APPENDIX B

SHORELINE RESTORATION REPORT

I. SHORELINE MANAGEMENT ACT RESTORATION PRINCIPLES

The Shoreline Management Act (Act) makes protection of shoreline environments an essential statewide goal, with an emphasis on maintenance, protection, restoration, and preservation. The Act requires local master programs include goals and policies for restoration of impaired shoreline ecological functions that are consistent with the principles embodied in WAC 173-26-186(8)(c). These principles include the following:

- 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;
- 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;
- Restoration efforts 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;
- Utilize a process that identifies, inventories, and ensures meaningful understanding of existing and potential ecological functions of affected shorelines;
- Develop policies and regulations designed to achieve no net loss of those ecological functions;
- In jurisdictions containing shorelines with impaired ecological functions, develop goals and policies that provide for restoration of those functions; and
- Evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions.

The Act also recognizes that restoration planning can vary dramatically between jurisdictions based on the jurisdiction's size, extent and condition of its shorelines, availability of funding and restoration tools, and the nature of the ecological functions to be restored.
In Mount Vernon, where there is an extensive dike system, potential areas of meaningful restoration are organized as follows:

- Locations where there is a significant open space within the batture between a levee and the river's edge;
- Future locations where the Dike Districts plan to relocate levees farther from the shoreline, thereby expanding and creating new restoration opportunities within the batture; and
- Those shoreline segments that do not have an immediately adjacent dike/levee or revetment.

A. SHORELINE MANAGEMENT PROGRAM RESTORATION AND ENHANCEMENT GOALS

1. Reestablish, rehabilitate, and/or otherwise improve impaired shoreline ecological functions and/or processes through actions that are consistent with this Master Program and guidelines provided in other local and regional restoration plans.
2. Encourage and facilitate cooperative restoration and enhancement programs between the City and state and federal public agencies, tribes, non-profit organizations, developers, and landowners to address shorelines with impaired ecological functions and/or processes.
3. Restore and enhance shoreline ecological functions and processes as well as shoreline features through voluntary and incentive-based public and private programs.
4. Target restoration and enhancement with the goal of improving habitat requirements of priority and/or locally important wildlife species.
5. Ensure restoration and enhancement is consistent with and, where practicable, prioritized based on the biological recovery goals for salmon populations and other species and/or populations for which a recovery plan is available.
6. Integrate restoration and enhancement with parallel natural resource management efforts such as the 2005 *Skagit Chinook Recovery Plan* and Department of Ecology Water Resource Inventory Area #3 watershed planning activities.

B. RESTORATION AND ENHANCEMENT POLICIES

1. The City of Mount Vernon should determine priority restoration sites.
2. This Master Program recognizes the importance of restoration of shoreline ecological functions and processes and encourages cooperative restoration efforts and programs between the City, county, state, and federal public agencies, tribes, non-profit organizations, and landowners to address shorelines with impaired ecological functions and/or processes.
3. Not restoration *per se*, but as a strategy for improving shoreline ecological systems, Mount Vernon plans to correct degraded conditions along the Downtown shoreline by removing the revetment that parallels the Skagit River (within 5 years from the date of the SMP).
4. The City intends to remove existing pilings from the main stem of the Skagit River as part of the redevelopment of the Downtown Waterfront project (within 5 years of the date of the SMP).
5. Additional opportunities for restoration would be created when Dike Districts complete plans to set back existing dikes greater distances from the OHWM of the Skagit River in the three bridge area of North Mount Vernon (ten to twenty years from the date of the SMP).
6. Restoration actions should restore shoreline ecological functions and processes as well as shoreline features and should be targeted towards meeting the needs of sensitive and/or locally important plant, fish, and wildlife species as well as the biological recovery goals for early Chinook, bull trout populations, and other salmonid species and populations.
7. Restoration should be integrated with other natural resource management efforts such as the *2005 Skagit Chinook Recovery Plan*.

8. Priority should be given to restoration actions that:
   i. Create dynamic and sustainable ecosystems.
   ii. Restore connectivity between river channels, floodplains, and hyporheic zones.
   iii. Restore historic back-channels to create refugia for migrating fish.
   iv. Mitigate peak flows and associated impacts caused by high stormwater runoff volume.
   v. Reduce sediment input to the Skagit River and associated impacts.
   vi. Improve Skagit River water quality through stormwater facility upgrades.
   vii. Restore native vegetation and natural hydrologic functions of degraded and former wetlands to the extent practical.
   viii. Replant native vegetation in shoreline areas to restore functions where such actions are meaningful and consistent with this SMP and Dike District guidelines.
   ix. Where practical restore riverine ecosystem processes, such as sediment transport and creation of sand bars and accumulation of large woody debris that create and sustain fish habitat.

The Skagit is the only river system in Washington that supports all five species of salmon, containing some of the largest and healthiest wild Chinook salmon runs in Puget Sound and the largest pink salmon stock in the state. In all, there are ten species of salmonids within the Skagit River basin. These include six Chinook stocks (spring, summer, and fall), pink salmon, chum salmon, sockeye salmon, summer and winter run steelhead, sea run cutthroat trout, Dolly Varden, and bull trout. Three of these, Puget Sound Chinook salmon, Puget Sound steelhead, and Coastal Puget Sound bull trout, are Endangered Species Act (ESA) listed.

As a result, restoration planning in the Skagit River watershed has had a focus on policies and actions intended to aid in the recovery of migratory fish populations, in particular ESA listed species.

II. WATERSHED PLANNING

In 1998, the State legislature passed Chapter 90.82 RCW, which sets forth a framework for developing local solutions to water resource issues on a watershed basis. Chapter 90.82 RCW states:

> *"The legislature finds that the local development of watershed plans for managing water resources and for protecting existing water rights is vital to both state and local interests. ... The development of such plans serves the state's vital interests by ensuring that the state's water resources are used wisely, by protecting existing water rights, by protecting in-stream flows for fish and by providing for the economic well-being of the state's citizenry and communities."*

RCW 90.82 recognizes that watersheds are the logical planning unit for addressing water resource issues and the protection and restoration of fish and wildlife habitats. The RCW establishes general criteria and guidelines for state agencies and local jurisdictions to follow in developing and implementing watershed plans. The primary purpose of these plans is to equitably manage water resources between the competing demands of human use, protection of existing water rights, and the maintenance of in-stream flows for resident fish.

Habitat restoration is an optional element in the development of local watershed plans under the RCW. However, given the requirements of the GMA relative to the SMA for shorelines, restoration would be an expected component for those watersheds that have experienced significant development and historically supported significant fish populations and riparian habitats.

Watershed planning is necessarily hierarchical in nature. Each major watershed is composed of smaller sub-basins that may differ substantially in the intensity of development, level of water resource use, types and extent of habitats, and functional characteristics. Federal and state agencies, tribes, and local governments have varying degrees of authority over watershed issues, resulting in a hierarchy of plans and regulations. Major watershed boundaries and tributaries also cross jurisdictional boundaries, requiring coordination between local communities, tribes, and private parties engaged in planning and restoration activities.

A. WATERSHED RESOURCE INVENTORY AREA #3

The State's major watersheds have been mapped into sixty-two Water Resource Inventory Areas (WRIA), with each further divided into sub-basins based on the physical extent of primary tributaries. Mount Vernon is located within WRIA #3 – Lower Skagit River. As a planning unit, the boundaries of WRIA #3 represent the upper tier of the watershed hierarchy for the Lower Skagit.

The Department of Ecology (DOE) is the agency responsible for coordinating and overseeing the development of watershed plans under RCW 90.82. The DOE further supports these efforts by conducting research and preparing studies on specific watershed issues, reporting on watershed planning activities, and maintaining a database of information specific to each WRIA.

B. SKAGIT CHINOOK RECOVERY PLAN 2005

The *Skagit Chinook Recovery Plan* (Plan) was completed in 2005 as a joint effort between the Skagit River System Cooperative (SRSC) and the Washington Department of Fish and Wildlife (WDFW). The process began in 1994, in response to the listing of Puget Sound Chinook salmon as threatened under the Endangered Species Act and during its development included the involvement of a variety of interested and affected parties. The Plan document is intended to provide the basis for the Skagit Basin chapter of the Greater Puget Sound Chinook recovery effort.

While not all of the parties involved have expressly issued their support, it remains the one watershed level plan currently in place for the Skagit.
The purposes of the Plan are 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 is built around the identification of four different juvenile Chinook salmon life history strategies in the Skagit: yearlings, parr migrants, tidal delta rearing migrants, and fry migrants. Due to the differences in habitat use, yearlings and parr migrants depend more on freshwater habitat, while tidal delta rearing migrants and fry migrants depend more on estuarine habitats.

This difference in habitat utilization by individual life history strategies shapes the habitat recovery actions proposed in the Plan. Habitat recovery actions are recommended that benefit each life history strategy in an effort to maintain and strengthen Chinook population diversity and ensure spatial connectivity and abundance. The restoration strategy for the Plan is based on an understanding of the limiting factors for each of the Skagit Chinook salmon stocks and the specific location of existing or potentially restorable habitat.

Relevant to Mount Vernon, are the Plan's recommended restoration actions for freshwater rearing habitat in large river floodplains, tributaries, and non-tidal deltas. Large river floodplain restoration actions in the Plan seek to improve freshwater conditions for all Chinook salmon fry, but in particular for those life history strategies that depend on freshwater habitat for extended rearing. Intact floodplain areas are especially important for freshwater rearing because the availability of complex main-stem edge habitat, backwaters, and off-channel habitat is essential for the foraging and refugia of all phases of freshwater life history. For example, stream type Chinook salmon spend over one year in freshwater habitat before migrating further downstream.

C. MOUNT VERNON SKAGIT TRIBUTARIES AND WATERS/WETLANDS RESERVE PROGRAM

Skagit River tributaries in Mount Vernon are regulated under the City's Critical Areas Ordinance (CAO) and are not a part of the Shoreline Master Program, except at their confluence with the Skagit River. However, the City recognizes that planning and development activities occurring within these tributary sub-basins can have impacts on the quality of shoreline environments downstream in the Skagit River.

The City has been involved with local watershed planning in the context of updating its CAO to comply with the Growth Management Act (GMA) requirement to include best available science (BAS). Beginning in 2005, and continuing through 2008, city staff, consultants, and student volunteers inventoried and evaluated the City's water and wetland resources. Mount Vernon has developed studies and maps that document location, extent, and conditions of the tributaries within the City's seven sub-basins. Information includes whether a stream is fish-bearing, stream gradient, type, location of blockages to fish passage, stream crossings, and riparian habitat.

This information has been used as the foundation for implementing the City's Waters/Wetlands Reserve program that is a part of its Critical Areas Ordinance (CAO). The program is founded on the principle that site specific impacts (both good and bad) have incremental and cumulative effects on ecological functions elsewhere within the ecosystem's landscape. In practice, the CAO provides an alternative whereby property owners may choose a program that requires both off-site mitigation via a contribution to a restoration fund and on-site enhancement/restoration of remaining on-site ecological functions (including stormwater upgrades), for which they are allowed a reduced buffer to a BAS supported minimum. Funds collected in this program are expended restoring ecological functions elsewhere in the waters/wetland system. The program is administered by the City's Stormwater Utility.

As a part of developing the CAO, the City identified ten city-owned properties totaling approximately 100 acres that have restoration potential and designated them as receiving sites for collected restoration funds. Two of these sites are on the Skagit River shoreline:

- Edgewater Park - approximately 9.0 additional acres of batture
- Lions Park North (the confluence of Kulshan Creek) - approximately 11.0 acres of degraded floodplain forest

Funding for restoration of these and other sites will occur as the program is implemented. Timelines will be dependent upon contributions to the program.

III. RESTORATION OPPORTUNITIES AND ACTIONS

A. BIG BEND REACH HABITAT RESTORATION FEASIBILITY STUDY, 2004

The primary goal of the *Skagit River Big Bend Reach Habitat Restoration Feasibility Study* (Study) was to identify opportunities for improving the quality and quantity of rearing habitat available to juvenile salmon at various opportunity sites located in the Big Bend Reach of the Skagit River. There are remnant pockets of habitat to be found between the river and the existing levees. Some of these are actively engaged with the river. Most are currently isolated from river actions, except during high water events.

Thirteen opportunity sites were identified and analyzed for their existing habitat values and their ability to provide additional habitat benefits. Several of the sites displayed little or no opportunity for restoration activities and several were not in close proximity to the City of Mount Vernon. Six sites from the Study have been included in this SMP Restoration Report.

The Study resulted in recommendations for appropriate restoration actions based on several factors, including geomorphic sustainability, habitat and fish benefits, and the feasibility of requirements to implement a restoration action. At several of the sites, combinations of restoration alternatives were determined to best meet the needs of a site and the objectives of the project. The opportunity sites have the potential to become the backbone for larger restoration efforts. Not all of the sites identified in the study area are in Mount Vernon and some are only partially within City jurisdiction (Ten Dollar Bar and Goodrich Bar). This Report includes those wholly or partially within the City's jurisdiction.

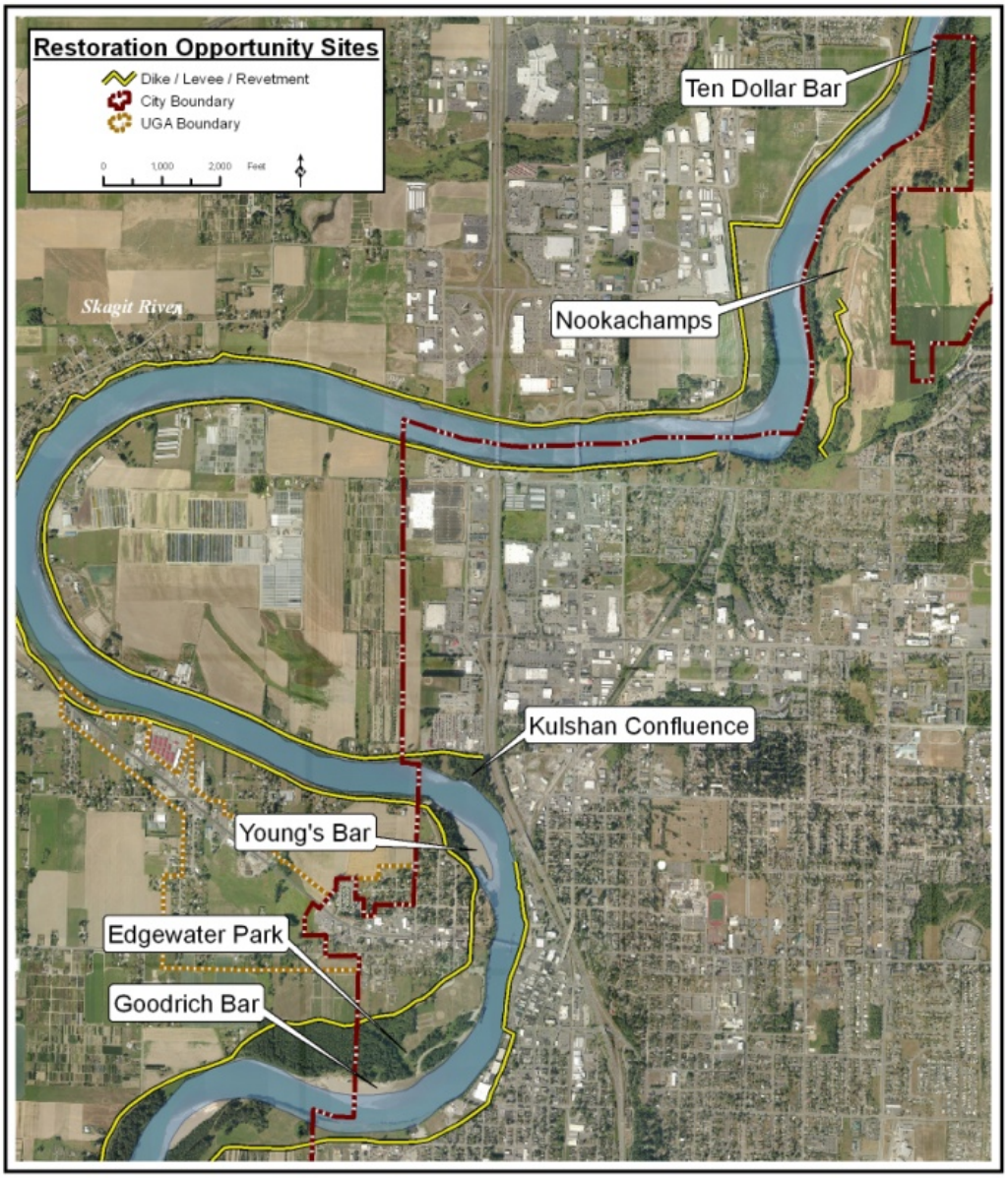

Figure B-1
Shoreline Restoration Opportunities

B. TEN DOLLAR BAR:

Location: This site, on the south side of the river (left bank) opposite Johnson Bar at the north end of the Nookachamps Wetland Mitigation Bank site, is approximately 90.5 acres. The area is privately owned and only partially within the City's jurisdiction. The gravel point bar (Ten Dollar Bar) consisting of about 3 acres along the downstream one-third of the site, is directly opposite the Burlington boat ramp.

Restoration Potential: The upstream portion of this site, between the Nookachamps confluence and the forested zone, is heavily armored with rip rap. Removal of this rock would likely increase the hydrologic connectivity between identified ephemeral channels and the outside bend of the river flowing past the Johnson Bar location. This could result in deeper and more frequently connected off-channels as well as increased point bar accretion.

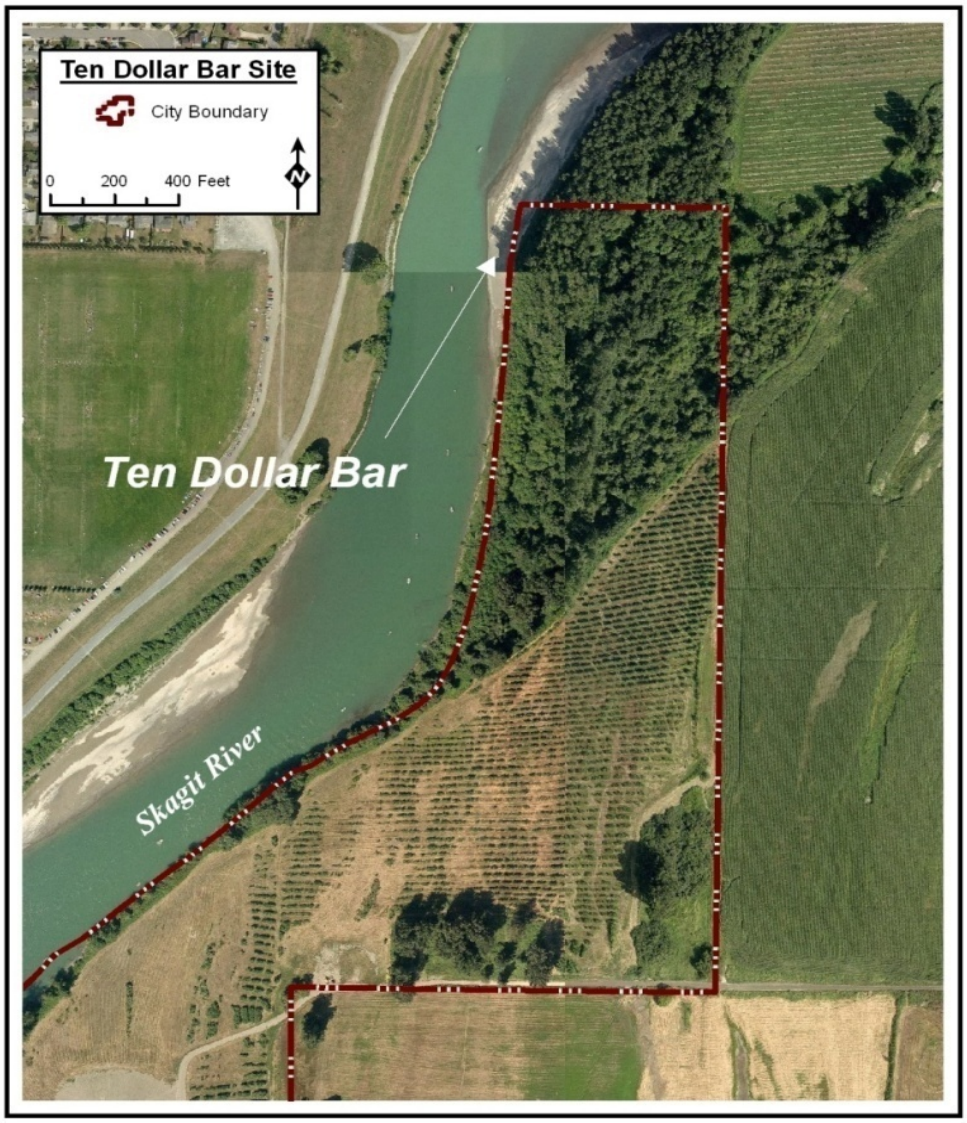

Figure B-2
Ten Dollar Bar

C. KULSHAN CONFLUENCE AT LIONS PARK NORTH:

Location: This 15 acre site is located on the outside of a bend and adjacent to the I-5 corridor at Lions Park North, a City park located north of Downtown of Mount Vernon at river mile (RM) 13.4. A Dike District 17 levee is located to the north.

Restoration Potential: Due to the stream confluence, in addition to being on the outside bend of the river, this site has unique restoration potential. Unfortunately, surrounding constraints severely limit the site's ability to realize its restoration potential without a high cost. Constraints such as Freeway Drive, the I-5 corridor, and heavily industrial and commercial land uses, make this site problematic for significant restoration. Modest efforts could include providing a complex of large wood and restoration of riparian vegetation for increased plant community diversity. Lions Park North has been identified as a potential restoration site for the City's CAO program that could include 11 acres of degraded forest.

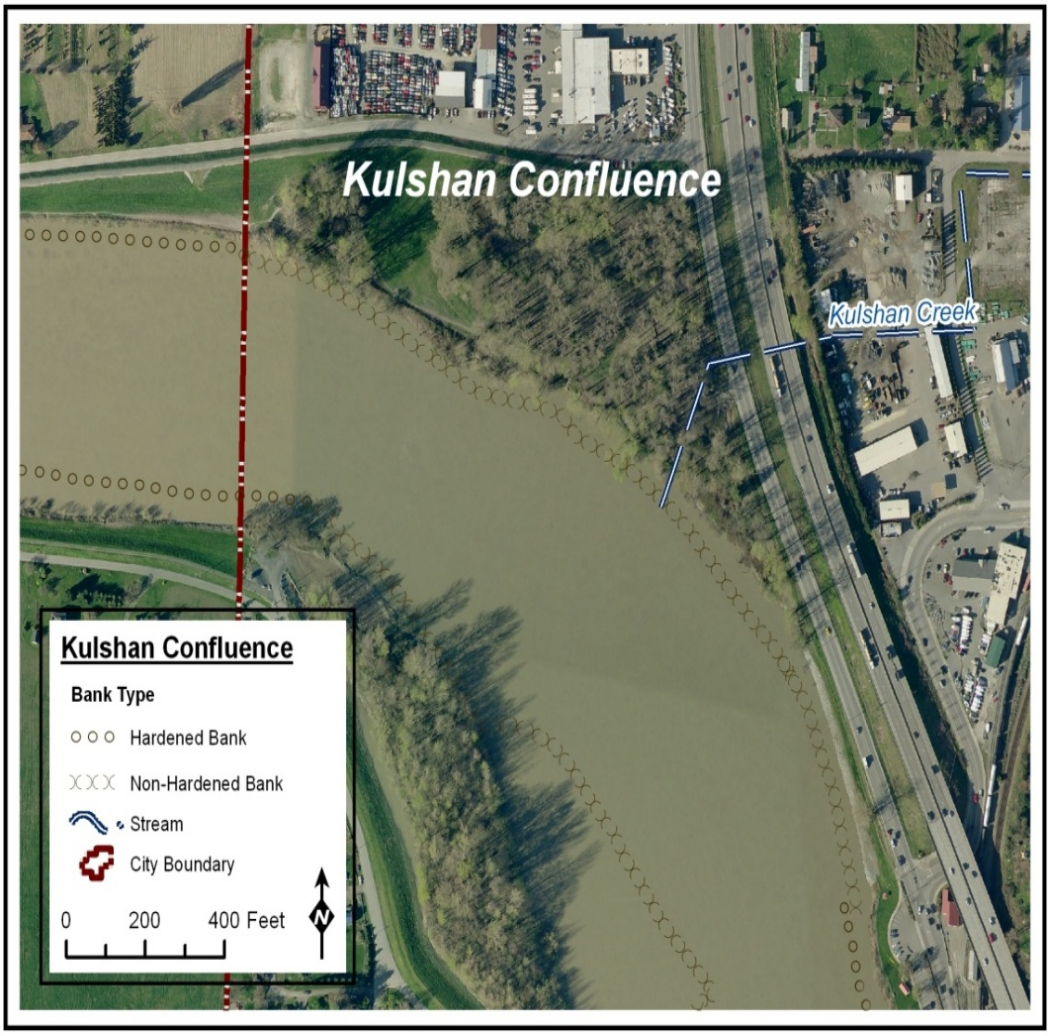

Figure B-3
Kulshan Confluence at Lions Park

D. YOUNG'S BAR:

Location: This is a major point bar in the Lower Skagit River system of about 19.7 acres located at RM 11.2, across from Lions Park and abutting the north end of Edgewater Park. The sand bar is owned by the Department of Natural Resources, a portion on the north part of the site, developed for fishing access, is owned by the Washington State Department of Fish and Wildlife, and uplands are privately owned. The area is bordered by a levee on its west side.

Restoration Potential: Without a more significant dike setback through this reach of the river, this site appears to have little potential for restoration given the extensive infrastructure immediately west. The predominant value missing from the site is LWD accumulation. Given large enough pieces, it would be possible to see some significant accumulation of large wood over time. It does not appear that a stable back-channel could be created on this site. Other actions could include increasing riparian plant diversity.

Figure B-4
Young's Bar

E. EDGEWATER PARK

Location: This 68 acre public park is located in West Mount Vernon, along the right bank of the Skagit River.

Restoration Potential: The Park includes over 4,700 feet of shoreline. A Master Plan was adopted by the City Council in 2000 and since then several elements of the plan have been implemented. Habitat enhancement is an integral part of the plan. Over half the park is open space and natural area. The river shoreline has been and will continue to be enhanced with the removal of invasive, non-native plants and landscaped with native plants to create a range of habitats, edge conditions, and food and shelter supply for mammals and birds. Existing native trees and snags have been retained. Approximately 3 acres of shoreline have been restored with over 9,000 shrubs and 300 deciduous and evergreen trees. A key feature of the plan has been the restoration and enhancement of a historic off-channel habitat. The result will be a strong riparian edge along the river. The functioning riparian zone will stabilize the river bank, provide shade and control water temperature, and eventually contribute woody debris to the river that will provide refuge and habitat for migrating adult and juvenile salmon. As noted earlier, there are an additional 11 acres of batture that could be restored within the park.

Figure B-5
Edgewater Park

F. GOODRICH BAR

Location: This site, at RM 12, is located immediately downstream of and adjacent to Edgewater Park in West Mount Vernon at the downstream edge of a major point bar. The bar is owned by the Washington Department of Natural Resources and adjacent land is privately owned. The majority owner (75 percent) has enrolled the land in the Skagit County Farmland Legacy Program. Although it is not completely within the City's jurisdiction, it does have potential for future restoration activities.

Restoration Potential: The site was compromised by the development of a land fill at the upstream end of Edgewater Park during the late 1950's and 60's. This floodplain fill has impeded hydrology such that limited sustainable channel development has been possible through this site. However, restoration actions that have occurred in the adjacent Edgewater Park have opened hydrologic connectivity opportunities that may allow channels to be established over time. Increasing riparian plant diversity would also be a potential at this site.

Figure B-6
Goodrich Bar

G. NOOKACHAMPS WETLAND MITIGATION BANK

Location: The Nookachamps Wetland Mitigation Bank is located adjacent to the Skagit River in northeast Mount Vernon, between the river's confluence with Lindegren Creek and Ten Dollar Bar.

Restoration Potential: This site, owned by Nookachamps LLC (identified as "Salem LC" in the Study) is being developed as a wetland mitigation bank. While the Study did not rate the site high for re-establishing additional back-channels, it did suggest that the historic complex of wetlands could likely be restored. The Mitigation Bank plan is to establish a more complex system of back-channels that will restore the direct connection of this portion of the floodplain to the river.

The site encompasses approximately 291 acres and includes a portion of the bar and forested floodplain associated with the Ten Dollar Bar site to the north. The purpose of the preserve is to develop a bank for projects that require mitigation credits to off-set project site impacts.

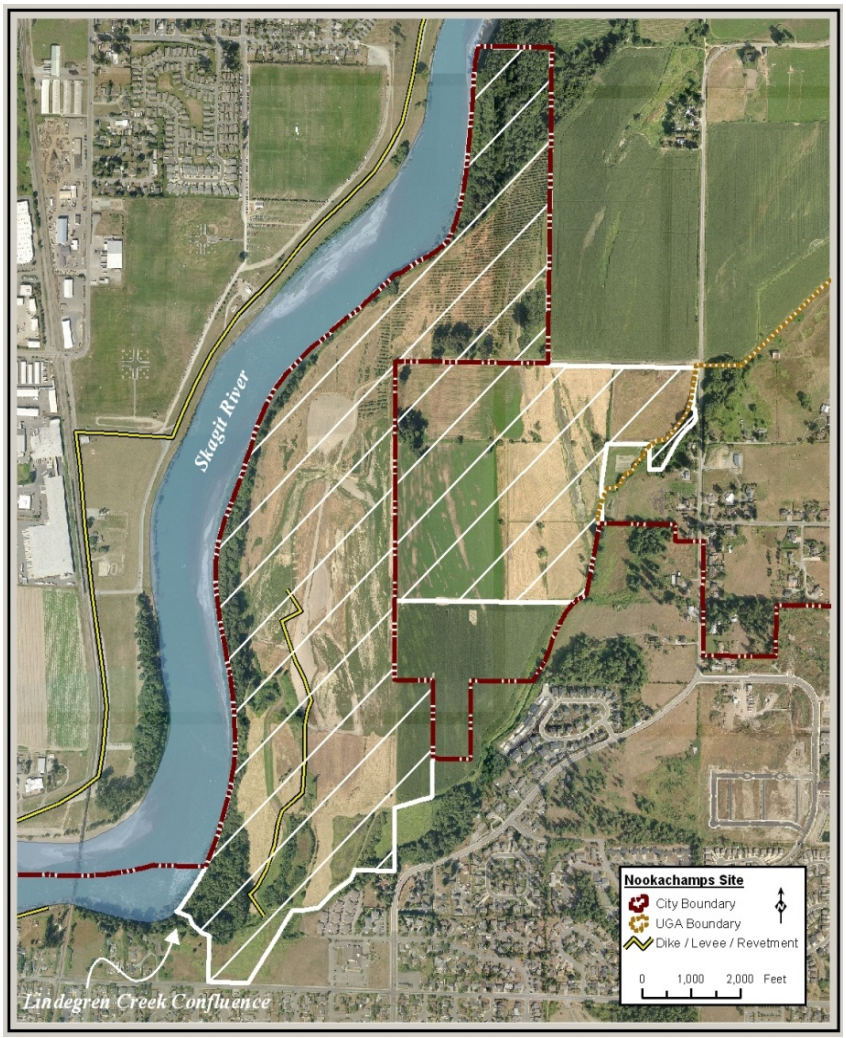

Figure B-7
Nookachamps Wetland Mitigation Bank

The plan is to excavate a channel network to restore the hydrogeomorphic character of the site. These channels will be constructed in what are believed to be historic locations of back channels prior to site conversion to agriculture. A significant portion of the site will be planted with a riparian forest, providing shade and other benefits for the back channels and the Skagit main-stem, as well as habitat for terrestrial species. One of the channels will have a direct connection to the river allowing water to inundate the back channels when the Skagit exceeds its mean annual flow. The constructed channels will be sloped to ensure their drainage after waters recede so fish will not be stranded.

Key features of the restoration plan include the following:

- Re-create the natural geomorphic character of the site.
- Create backwater sloughs for off-channel habitat.
- Create habitat along the slough channels.
- Enhance existing emergent wetlands.
- Increase riparian buffer along the Skagit River.
- Provide benefit to the ESA listed species and fish in general.
- Provide benefit to migratory waterfowl and other terrestrial species.
- Perform wetland function such as reducing erosion and attenuating floodwaters.

IV. RESTORATION SUMMARY

As noted in Appendix A, past development actions have resulted in significant and material changes in the City's shorelines. Historic riparian, floodplain and wetland habitats have been converted to urban uses within the City's jurisdiction. As a result, a majority of the shoreline areas occur within a batture created by a nearly continuous system of levees/dikes and revetments.

Direct City restoration actions are limited to those sites actually owned by the City. Shorelines having restoration potential that are within City jurisdiction and also owned by the City include Edgewater Park and Lions Park North. The south portion of Edgewater Park was recently restored in conjunction with redevelopment of the park as a whole. There are also approximately 9 acres of batture within the park that have been identified for restoration under the City's CAO program. The confluence of Kulshan Creek with the Skagit River at Lion Park North has also been identified as having potential, with approximately 11 acres of degraded floodplain forest.

Areas identified as having restoration potential wholly or partially within the City's jurisdiction, owned by state agencies or private parties, include Ten Dollar Bar, Nookachamps Wetland Mitigation Bank, Young's Bar, and Goodrich Bar. within addition to reestablishing historic off-channel habitats and wetlands, the shoreline adjacent to the Wetland Mitigation Bank is planned to provide a pedestrian trail in conjunction with construction of the Bank.

Restoration of the City-owned sites will occur as funds become available, either through the City's CAO program or other sources that may become available. At this time no benchmarks or timelines have been established. Preservation of existing ecological functions on privately-owned lands will be accomplished through the goals, policies and regulations within the SMP.