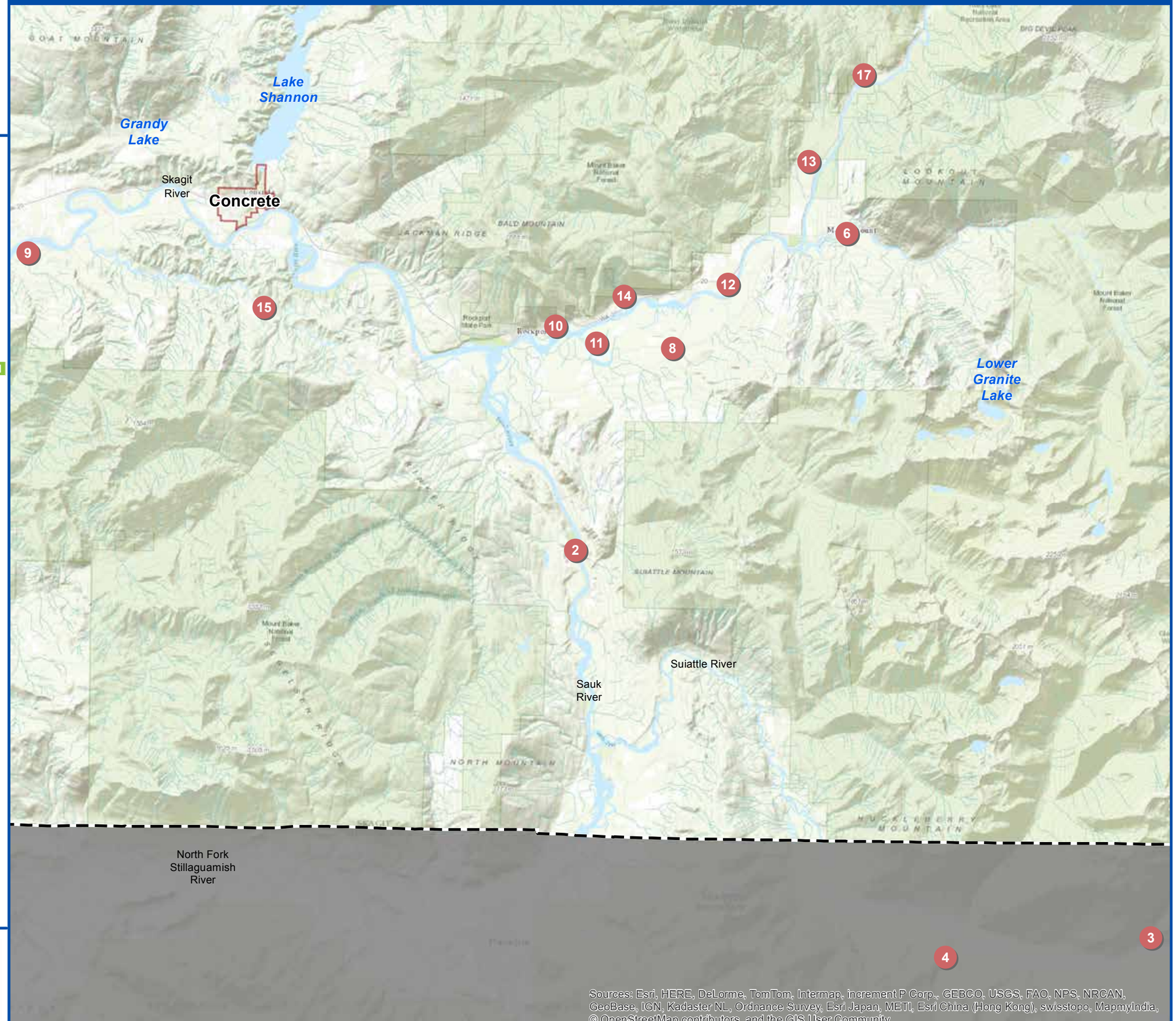

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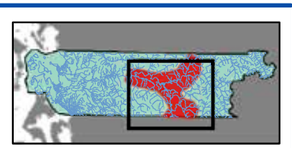
Date: 12/31/2014
Name: Skagit_Restoration_Plan_2014-12-31

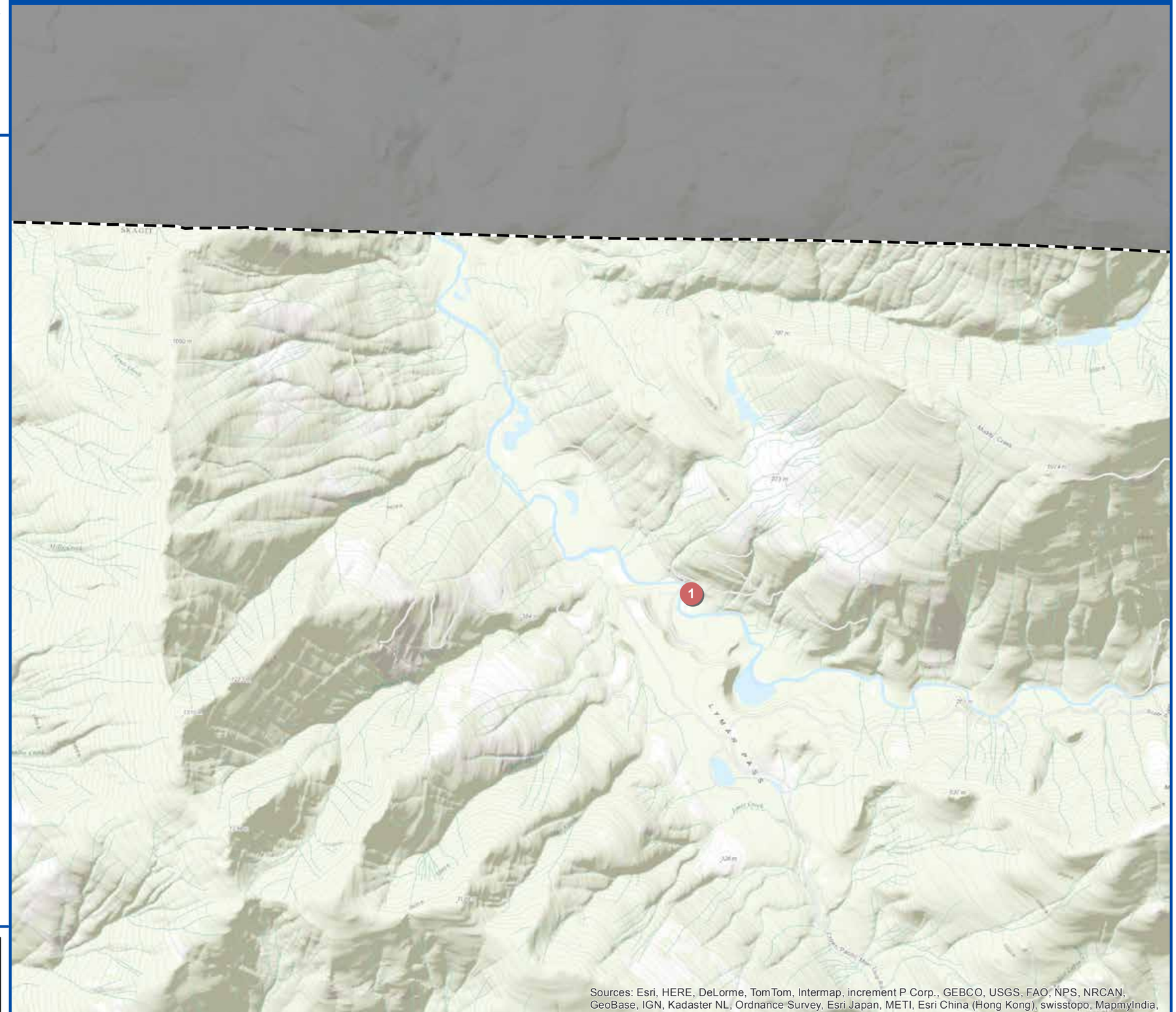


All features depicted on this map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm/ verify information shown on this map.

SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Nooksack Management Area 10 (WRIA 1) (Nook - Nooksack)

1. Larson's Floodplain Refuge Project H
2. Fish Passage Projects Correct priority fish passage barriers in Skagit County. P



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

00 Site specific project (mapped)

00. Non-site specific project (unmapped)

Restoration Action Types

- H Habitat-related
- W Water quality
- M Management
- Y Hydrologic
- P Fish passage
- A Habitat acquisition and/or protection
- R Research and investigation
- G Regulatory
- O Outreach

Notes: *Project locations are estimated only. Please refer to the Skagit County Restoration Plan document for more details.* ***Data sources:*** *Skagit County, City of Lyman, City of Hamilton, Lower Columbia Fish Recovery Board, Habitat Work Schedule, Department of Ecology, MSC, The Watershed Company.*

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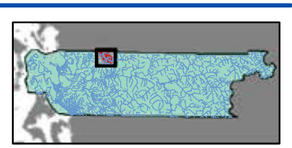
THE WATERSHED COMPANY

Date: 12/31/2014
Name: Skagit_Restoration_Plan_2014-12-31

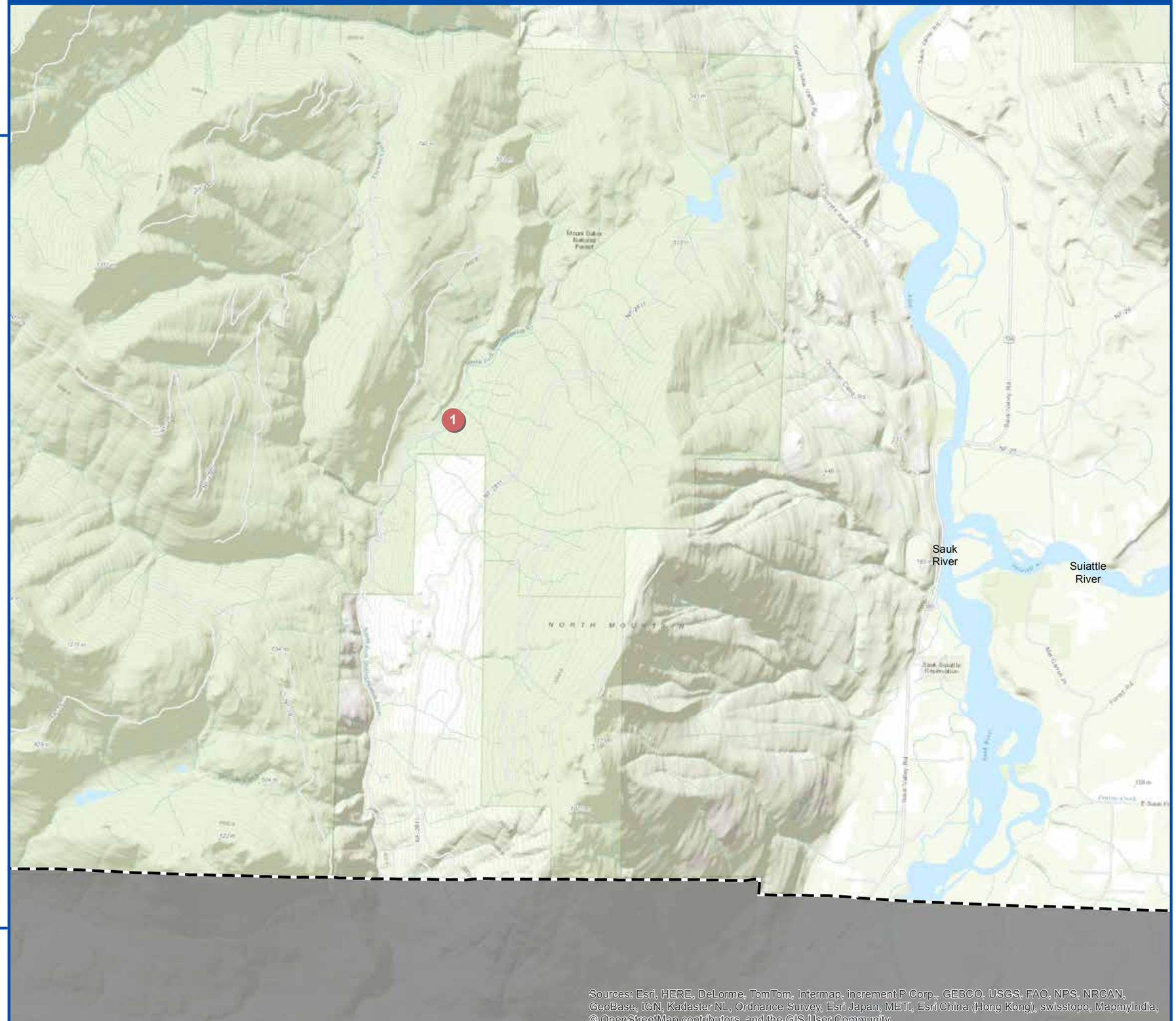


All features depicted on this map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm/ verify information shown on this map.

SKAGIT COUNTY SHORELINE MASTER PROGRAM UPDATE

Stillaguamish Management Area 10 (WRIA 5) (Stilly - Stillaguamish)

1 Stillaguamish Watershed Stewardship Pilot Project H



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

00 Site specific project (mapped)
00. Non-site specific project (unmapped)

Restoration Action Types

- H Habitat-related
- W Water quality
- M Management
- Y Hydrologic
- P Fish passage
- A Habitat acquisition and/or protection
- R Research and investigation
- G Regulatory
- O Outreach

Notes: *Project locations are estimated only. Please refer to the Skagit County Restoration Plan document for more details.* ***Data sources:*** *Skagit County, City of Lyman, City of Hamilton, Lower Columbia Fish Recovery Board, Habitat Work Schedule, Department of Ecology, MSC, The Watershed Company.*

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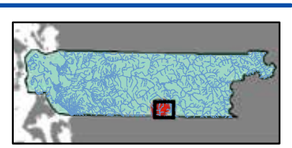
THE WATERSHED COMPANY

Date: 12/31/2014
Name:
Skagit_Restoration_Plan_2014-12-31



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APPENDIX B: CONCEPTUAL PLANS FOR SELECTED PROJECTS

Skagit County Shoreline Master Program

CONCEPTUAL RESTORATION PLAN

The Shoreline Restoration Plan identifies voluntary restoration actions that are proposed or underway within the County's shorelines in order to plan for "overall improvements in shoreline ecological function over time, when compared to the status upon adoption of the master program" (WAC 173-26-201(2)(f)). In addition, in order to facilitate implementation of future restoration actions, several projects throughout the County were identified for additional conceptual development. A total of four projects were identified based on input from County staff and many of the County's restoration partners. Selection criteria for these projects included:

- Projects that have been identified, but for which conceptual designs had not yet been developed;
- Projects on public lands or projects that would have a significant public benefit. Where projects occur on private lands, projects could be implemented following purchase of a conservation easement or future acquisition by the County or its restoration partners.
- Projects representing diverse areas and restoration activities within the County.

Projects selected for additional conceptual development include the following, described briefly below.

1. Baker River Alluvial Fan Enhancement:

Restore riverine, shoreline, and riparian functions to provide fish and wildlife habitat, while providing shoreline access and low-impact recreational opportunities.

2. Barney Lake/Logan Creek Restoration

Restore a naturalized, low gradient stream/wetland complex within a native riparian forest. Restore the scrub-shrub and forested vegetation components which formerly existed around and upslope from Barney Lake.

3. Samish Island Tidal Restoration

Restore hydrologic connectivity between Samish Bay and Padilla Bay. Restore estuarine habitat, and reduce flooding risks and impacts to Samish Island Road and nearby properties.

4. South Fork Skagit River Side Channel and Riverine Wetland Restoration

Restore or create a network of interconnected side channels and off -channel wetland habitat for use by a variety of fish and wildlife species, with an emphasis on rearing habitat for juvenile Puget Sound Chinook salmon.

Baker River Alluvial Fan Enhancement

BACKGROUND

The Baker River Alluvial Fan area at the confluence with the larger Skagit River is located partly within the Town of Concrete and partly in unincorporated Skagit County. For more than a decade, various stakeholders including user groups, landowners, local governments, and other interested parties have been considering habitat and recreational improvement opportunities along the lower Baker River and its associated alluvial fan.

Given the ecological significance of the confluence area of the Baker and Skagit Rivers and the existing level of shoreline, in-stream, and riparian function impairment, the lower portion of the Baker River channel downstream of SR-20 was identified by the Town of Concrete's Shoreline Master Program update as the area within its jurisdiction that would most benefit from restoration activities.

EXISTING CONDITIONS

The lowermost portion of the Baker River channel has undergone significant straightening and is now maintained in a channelized condition. The length of the lower river channel has likely been reduced due to the straitening of the original channel. The profile has also likely been lowered to accommodate fish capture and passage around the Baker River dams and tribal drift net fisheries. The channel is generally void of in-stream wood, and native streambank and riparian vegetation is sparse.

Public access along both banks of the Baker River below the SR-20 Bridge is provided via gravel access roads which contribute to the impairment of ecological functions along the lower river. Both banks are also heavily armored with rock. The confluence area is undeniably significant as a restoration site, and has been used for shoreline access and recreation for many years.

PROJECT GOALS

Restore riverine, shoreline, and riparian functions to provide fish and wildlife habitat while at the same time providing shoreline access and low-impact recreational opportunities.

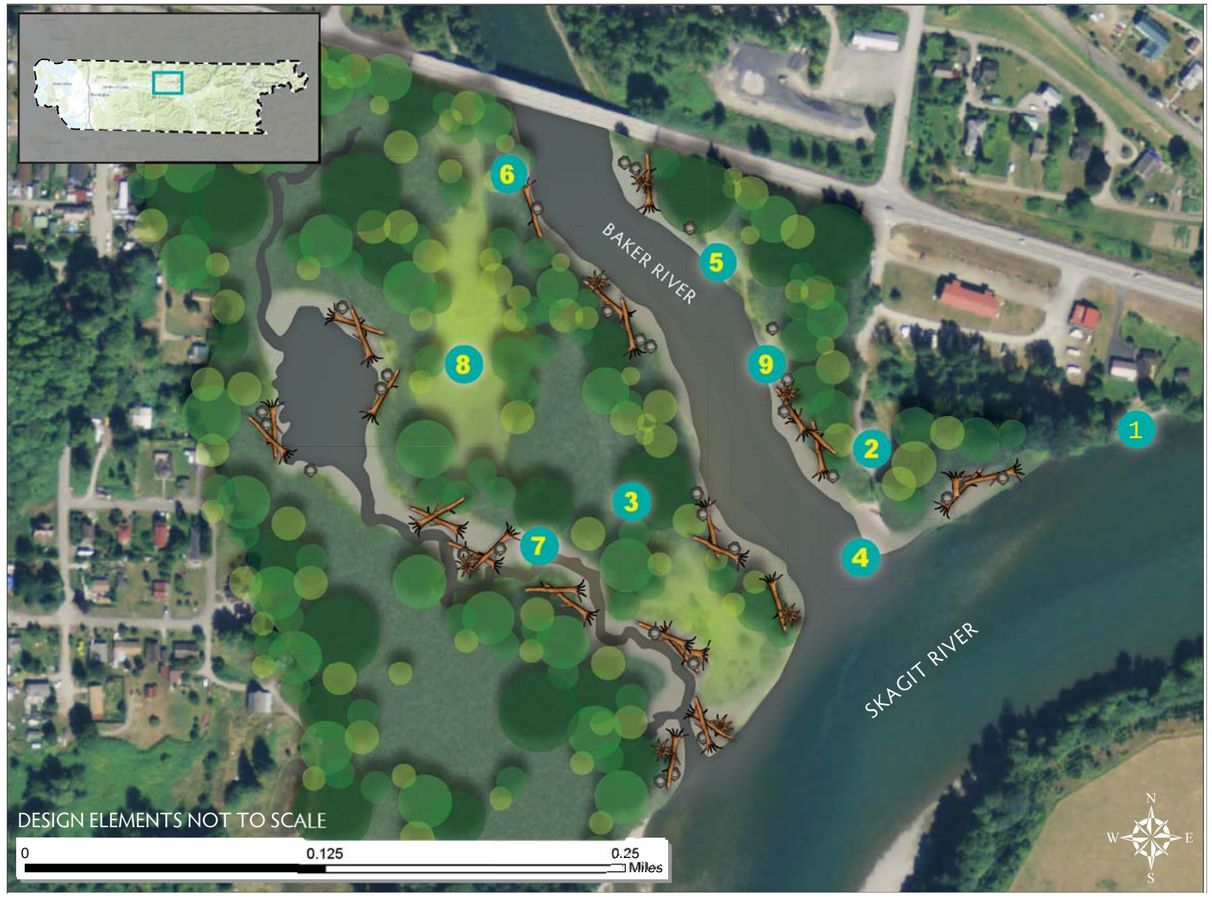
RESTORATION STRATEGY

1. Increase off-channel rearing habitat by excavating a channel connecting the mainstem Skagit with an off-channel pond.
2. Improve instream complexity by adding large woody debris.
3. Substitute pervious pedestrian trails for impervious vehicular access road and parking areas where feasible in areas adjacent to the Baker and Skagit Rivers.
4. Remove invasive plant species and replace them with native trees and shrubs to provide riparian functions over the long term.
5. Provide for monitoring and maintenance of restoration actions to assure success over the long term including provisions for replacement plantings as needed.
6. Improve shoreline and river access and other recreational opportunities by identifying and developing an appropriately sited boat launch, as well as picnic, camping, and other recreational facilities. Enter into intergovernmental, interagency, and/or landowner agreements to provide for shoreline and river access and other recreational facility improvements, as well as for maintenance of these facilities over time.

Existing conditions figure.
(Data Credit: Skagit County; Imagery Credit: USDA FSA NAIP)

CONCEPT ELEMENTS

1. Replace the existing shoreline stairway
2. Reduce imperviousness of vehicular and pedestrian access along river banks
3. Replace invasive plant species with native trees and shrubs.
4. Improve the existing WDFW boat launch site
5. Improve sinuosity of lower Baker River, establish floodplain benches and meanders.
6. Substitute pervious, natural-surface pedestrian shoreline access trails for impervious road surfaces.
7. Provide channels to link habitats of the historic Little Baker River channel and alluvial fan as a backwater channel.
8. Provide low-impact recreational improvements such as campgrounds outside the floodway.
9. Place boulders, log structures, and/or engineered log jams to increase low-flow complexity and improve salmonid fish habitat for juvenile rearing and adult holding life stages.



Project vicinity (inset) and site plan showing the proposed project elements. *(Imagery Credit: USDA FSA NAIP, ESRI, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster, NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community)*

Baker River Alluvial Fan Enhancement

Three-dimensional depiction of the proposed restoration project after implementation

Rendering by The Watershed Company, June 2013.

Image Credit: Google Earth, USDA Farm Service Agency
Imagery Date: Not specified

Barney Lake / Logan Creek Restoration

BACKGROUND

Skagit Land Trust (SLT), in partnership with Ducks Unlimited (DU) and other conservation partners, has acquired 255 acres of the core wetland area of Barney Lake and key floodplain habitats near the confluence of Nookachamps Creek and the Skagit River, east of Mt. Vernon. The site includes the confluence of Nookachamps and Logan Creeks.

EXISTING CONDITIONS

While much of the property is in good ecological health, Logan Creek currently flows through a straightened, channelized ditch dating from the early 1900s. The length of the creek on-site has been substantially reduced due to the straitening of the original meandering stream alignment , and the channel profile was also lowered to provide drainage for agricultural uses. The Creek is void of in-stream wood and native streambank and riparian vegetation.

Barney Lake is a large wetland and river oxbow complex consisting of forested, scrub-shrub, and emergent wetlands. It is one of the largest freshwater wetlands remaining in Skagit County. It provides important habitat for a variety of avian wildlife as well as native amphibians and salmonids. It is well-used by passerines (songbirds) and is home to three bald eagle nests and a great blue heron rookery. Thousands of waterfowl, including dabbling ducks and Trumpeter swans, can be found there in winter. Areas to the south and east of the lake have been cleared of scrub-shrub and forested plant communities for use as pasture.

PROJECT GOALS

1. Restore Logan Creek on-site to a naturalized, low gradient stream/wetland complex within a native riparian forest.
2. Restore the scrub-shrub and forested vegetation components which formerly existed around and upslope from Barney Lake.

RESTORATION STRATEGY

Stream alignment restoration (Logan Creek): The project will involve grading a new channel that mirrors the historic profile, section, and planform, also placing woody debris and planting a substantial number of native trees and shrubs. Restoring the stream channel and adjacent riparian corridor will restore (increase) riparian wetland hydrology, decrease instream temperature, improve water quality, and in the process provide valuable habitat for salmonid fish and a myriad of other wildlife species. The downstream section of the old, ditched channel will remain as a backwater, and the rest will be plugged at various locations to form a series of ponded wetland areas.

Wetland Enhancement (Barney Lake): The project is intended to restore scrub-shrub and forested vegetation components which are no longer present along the south and east sides of the lake by extensively planting locally native vegetation adapted to the current hydrologic regimes.

Enhance Wildlife Habitat: Wildlife species that currently use the site rely heavily on the existing pasture and managed grasslands. These include grazing waterfowl species like Trumpeter swans and American wigeon. The proposed enhancement project would enhance remnant areas of pasture to improve waterfowl habitat. This work may entail noxious weed control, disking, reseeding, and/or mowing to maintain desirable forage and weed control.

Existing conditions figure.
(Data Credit: Skagit County; Imagery Credit: USDA FSA NAIP)

CONCEPT ELEMENTS

1. Provide for a new meandering channel alignment away from the old channel.
2. Widen existing channel cross section to include a low-flow channel and readily-activated floodplain.
3. Fill short sections (only) of the existing channel to create backwater areas.
4. Unfilled areas of existing channel enhanced to create off-channel wetlands.
5. Install large woody debris including snags along the new channel.
6. Revegetate new channel with native trees, shrubs, and emergents.
7. Manage remnant pasture areas for the wildlife and grazing waterfowl species such as trumpeter swans and American wigeon.
8. Replant native vegetation around Barney Lake. *(Labeled on next sheet)*

Project vicinity (inset) and site plan showing the proposed project elements. *(Imagery Credit: USDA FSA NAIP, ESRI, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster, NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community)*

Barney Lake / Logan Creek Restoration

Three-dimensional depiction of the proposed restoration project after implementation

Rendering by The Watershed Company, June 2013.

Image Credit: Google Earth
Imagery Date: 8/25/2011

Samish Island Tidal Restoration

BACKGROUND

A sea dike protecting private farmland south of Samish Island along Puget Sound is susceptible to erosion and potential failure. If breached, the flooding would impact several hundred acres of farmland and county roads. An alternative to reduce the likelihood of flood damages in this area is to raise Samish Island Road so it doesn't get overtopped if the dike breaks. If this were to occur, it would open up the opportunity to purchase private land, build a cross-dike, and re-create an estuary connected to both Samish Bay and Padilla Bay.

EXISTING CONDITIONS

The dike along Puget Sound is not constructed to Army Corps of Engineers standards and not maintained regularly. The land between Samish Island Road and the dike is low, wet, and difficult to drain. Samish Island Road is just a few feet higher than surrounding grade, and would flood if the dike breached in a storm. The property is drained with ditches flowing to the west, and drain via culverts with tidegates. At low tide, the water drains out. At high tide, the gates close until the tide goes out again and positive gravity drainage can resume.

PROJECT GOALS

The project would be expected to restore estuary conditions to approximately 115 acres in the project area. There would be intertidal channels connecting Samish Bay and Padilla Bay beneath the roadway. Eelgrass beds would likely form within the restored tidal areas, as would mudflats, vegetated saltmarsh, driftwood beaches, and riparian corridors. The project would benefit salmonids, primarily outmigrating smolts, as well as shorebirds, crab larvae, and waterfowl. The project would decrease the length of dike to maintain, and eliminate the threat of flooding Samish Island Road in this vicinity.

RESTORATION STRATEGY

Project elements involve property acquisition and construction of a new cross dike between Puget Sound and Samish Island Road on the southern boundary of the project. Samish Island Road would be raised above the high tide and river flooding elevations. Culverts under Samish Island Road, or bridges, will be installed to connect intertidal channels between Samish Bay and Padilla Bay. New intertidal channels would be constructed in the acquired properties to facilitate flows in and out of the area during tidal cycles. The old dike would be breached in key locations for tidal connection, with sections remaining as islands of upland vegetation to provide habitat diversity. Native riparian species would be planted in the areas with appropriate elevation.

Existing conditions figure.
(Data Credit: Skagit County; Imagery Credit: USDA FSA NAIP)

CONCEPT ELEMENTS

1. Raise Samish Island Road and install culverts.
2. Acquire private properties
3. Construct cross-dike and breach old dike
4. New intertidal channels
5. Install large woody complexes
6. Plant native vegetation

Project vicinity (inset) and site plan showing the proposed project elements. *(Imagery Credit: USDA FSA NAIP, ESRI, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster, NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community)*

Samish Island Tidal Restoration

Three-dimensional depiction of the proposed restoration project after implementation

Rendering by The Watershed Company, June 2013.

Image Credit: Google Earth
Imagery Date: 8/25/2011

South Fork Skagit River Side Channel and Riverine Wetland Restoration

BACKGROUND

The Nature Conservancy holds low-lying, floodplain property along the South Fork Skagit River which includes existing open-water wetlands and a number of historic side channels which have been partially de-activated due to sediment blockages at their mouths. The Skagit Program office of The Conservancy is considering a salmon habitat enhancement project at the site which would largely restore these side channels and associated floodplain wetlands in form and function as fish and wildlife habitat, including as rearing habitat for listed juvenile Puget Sound Chinook salmon.

EXISTING CONDITIONS

The property is situated along the inside of a bend in the South Fork Skagit River. It can be characterized as a historic or remnant point bar, however the river at and near the site is severely confined by levees. Most of the property is densely forested with mixed age stands including very mature cottonwood and a few cedars. The entire property falls within a depositional and low-energy river zone, and it appears that the channel configuration is very stable. The property is largely protected at its upstream end from channel migration by levee position which trains the river away from the property. There is evidence that the river is actively building point bars through ongoing deposition; however, it is constrained by levees on the opposite bank and not able to migrate away from these point bars.

Relatively clear water flows through a narrow outlet channel at the downstream end of the property and into the Skagit River at normal flows. This indicates that there is substantial groundwater flow into the lower elevations of the property where wetland enhancement is proposed.

PROJECT GOALS

Restore or create a network of interconnected side channels and off-channel wetland habitat for beneficial use by a variety of fish and wildlife habitat species, with emphasis on rearing habitat for juvenile Puget Sound Chinook salmon.

RESTORATION STRATEGY

Create off-channel rearing habitat: Preliminary analyses (topographic and hydrologic) indicate a favorable environment for creation of substantial off-channel rearing habitat in the form of a constructed wetland/slough feature on the downstream half of the property. Construction could be accomplished with the simple excavation of open-water habitat within existing low elevation areas, with minor modifications to the existing outlet channel to provide fish passage to and from the Skagit River during all flows. However, if design analyses indicate benefits from regular or sustained flow through the project, the elevation of the river bank upstream lends well to installation of an inflow headgate with minimal or no necessary topographic reconstruction.

Improve wetland connectivity: Based on preliminary topographic information, connect existing wetlands into a single wetland/slough area in the southern half of the property along the eastern margin of the site. Depending on availability of groundwater sources, the proposed wetland/slough design will be self-sustainable with or without an inflow channel.

Existing conditions figure.
(Data Credit: Skagit County; Imagery Credit: USDA FSA NAIP)

CONCEPT ELEMENTS

1. Excavate partially-deactivated side channels near their mouths to reconnect them and associated floodplain areas to the river.
2. Reconnect and enhance floodplain wetlands.
3. Lower and otherwise reconstruct and enhance the existing wetland outlet channel to provide juvenile fish passage over the range of river stages and flows.
4. Install an engineered log jam to provide habitat and a scour pool to help keep the side channel open.

Project vicinity (inset) and site plan showing the proposed project elements. *(Imagery Credit: USDA FSA NAIP, ESRI, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster, NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community)*

South Fork Skagit River Side Channel and Riverine Wetland Restoration

Three-dimensional depiction of the proposed restoration project after implementation

Rendering by The Watershed Company, June 2013.

Image Credit: Google Earth
Imagery Date: 8/25/2011