

Draft

CITY OF TUKWILA SHORELINE MASTER PROGRAM UPDATE

Cumulative Impacts Analysis

Prepared for:
City of Tukwila

July 2008



Introduction

With the assistance of a grant from the Department of Ecology, the City of Tukwila is updating its Shoreline Master Program (SMP) consistent with state guidelines (WAC Chapter 173-26). Under the shoreline guidelines, local jurisdictions are required to evaluate and consider cumulative impacts of reasonably foreseeable future development in the shorelines of the state (WAC 173-26-186(8)(d)). This report assesses the cumulative impacts of development and activities in the shoreline over time under the proposed amendments to the City of Tukwila SMP and was prepared as a grant deliverable (SMA Grant No. G0600234, Task 9).

At this point in time, the proposed amendments to the SMP have been reviewed by Department of Ecology. Tukwila staff has made revisions to the draft as a result of Ecology's initial review and the Planning Commission and City Council will begin review of this revised draft soon. Accordingly, this analysis should be considered preliminary and may be revised as revisions to the draft SMP update are incorporated during local adoption of the SMP amendments or approval by Department of Ecology.

For the City of Tukwila, shorelines of the state in the city limits and Potential Annexation Areas (PAAs) include approximately 13.6 river miles of the Green/Duwamish River, between approximately river mile (RM) 17.3 and RM 3.7. The Green/Duwamish River in Tukwila is designated as a "shoreline of statewide significance," having a mean annual flow greater than 1,000 cubic feet per second (cfs).

The purpose of evaluating cumulative impacts is to insure that, when implemented over time, the proposed SMP goals, policies and regulations will achieve no net loss of shoreline ecological functions from current "baseline" conditions. Baseline conditions are identified and described in the Final Shoreline Inventory and Characterization Report (May 2007); Appendix A to the draft SMP. The SMP provides standards and procedures to evaluate individual uses or developments for their potential to impact shoreline resources on a case-by-case basis through the permitting process. The purpose of this memorandum is to determine if impacts to shoreline ecological functions are likely to result from the aggregate of activities and developments in the shoreline that take place over time.

The state guidelines establish that, "to ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts among development opportunities. Evaluation of such cumulative impacts should consider:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws."¹

This cumulative impacts assessment uses these three considerations as a framework for evaluating the potential long-term impacts on shoreline ecological functions and processes that may result from development or activities under the proposed SMP over time.

Current Circumstances

As part of the City's SMP update, an Inventory and Characterization Report and Map Folio was prepared in December 2006, and was finalized in the spring of 2007 following technical review by Ecology and King County.

¹ WAC 173-26-286(8)(d)

The final report and map folio is included as Appendix A to the SMP. The inventory and characterization report identifies existing conditions and evaluates the ecological functions and processes in the City's shoreline jurisdiction. The inventory included a characterization of ecosystem processes functioning at a watershed scale, as well as an inventory and assessment of conditions in all shoreline areas within the City of Tukwila and its Potential Annexation Areas (PAAs) (shown below as the "shoreline planning area"). The term "shoreline planning area" refers to the approximate area within the City's shoreline jurisdiction, or areas subject to SMP regulations, as shown in Figure 1. The following sections summarize baseline conditions, or current circumstances, with regard to Tukwila's shorelines.

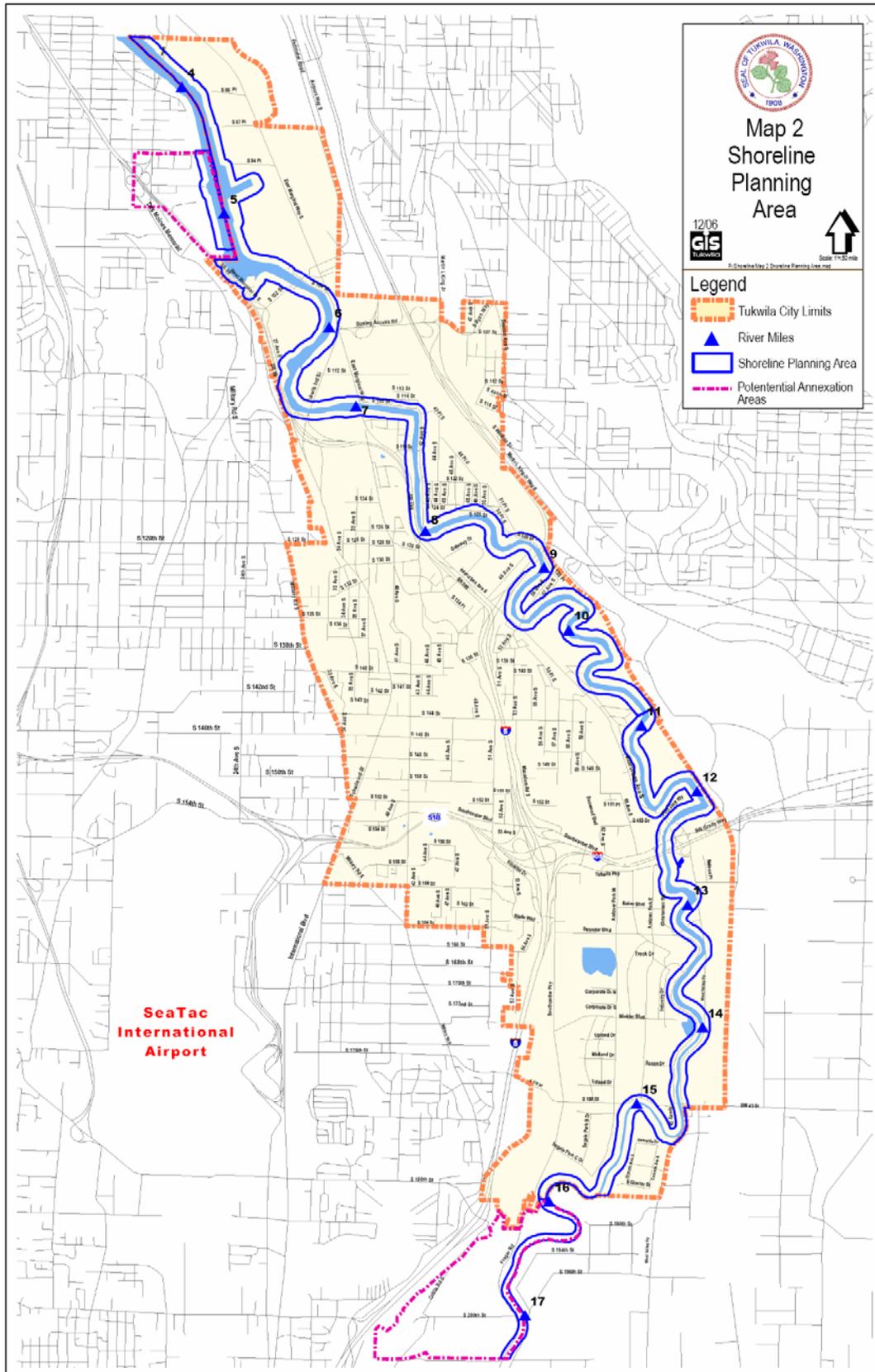
Watershed Context and Shoreline Modifications

The City of Tukwila is situated in the Puget Sound Lowlands at the transition from the fresh water Green River to the tidally influenced Duwamish estuary ecosystem. Tukwila includes approximately 12.5 miles of the Green/Duwamish River. The Green River basin is part of the Green/Duwamish Water Resource Inventory Area (WRIA 9).

Historically, the Green/Duwamish River drained a significantly larger area than it does today. River course changes and major engineering projects in the early part of the 20th century resulted in both the White and Cedar Rivers being diverted to neighboring basins. As a result, the overall freshwater discharge in the Green/Duwamish River has been reduced to around a third of the pre-diversion era. The Green/Duwamish has undergone extensive modifications as part of past river management with the intent of reducing channel migration and limiting the extent and duration of valley flooding.

Levees and/or revetments have been constructed along the majority of the Green/Duwamish River through the City of Tukwila to increase bank strength and reduce flooding. In addition, flows within the Green/Duwamish River have been significantly modified by the construction of the Howard A. Hanson Dam and installation of water diversions. These modifications have significantly reduced the severity of floods that historically covered much of the valley bottom. The condition of the current system of levees and revetments is a growing source of concern for King County and the cities involved, as many of the levees are aging and would not meet current standards for either flood conveyance or stability.

Figure 1. City of Tukwila Green / Duwamish Shoreline Planning Area



Biological Resources and Shoreline Functions

The Green/Duwamish River within the City of Tukwila provides important habitat for several fish and some wildlife species, such as osprey. The entire length of the Green/Duwamish River within the City of Tukwila has been declared “critical habitat” for the Chinook salmon and bull trout and both species are listed as threatened under the Federal Endangered Species Act. The aquatic environment within the channel is an important corridor located at the transition from the freshwater riverine environment to tidal estuarine environment of Elliot Bay. Almost every species of anadromous fish migrates through this transition zone.

One particularly important feature of Tukwila’s shorelines is the habitat functions provided by the transition zone between fresh and salt water associated with the Duwamish estuary. In Tukwila, this area generally extends from the East Marginal Way bridge to the city’s northern limits. This transition zone has effectively been pushed upstream from its historic location due to: (1) a significant reduction (70%) of fresh water flowing into the Duwamish estuary (owing to the diversion of the White and Cedar/Black Rivers), (2) channel dredging, and (3) reduction of flows as a result of the Howard A. Hanson dam. The establishment of heavy industrial uses in the transition zone has replaced wetlands with impervious surfaces, and the river banks have been replaced by levees and other armoring, eliminating edge habitat which slows flows and creating unrestrained rapid downstream flows. Spatial structure, residence time, and the habitat available for fish refugia and rearing functions in the Duwamish estuary have therefore been reduced and constrained. High densities of fish have been observed utilizing what is left of this specific habitat. At the watershed scale, overall increases in salmonid survival rates are dependent on the availability of sufficient transition zone habitat to accommodate fish while they adjust from fresh to salt water (WRIA 9 Steering Committee, 2005).

Modifications to the river system have resulted in reduced levels of ecosystem functioning, including hydrology, water quality, riparian habitat, and in-stream habitat. Changes to hydrology focus on modified flow regime due to dam construction, diversion, and urban development. River management and levees have reduced the connection between the rivers and their floodplains, changing the spatial extent of habitats, and increasing the potential for negative water quality impacts. Disturbances to the channel banks have resulted in areas that are dominated by non-native invasive species. Wood, in the form of riparian trees and in-channel wood, is generally lacking throughout the system, which negatively impacts riparian and aquatic habitats.

Land Use and Public Access

The majority of the upper Green/Duwamish watershed, beyond the city limits, is in managed forestland, parkland, or designated wilderness areas. Agricultural land covers much of the upper watershed within the Green River gorge. The Kent-Auburn Valley is a transitional area between the forest and agricultural activities upstream to the highly developed residential, industrial and commercial development in the cities of Kent, Tukwila, and Seattle downstream in the Lower Green / Duwamish River Valley.

Within the valley, industrial, commercial, and residential land uses dominate the former Green River floodplain in the vicinity of Tukwila. South of the city, commercial and warehouse/industrial land uses dominate on the right bank in the City of Kent, with agricultural fields on the left bank within the Tukwila South potential annexation area. Commercial development is prevalent between the southern city boundary and I-405. Residential development dominates between I-405 and the I-5 Bridge. North of the I-5 Bridge to the Turning Basin, residential uses give way to commercial uses. The Turning Basin, located at river mile 5.8, is the approximate southern boundary of the predominantly industrial area that extends to the northern city limit.

There are significant public access opportunities for enjoyment and use of the Green/Duwamish River in Tukwila. A series of parks and open space areas provide recreational opportunities and the Green River Trail provides access along the river throughout much of the city, linking many shoreline parks. In addition, there are several unofficial recreational fishing sites and fishing shelters at various locations along the shoreline.

Restoration Opportunities

The inventory and characterization provides an assessment of shoreline functions and identifies potential conservation and restoration opportunities. As part of the SMP update process, the City also developed a Draft Shoreline Restoration Plan in February 2007. The plan report was revised in May following technical review by King County and Ecology and is included as Appendix B to the SMP.

The Restoration Plan builds on the Inventory and Characterization Report and provides a framework to:

- Identify primary goals for ecological restoration of the Green/Duwamish ecosystem;
- Identify how restoration of ecological function can be accomplished;
- Suggest how the SMP update process may accomplish the restoration of impaired shoreline functions associated with the Green/Duwamish ecosystem; and
- Prioritize restoration projects so that the highest value restoration actions may be accomplished first.

Past work which focused on the Green/Duwamish River (in Water Resource Inventory Area (WRIA) 9) has resulted in good data collection and identification of potential restoration opportunities. Significant restoration activities along the Green/Duwamish River are already underway in the form of the multi-agency Green River Ecosystem Restoration Project. Several restoration opportunities have been identified as part of the WRIA 9 Final Salmon Habitat Plan and the recently adopted King County Flood Hazard Management Plan.

Based on the key ecosystem functions that are currently altered, there appear to be two specific types of restoration actions that will most benefit the Green/Duwamish ecosystem in Tukwila. While these projects are intended to restore many ecosystem functions, the restoration activities will occur in the highly-urban valley bottom, and as a result, cannot fully achieve pre-disturbance channel conditions. In addition, some restoration actions must occur at the watershed scale, which will restore ecosystem functions that cannot be addressed solely within Tukwila.

- **Enlarging channel cross-sectional area.** This action will increase flood storage, allow for more stable levees, restore floodplain area, provide a larger intertidal zone in the important transitional area, and provide a more natural transition from aquatic to upland habitats. This action could include the use of setback levees and revetments, and the excavation of historic fill or floodplain materials to create back channels.
- **Enhance existing habitats.** This action will improve the functioning of the existing aquatic, riverine wetland, and riparian habitats that currently exist along the Green/Duwamish River. These actions could include the removal of non-native invasive vegetation, installation of native riparian vegetation, and installation of LWD below ordinary high water.

The Restoration Plan identifies over 20 site-specific projects that are in various stages of development. The projects generally address one or both of the types of actions described above. High priority projects will typically address both hydrologic and habitat ecosystem functions; have opportunity for multiple funding sources;

include freshwater tributary channels; and/or not require additional property acquisition. In the context of designating shoreline environments and developing management policies and regulations, the City wants to encourage and enable restoration projects throughout the city wherever possible.

Potential Use Conflicts

Two key issues illustrate potential use conflicts and constraints to implementing restoration in Tukwila: 1) levee maintenance and management; and 2) existing development patterns and anticipated redevelopment.

Discussion of shoreline planning for the Green/Duwamish River in Tukwila must acknowledge the fact that, in light of the existing system of levees and revetments, the City cannot act alone. There are a variety of regulatory jurisdictions outside of the City with different responsibilities for maintenance and management of the levee system, including the U.S. Army Corps of Engineers (the Corps), the Federal Emergency Management Agency (FEMA), King County River and Floodplain Management Unit (acting as part of the Green River Flood Control Zone District), and private property owners. The City of Tukwila Public Works Department has overall responsibility for maintenance of all levees including the federally certified levee, which extends from about the I-405 crossing to S. 180th. The actual maintenance work on the levees is contracted by the City to King County.

The restoration of native tree and shrub species along the levees would increase riparian habitat and ecological functioning of this reach of the Green/Duwamish River, benefiting salmonids as well as other species. However, along the federally certified levee the Corps of Engineers (responsible for certifying the federal levee) recently required removal of large trees to prevent what the Corps considers destabilization of the levee caused by the root systems, potential water piping (e.g., water infiltrating into and through levees along root pathways at higher rates than it could through root free soil) at high flows, and levee failure if trees fall. For the Vegetation Free Zone of the levee, current Corps guidance only allows grass as vegetative cover on the levees (USACOE, Engineering Manual 1110-2-301). Current guidance also specifies a root-free zone where plantings can occur, but roots will generally not penetrate this structural zone. Therefore, under current regulations, to meet the requirements for federal levee certification, some existing vegetation will continually have to be removed to maintain the levee certification. Under the SMA, removing trees and vegetation from the riparian zone of shorelines of the state is in conflict with policies for vegetation conservation and enhancement. A possible solution is to step back and re-slope the levees to create benches where vegetation can be planted that will not interfere with the levee prism as the levee system is reconstructed to improve its stability. This would require additional easement area beyond the existing maintenance easements that have been acquired along the length of the system.

The existing development pattern also represents constraints to implementing restoration projects, including levee setbacks, off-channel habitat restoration, wetland and stream restoration, and riparian zone enhancements. Most of Tukwila is fully developed with a dense, urbanized land use pattern along the river bank. The City's current SMP, in place since 1974, establishes a 40-foot setback from the mean high water line. In areas where King County's SMP still applies, a 20 to 50 foot setback is established, depending on the type of use. In many places, there is little more than this 20 to 40-foot zone that is not intensely developed. Some places have more open space and less development and thus have greater flexibility to accommodate potential habitat restoration actions. The City's vision for future land use includes maintenance of existing urban development and further development of its urban character, particularly its identity as a regionally significant center for manufacturing, industrial, and commercial development, as well as treating the river as more of an amenity than in the past. One challenge for the City is in determining how best to accommodate new development and redevelopment near the shoreline in a manner consistent with the many competing goals of the GMA and SMA and their accompanying local documents, the Comprehensive Plan and the Shoreline Master Program.

Reasonable Foreseeable Future Development and Use

For the purposes of the cumulative impacts analysis, this section focuses on the effects of anticipated development and use of the shoreline as envisioned in the City's Comprehensive Plan and the draft SMP. Since the existing development pattern in Tukwila is well established and highly urbanized, the focus of this discussion is on potential redevelopment throughout much of the city. That is, there are few vacant parcels along Tukwila's shorelines and virtually no potential for large areas of undeveloped land along the shoreline to be subdivided and newly developed. One exception is the Tukwila South Potential Annexation Area, which is currently agricultural and/or undeveloped land. While this section addresses anticipated future development and redevelopment, the subsequent sections address how such development would occur under the proposed draft SMP.

Comprehensive Plan

The Comprehensive Plan Land Use Element is divided into several elements, including three that specifically address different geographic areas of the City: the Manufacturing/Industrial Center, Tukwila Urban Center, and Tukwila South. Additional planning efforts for these areas include master plans, planned actions, and/or strategic implementation plans.

From the upstream City boundary downstream to the Black River / Green River confluence within the city limits (S. 204th Street to the north boundary of Ft. Dent Park), the Comprehensive Plan designates areas along the shoreline as Tukwila Urban Center and Commercial/Light Industrial (predominantly south of I-405). North of I-405 in this reach, designations include a mix of Low Density Residential, Medium Density Residential, Regional Commercial Mixed Use, Commercial/Light Industrial, and Heavy Industrial. Significant portions of Low Density Residential areas within the reach's shoreline area are designated with a Public Recreation Overlay and are developed as Fort Dent Park, the Foster Golf Links and the Tukwila Community Center. Within the City's southern PAA, along the western Green River shoreline, all areas are designated as Tukwila Valley South. The Comprehensive Plan element generally envisions an extension of the commercial and industrial development on the valley floor for this area.

From the Black River / Green River confluence downstream to the northern city limits near the 16th Avenue S. bridge, the Comprehensive Plan designates areas along the shoreline as a mix of Manufacturing Industrial Center/Heavy and Low Density Residential. Other designations include Manufacturing Industrial Center/Light, Commercial/Light Industrial, and Residential Commercial Center.

Tukwila Manufacturing/Industrial Center

The Tukwila Manufacturing/Industrial Center (MIC) is one of eight regionally significant industrial and employment centers in the Central Puget Sound region. Designated as such by the Puget Sound Regional Council, the City has developed a specific element in its Comprehensive Plan and an Implementation Plan to guide redevelopment in the area. The Implementation Plan is structured as a Planned Action under SEPA and was adopted in 1998. A significant element of the plan is an updated MIC Shoreline Master Plan. This element was developed consistent with the Comprehensive Plan and has been integrated as a component of the City-wide SMP Update. The element includes innovative approaches to combine shoreline redevelopment with environmental conservation, restoration, or enhancement actions. The plan also provides guidelines for integrating habitat enhancement with alternative bank stabilization designs, based in part on King County flood reduction policies and guidelines for bank stabilization. The MIC Plan needs to be reviewed for any needed amendments before completing the current SMP update.

Redevelopment in the MIC is also subject to design guidelines developed in 1992 by the Boeing Corporation, in coordination with the City, and described in *Duwamish Corridor Redevelopment Proposal/Design Guidelines* (Sugio Kobayashi Ullman Inc., 1992). The document, which became part of the MIC Planned Action, establishes goals, objectives, and guidelines for redevelopment of Boeing properties in the Duwamish corridor. Objectives include enhancement of the shoreline environment by replacing old riprap bulkheads with new, more environmentally friendly retention structures and native riparian vegetation. The plan also promotes increased public access as redevelopment occurs, primarily as public and employee-only (semi-public) access features and public shoreline access trails. Finally, the plan addresses remediation actions so that as redevelopment occurs, sites with contaminated soil and groundwater are identified and clean up plans are developed, consistent with state and federal laws. As this document is 14 years old, the City will be working with the Boeing Company to identify any needed amendments or revisions to the Redevelopment Proposal as part of the SMP update.

Tukwila Urban Center Plan

The Comprehensive Plan includes an element addressing the Tukwila Urban Center. The City is currently preparing a Tukwila Urban Center Plan. The Urban Center serves as a regionally significant shopping center (including Westfield Shoppingtown) with light industrial, office park, and transportation oriented development. The center is generally bounded by I-405, I-5, South 180th Street, and the Green River. Policies and implementation strategies for the Urban Center promote mixed-use commercial and residential development near the Green River, with an integrated network of park, trail, and recreational facilities.

Tukwila South

The Comprehensive Plan includes an element addressing Tukwila South, an area bounded generally by South 180th Street, I-5, the Green River, and South 204th Street. This area includes the southern designated potential annexation area, which is currently in unincorporated King County. Currently the area is primarily a mix of agricultural and vacant lands, with a small amount of residential and industrial uses. The Comprehensive Plan element generally envisions an extension of the commercial and industrial development on the valley floor for this area. As elsewhere in the City, the Comprehensive Plan promotes mixed-use densities for residential development near the river, and maintenance and enhancement of the open space network along the Green River. The Comprehensive Plan also directs that a master plan be developed for any significant development and annexation of the Tukwila South Area.

A master plan for development has been proposed for this area. In July 2005, a Final EIS was issued for the 498-acre Tukwila South Project. The master plan proposes up to 14 million square feet of development in a large-scale, campus setting. The development is envisioned to create a major new employment hub with campus-style office and research complexes with an array of commercial, retail, residential, hotel, and recreational uses included. The master plan, described in the Final EIS as being in accordance with the vision and policies of the Tukwila South component of the City's Comprehensive Plan, expects to develop over two phases: Infrastructure Development Stage (3 years) and Full Buildout Stage (horizon of 2030). The Infrastructure Development Stage would include the extension of major roadways (such as Southcenter Parkway) into the area, establishment of site grades throughout the area, installation of utilities and stormwater control facilities, and construction of sensitive areas mitigation as required for the master plan. The two action alternatives considered in the master plan envision between 10 million and 14 million square feet of development to occur in the area during the Full Buildout Stage. An easement for setting back the existing Federal 205 levee south of 190th Street has been envisioned, as well as completion of two restoration projects along the River – off channel fish habitat and restoration of the Johnson Creek Channel.

Summary of Conditions and Findings

In summary, the City's shoreline planning areas are primarily designated for industrial/manufacturing and commercial/retail land uses. Other areas are primarily designated for low-density single-family uses. Public access and recreational uses along the shoreline are located throughout the city. These uses are not expected to change over time. Most of the City's shorelines are fully developed and future development activities on these properties would largely occur as redevelopment.

The inventory and characterization and restoration planning elements of the SMP update should inform goals, policies, regulations, and environment designations. In this context, the key findings can be summarized as follows:

- The Green/Duwamish River throughout Tukwila is a critical resource, providing migratory habitat for numerous fish species, as well as riparian habitat for a variety of wildlife. The Green/Duwamish River changes from fresh to salt water within Tukwila, making it a unique and important section of the overall river system that deserves attention.
- Existing shoreline habitat is largely homogenous and degraded throughout the city. The variation that does exist is typically not significant enough to warrant different levels of protection or restoration focus along the shoreline.
- The flood protection system is made up of a mix of newer levees (e.g., the 205 levee), and older portions of levee (e.g, the northern portion of the city). The older levees may not meet current engineering standards in terms of slope angles and geotechnical stability, which may provide opportunities for different approaches to redevelopment.
- Restoration opportunities exist throughout Tukwila's shoreline environment. Activities that provide restoration of both floodplain functions and habitat functions should be prioritized. Policies should promote and regulations should enable the City to accomplish restoration goals and actions.
- Given the relative homogeneity of the resource condition and needs throughout the city, environment designations should reflect the distinction in current and planned land use and opportunities to expand or enhance restoration. Primarily this is a distinction between existing residential development, where banks may be armored with bulkheads or revetments, and commercial and industrial development elsewhere in the city, where banks are altered by flood control structures.

It is important to acknowledge that future shoreline use patterns should not be driven solely by the Comprehensive Plan and zoning. As a result of the SMP update process, changes may be warranted in the Comprehensive Plan, zoning code, and floodplain management regulations to help facilitate long range planning objectives for shoreline management (such as implementation of levee setbacks). That is, since the proposed SMP amendments are informed by a body of technical and scientific shoreline analyses consistent with state guidelines, future amendments to other regulations may be necessary to successfully implement the SMP's vision.

The following sections summarize the most significant proposed changes to the Tukwila's SMP and how these changes reflect the findings of the inventory and characterization and restoration planning efforts.

Summary of Proposed SMP Amendments

Existing Regulatory Framework

The City's current SMP designates all shorelines as "Urban." At the time the 1974 SMP was developed, all of the land in Tukwila's shoreline jurisdiction was either zoned industrial or was developed with urban uses. The SMP defines the Urban Environment as "areas to be managed in high intensive land uses, including residential, commercial, and industrial development and accessory uses, while providing for restoration and preservation to ensure long-term protection of natural and cultural resources within the shoreline" (Tukwila, 1974). The SMP further states that the management objectives for the shoreline "are directed at minimizing adverse impacts on the river and shoreline ecology, maximizing the aesthetic quality and recreational opportunities of the river shore, and recognizing the rights and privileges of property owners" (Tukwila, 1974). Within the Urban Environment, Tukwila's SMP employs a three tiered system of regulations based on the distance from the Green River mean high water mark (MHWM). These tiered management zones are generally described below and illustrated on Figure 2:

- River Environment/Zone: a 40-foot wide zone extending landward from MHWM and having the most environmentally protective regulations;
- Low-Impact Environment/Zone: the area between the River Environment and 100 feet from the MHWM; and
- High-Impact Environment/Zone: the area between 100 and 200 feet from the MHWM.

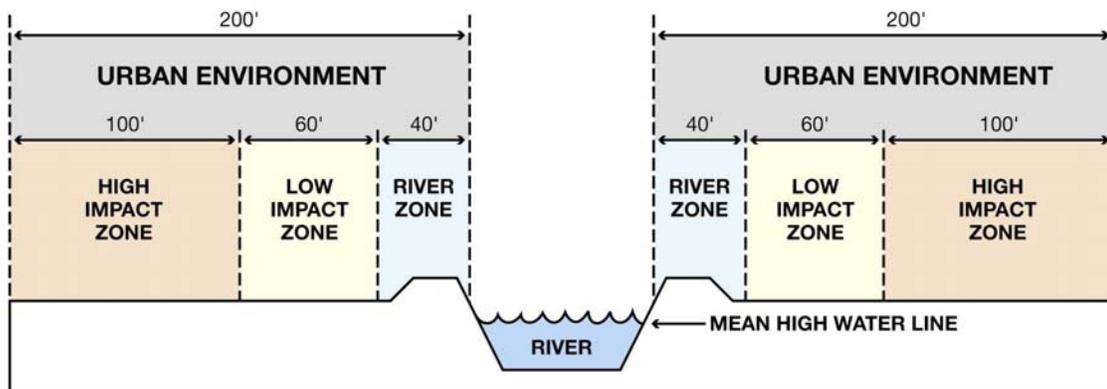


Figure 2. Tukwila SMP Shoreline Management Zones (1974 SMP; TMC 18.44)

The City also administers the King County Shoreline Master Program for the areas which have been annexed since the adoption of the City's SMP. These areas are designated Urban and the setbacks from Ordinary High Water Mark vary from 20 feet to 50 feet depending on whether the use is water dependent, single family or commercial/industrial.

Proposed Environment Designations

Tukwila's proposed shoreline designation system reflects the state's guidelines. The City's three proposed environment designations are:

- Shoreline Residential Environment;
- Urban Conservancy Environment; and
- High Intensity Environment.

The City proposes to designate river buffers to replace the current system of parallel shoreline management zones. Instead of the current River Environment, a minimum river buffer would be established for each shoreline environment. Allowed uses are proposed for the buffer area along the river and outside of the buffer in the remaining shoreline jurisdiction. This system is intended to facilitate the City's long-range objectives for land and shoreline management, including:

1. Ensuring no net loss of ecological shoreline functions;
2. Providing for habitat protection, enhancement, and restoration to improve degraded shoreline ecological functions over time and protection of already restored areas;
3. Allowing continued and increased urban development in recognition of Tukwila's role as a regionally significant industrial and commercial center; and
4. Providing for improved flood control in coordination with King County and the Army Corps of Engineers.

The proposed shoreline environment designations and their associated buffers are illustrated in Figures 3 through 5 and described briefly below. Designation criteria, management policies, use regulations, and development standards for each designation and management zone are in the draft SMP.

Shoreline Residential Environment

This environment would be designated in the area between the ordinary high water mark and 200 feet landward for all properties zoned for single-family use.

The purpose of the Shoreline Residential Environment is to accommodate urban density residential development, appurtenant structures, public access and recreational activities. In addition to general shoreline management objectives (above), the protective river buffer would limit development to accomplish the following objectives (not listed in order of priority):

- Avoid the need for new shoreline armoring;
- Help protect water quality and habitat function by limiting allowed uses;
- Protect existing and new development from high river flows;
- Promote restoration of the natural character of the shoreline environment; and
- Allow room for reconstructing over-steepened river banks to achieve a more stable slope and more natural shoreline bank conditions.

The width of the buffer will be determined by identifying the location where the river bank would achieve an angle of 2.5:1 and then setting back 20 feet from that location. However, in no case shall the buffer be less than fifty (50) feet from the OHWM, measured on the horizontal. The river bank in the Shoreline Residential Environment is typically in a somewhat modified and degraded state but generally not stabilized with revetments or levees. This buffer width will protect shoreline functions, and allow for restoration by re-sloping and

stabilization using bioengineering methods where possible and through planting with native vegetation. The buffer area and vegetation requirements established for the Shoreline Residential Environment will allow removing invasive plants; planting native vegetation; include other features to improve shoreline habitat; and will prevent the placement of any structures in an area that could potentially prove instable.

A cross section illustrating the proposed Residential Shoreline Environment and buffer is provided in Figure 3.

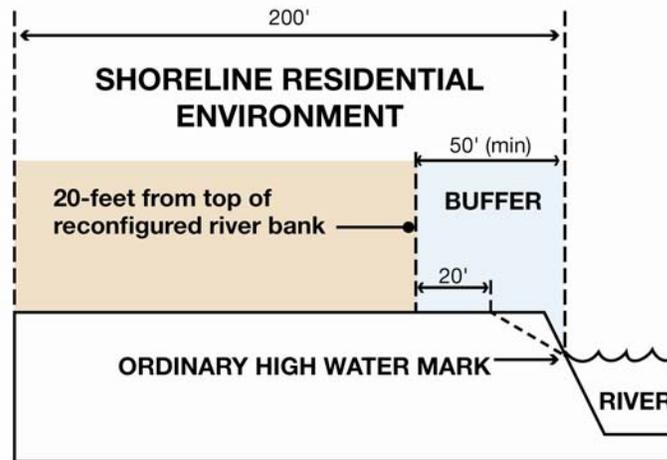


Figure 3. Schematic of Proposed Shoreline Residential Environment

Urban Conservancy Environment

This environment begins at the Ordinary High Water Mark and extends landward 200 feet along portions of the river not navigable to large water craft and that are not located in low-density residential areas.

The Urban Conservancy Environment areas are currently developed with high intensity urban multifamily, commercial, industrial and/or transportation uses or are designated for such uses in the proposed annexation areas. The Urban Conservancy Environment will also be established along Fort Dent Park as this site is bordered by a County constructed levee. However, uses will be restricted immediately adjacent to the river by establishment of a minimum protective buffer intended to protect and restore ecological functions where they exist in urban and developed settings while allowing a variety of compatible uses.

In addition to general shoreline management objectives, the river buffer would be established to accomplish the following objectives (not listed in order of priority):

- Protect existing and restore degraded ecological functions of the open space, flood plain and other sensitive lands in the developed urban settings;
- Provide opportunities for restoration and public access;
- Allow for adequate flood and channel management to ensure protection of property, while accommodating shoreline habitat enhancement and promoting restoration of the natural character of the shoreline environment, wherever possible;
- Avoid the need for new shoreline armoring; and
- Protect existing and new development from high river flows.

The width of the buffer in the Urban Conservancy Environment is proposed as 125 feet, if the shoreline has an existing levee or is located south of I-405; or 100 feet, if there is no levee.

The establishment of the 125 foot buffer along the shorelines with levees and south of I-405 allows sufficient room for eventually setting back the levees and other armored banks to a 2.5:1 slope, and including a mid-slope bench that can be planted with native vegetation. This approach widens the channel somewhat to accommodate high flows and improves shoreline function in providing vegetation for habitat enhancement. As the Corps of Engineers does not permit planting on the levee prism, the only way to improve habitat along the 205 leved portion of the river is to create a bench that can be vegetated that will not create a hazard for the stability of the levee.

As an alternative to the 100 foot buffer, where applicable, if the property owner chooses to lay back the bank to achieve a more stable slope of 2.5:1 (where feasible), and plant it with native vegetation plus include an additional planted area 20ft wide at the top of the new bank, then this would become the buffer for that site.

A cross section illustrating the proposed Urban Conservancy Environment and buffer is provided in Figure 4.

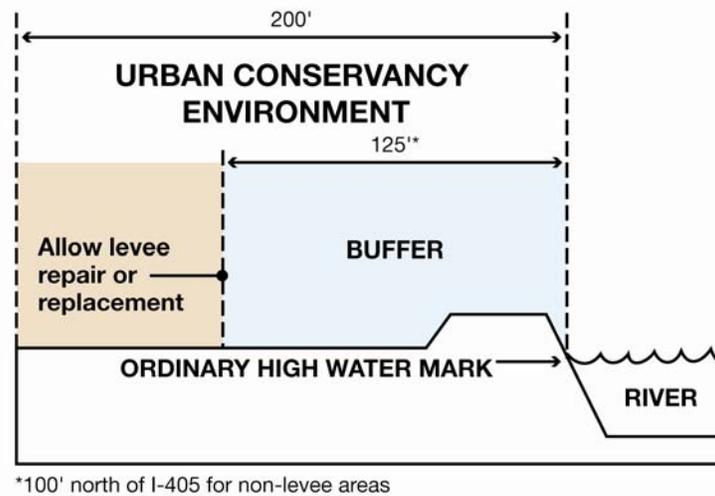


Figure 4. Schematic of Proposed Urban Conservancy Environment

High Intensity Environment

This environment will be designated in the area between the Ordinary High Water Mark and 200 feet landward for the area of the shoreline located from the southern end of the Turning Basin north to the City limit (including the City's North PAA). The High Intensity Shoreline Environment area is currently developed with industrial uses, a few of which are water-dependent uses. Some areas of the shoreline in this environment are hardened with riprap or bulkheads, while other areas are more natural banks, such as those in the three restoration sites around the Turning Basin.

The purpose of the Urban High Intensity Environment is to provide for transportation and industrial uses while encouraging water dependent uses, protecting existing shoreline ecological functions and restoring ecological functions in areas that have been previously degraded. In addition to general shoreline management objectives (above), the river buffer would be established to accomplish the following objectives (not listed in order of priority):

- Protect existing and restore degraded ecological functions of the open space, flood plain and other sensitive lands in the developed urban settings;
- Provide opportunities for restoration and public access;
- Allow for adequate flood and channel management to ensure protection of property, while accommodating shoreline habitat enhancement and promoting restoration of the natural character of the shoreline environment, wherever possible;
- Avoid the need for new shoreline armoring; and
- Protect existing and new development from high river flows.

The buffer will extend 100 feet landward from the ordinary high water mark. This buffer width is consistent with the buffer width established by the City’s Sensitive Areas Ordinance for Type 2 streams that support salmonid fish use, and allows room for setting back and vegetating the river bank to improve shoreline function over existing conditions.

As an alternative to the 100 foot buffer, if the property owner chooses to lay back the bank to achieve a more stable slope of 2.5:1 (where feasible) and plant it with native vegetation plus include an additional planted area 20ft wide at the top of the new bank, then this would become the buffer for that site.

A cross section illustrating the proposed High Intensity Environment and buffer is provided in Figure5.

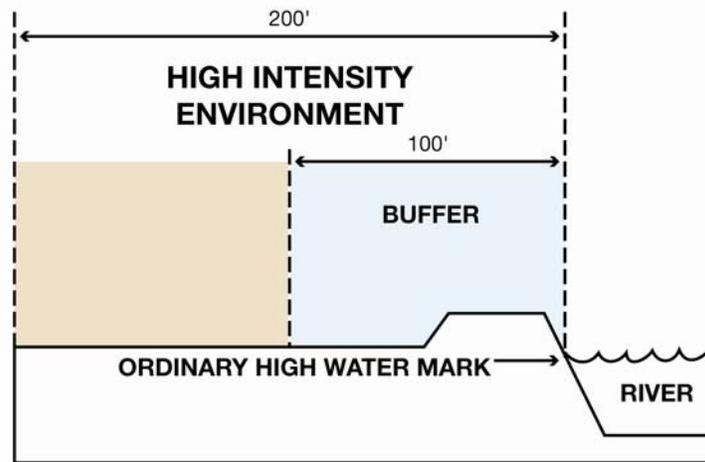


Figure 5. Schematic of Proposed High Intensity Environment

Changes to Development Standards and Use Regulations

The preference for water-dependent or water-related uses established in the Shoreline Management Act requires a body of water that is navigable and accessible both to businesses and the general public. The challenge for Tukwila’s SMP is that very little of the Green/Duwamish River is navigable. Of the 13.6 river miles in the City and its PAA, only approximately 1.5 river miles are accessible to deep draft vessels, from the Duwamish River Turning Basin north to the city limits. The vast majority of the river can only be accessed by kayaks, or small motorized boats and definitely not larger ships or barges. In addition, the presence of recently re-certified U.S. Army Corps of Engineers (COE) levees along a major portion of the river prevents direct access to the river, other

than via visual access and pedestrian/bicycle trails, thus further limiting the possibility for establishment of water-dependent uses. Other portions of the shoreline are protected by King County constructed levees or armored with revetments, which also limit the possibility of water dependent uses. Nonetheless, water dependent uses are designated as priority uses north of the Turning Basin.

The proposed SMP offers several changes to the development regulations that encourage shoreline conservation, facilitate shoreline restoration, and prohibit activities that would cause adverse impact to shoreline functions and processes. The most significant change is related to provisions within the proposed river buffer. The restoration plan identifies vegetation enhancement or restoration as one key priority for shoreline management in Tukwila. As new development or redevelopment occurs, an assessment would be required to determine appropriate vegetation restoration and management for particular development proposals. The restoration plan also prioritizes actions that expand the active channel of the river and/or provide off-channel habitat. The application of the river buffer, would facilitate projects such as levee setbacks and vegetated benches, as well as removal of shoreline armoring and setting back and re-sloping banks in non-levee areas to achieve a more natural, vegetated shoreline. These actions would occur either as project specific implementation of the WRIA 9 Salmon Habitat Plan (restoration plan) or the King County Flood Hazard Management Plan; or as part of redevelopment proposals in coordination with the City, King County, and other stakeholders.

Consistent with state guideline requirements, the proposed draft SMP integrates environmentally sensitive areas regulations (Sensitive Areas Ordinance (SAO), TMC 18.45). Under the proposed SMP, standards and regulations for designated sensitive areas that are physically located in the shoreline jurisdiction would apply to all shoreline uses and development. The SAO standards provide many provisions to protect the shoreline, tributaries to the Green/Duwamish River, associated wetlands, and adjacent upland areas.

Another change is the requirement of environmental impact mitigation where unavoidable impacts to shoreline ecological functions would occur as a result of allowed uses or development under the SMP. Consistent with state guidelines (WAC 173-26-201(2)(c)), the proposed SMP requires mitigation measures where impacts are unavoidable to achieve the “no net loss” of ecological functions standard. This requirement is applied to any activity that would result in impacts to ecological functions, regardless if the action required a shoreline permit or not.

Other changes include limiting new shoreline modifications such as bulkheads and riprap revetments along much of the City’s shoreline. New development would be required to be located and designed to avoid the need for shoreline stabilization measures. The proposed shoreline stabilization standards will limit any new shoreline stabilization, unless it can be shown through extensive studies to be necessary and will require the use of bioengineering techniques wherever feasible. Further, the conservation of native shoreline vegetation and removal of invasive vegetation has been emphasized in the new shoreline regulations for the City to further stabilize shorelands and increase habitat functions. Other changes related to development of specific uses in the shoreline are also designed to protect shoreline ecological functions and processes, while continuing to allow legal uses and development and encouraging public access to the shoreline for water-oriented uses such as fishing.

The proposed changes to development standards and use regulations are, in general, more protective than the existing SMP. New development would be required to meet standards contained in the SAO regulations and meet the policy intent and development standards of the SMP. Redevelopment would be allowed in all environments. As redevelopment occurs, the policies and regulations in the SMP require that development be located and designed in a manner that avoids impacts to ecological functions and/or enhances functions where they have been degraded. For example, the vegetation conservation measures require that, as part of a redevelopment proposal,

non-native or invasive species be replaced with native vegetation appropriate for riverine riparian environments. Another example pertains to shoreline stabilization (for residential bulkheads or revetments). Policies and development standards establish a preference for alternative “soft-shore” erosion control or stabilization designs. Where shoreline stabilization is requested, project applicants would be required to demonstrate why a bioengineered design would not provide adequate protection of existing development. Over time these changes will likely have a net beneficial effect on shoreline ecological processes as properties are redeveloped.

Restoration Planning

As described previously, the SMP Restoration Plan (Appendix B to the draft SMP) represents the shoreline restoration element of the SMP. The plan includes goals and policies addressing restoration. The policies establish the City’s intent is to meet the “no net loss” standard, and result in an overall improvement to the condition of the habitat and resources within the shoreline jurisdiction of the City over time. The plan identifies opportunities for restoration activities or efforts that include programmatic opportunities (e.g. surface water management; water quality improvement; public education), 26 site-specific opportunities (some of which are already underway), regional plans and policies for Puget Sound restoration, and potential funding and partnership opportunities. The SMP’s restoration planning is focused on areas where shoreline functions have been degraded by past development activities. The areas with impaired functions were identified in the City’s Shoreline Inventory and Characterization. Recognizing that much impairment to shoreline processes and functions are the result of watershed scale activities beyond the City’s control, the implementation of the Restoration Plan will improve shoreline ecological functions in the City over time.

Beneficial Effects of Any Established Regulatory Programs Under Other Local, State, and Federal Laws

A variety of other regulatory programs, plans, and policies work in concert with the City’s SMP to manage shoreline resources and regulate development near the shoreline. The City’s Comprehensive Plan establishes the general land use pattern and vision of growth and development the City has adopted for areas both inside and outside the shoreline jurisdiction. Various sections of the Tukwila Municipal Code (TMC) are relevant to shoreline management, such as zoning (TMC Title 18), stormwater management (TMC 14.30), and floodplain management (TMC 16.52). The City’s development standards and use regulations for environmentally sensitive areas (TMC 18.45) are particularly relevant to the City’s SMP. Designated sensitive areas located in the shoreline may include areas of potential geologic instability, wetlands, watercourses, and fish and wildlife conservation areas. As noted above, standards and regulations in the critical areas regulations are now integrated in the proposed SMP.

A number of state and federal agencies may have jurisdiction over land or natural elements in the City’s shoreline jurisdiction. Local development proposals most commonly trigger requirements for state or federal permits when they impact wetlands or streams; potentially affect fish and wildlife listed under the federal Endangered Species Act (ESA); result in over one acre of clearing and grading; or affect the floodplain or floodway. As with local requirements, state and federal regulations may apply throughout the city, but regulated resources are common within the City’s shoreline jurisdiction. The state and federal regulations affecting shoreline-related resources include, but are not limited to:

Endangered Species Act: The federal ESA addresses the protection and recovery of federally listed species. The ESA is jointly administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries

(formerly referred to as the National Marine Fisheries Service), and the United States Fish and Wildlife Service (USFWS).

Clean Water Act (CWA): The federal CWA requires states to set standards for the protection of water quality for various parameters, and it regulates excavation and dredging in waters of the U.S., including wetlands. Certain activities affecting wetlands in the City's shoreline jurisdiction or work in the adjacent rivers may require a permit from the U.S. Army Corps of Engineers and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively.

Hydraulic Project Approval (HPA): The Washington Department of Fish and Wildlife (WDFW) regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state and may affect fish habitat. Projects in the shoreline jurisdiction requiring construction below the ordinary high water mark of Puget Sound or streams in the city could require an HPA from WDFW. Projects creating new impervious surface that could substantially increase stormwater runoff to waters of the state may also require approval.

National Pollutant Discharge Elimination System (NPDES): Ecology regulates activities that result in wastewater discharges to surface water from industrial facilities or municipal wastewater treatment plants. NPDES permits are also required for stormwater discharges from industrial facilities, construction sites of one or more acres, and municipal stormwater systems that serve populations of 100,000 or more.

State-owned Aquatic Lands: The Washington State Department of Natural Resources is the steward for the State-owned bed of the Green/Duwamish River and would regulate any structures constructed in the bed of the river, such as piers.

Conclusion

In large measure, the development and use patterns along Tukwila's shorelines are well established and there is little undeveloped land along the shoreline. Tukwila's identity as a regionally significant industrial, manufacturing, and commercial center will be maintained. Therefore, change within the shoreline will primarily be the result of redevelopment activities. The proposed SMP provides a new system of shoreline environment designations and river buffers that would protect shoreline resources and enable enhancement and restoration actions. The updated development standards and regulation of shoreline modifications provides more protection for shoreline processes. The updated standards and regulations are more restrictive of activities that would result in adverse impacts to the shoreline environment. The restoration planning effort outlined in the proposed SMP provides the City with opportunities to improve or restore ecological functions that have been impaired as a result of past development activities. In addition, the proposed SMP is meant to compliment several city, county, state and federal efforts to protect shoreline functions and values.

Based on the assessment of these factors, the cumulative actions conducted over time in accordance with the proposed draft SMP are not likely to result in a net loss of shoreline ecological functions from existing baseline conditions. In concert with implementation of restoration actions in the city, the regulatory provisions of the proposed SMP would serve to improve the overall condition of shoreline resources in the city as redevelopment occurs.