

City of Enumclaw Shoreline Master Program Restoration Plan Enumclaw, Washington



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Prepared for

**City of Enumclaw
Enumclaw, Washington**

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1.0 INTRODUCTION

In general, land use alterations to ecological processes across the Boise Creek and Newaukum Creek basins have resulted in reduction in water quality and habitat complexity (of both channel and riparian areas), as described in the [Shoreline Characterization Report](#). These alterations affect fish and wildlife habitat throughout the basins, as well as within the City of Enumclaw (City) Shoreline Jurisdiction. Both creeks support biological production in the Shorelines of Statewide Significance (Green River or White River) by contributing water, sediments, organic matter, food energy, and nutrients (Latterell et al. 2007).

Policies and regulations are the primary method used by the City to promote land use management that will conserve (result in no-net-loss) of ecological functions within the shoreline jurisdiction. Refer to the City's [Shoreline Master Program](#) for detailed description of specific policies and regulations that provide for no-net-loss of ecological functions within the shoreline jurisdiction. Land use management practices across the City, including shoreline and non-shoreline areas, are regulated by multiple other mechanisms, including the [City's Critical Areas Ordinance, Comprehensive Plan, Zoning, and Land Use Regulations, and Shoreline Master Program](#), in addition to federal and state regulations.

This document provides describes specific land use management practices, and regulations that the City, in coordination with other governmental and non-governmental agencies, tribes, and citizens, can implement in order to maintain (conserve) and/or improve (restore, rehabilitate or enhance) watershed processes and/or shoreline functions. Ecologically sound land use management practices are needed at both the landscape level (throughout the basin) and at the reach level (within shoreline jurisdiction). Therefore, continued coordination between multiple jurisdictions (state, county, and local) and agencies will be an integral component conservation and restoration processes. For the purposes of this report, we have identified specific priorities for shoreline management areas only.

2.0 METHODS

The results of both the landscape-level (basin) characterization and the shoreline functional assessment, as presented in the [Shoreline Characterization Report](#), are used to identify appropriate conservation and/or restoration approaches. Areas that are functioning well and that have processes that are minimally altered from expected conditions are identified for protection. Areas that are not functioning well, due either to alterations to processes or natural landscape conditions, are prioritized for restoration. Prioritization of restoration for these areas (via improvement, enhancement, or rehabilitation), and goals for restoration were determined based on information from two analyses: ecological process analysis and ecological functional analysis; as well as from existing information on basin-wide limiting factors and other locally important factors. To determine appropriate goals for restoration, we compared the expected processes given the landscape-level ecosystem analysis with the results of the functional assessment to determine whether actual shoreline reach conditions are consistent with expected processes. For example, if we find that a shoreline area is expected to provide surface water storage due to its hydrogeologic setting and it is not providing storage due to human alterations, we may determine that a primary restoration goal is to re-establish the storage function. An objective for attaining the water storage may include removing armoring from a channel and re-establishing a hydrologic connection between the channel and adjacent depressional wetlands.

Prioritization of restoration projects is necessary for long-term planning and development of shoreline policies. Prioritization should be based on analysis of alterations to basin-wide processes and specific reach functions, including degree of degradation, immediate management concerns, and previously identified opportunities (by the City and/or other governments, agencies, tribes, or groups). The information in this report may be used to prioritize restoration for specific areas within the City's shoreline jurisdiction.

3.0 RESULTS

Specific areas for restoration, as well as a description of various restoration types that may be applied in those specific areas, or to other areas in the landscape (including those outside of the shoreline jurisdiction) are described in this section. For descriptive purposes, the shoreline jurisdiction has been divided into four shoreline management zones (SMZs) as shown on [Figure B-1](#).

3.1 RESTORATION AREAS

Specific areas for restoration, including priority restoration types for those areas, are shown on [Figure B-2](#) and described below. The information may be used to prioritize restoration for specific areas within the City's shoreline jurisdiction.

3.1.1 NEWAUKUM CREEK SHORELINES

Newaukum Creek is one of the most productive tributaries to the Green River, providing vital spawning and rearing habitat for Puget Sound salmonid species (Kerwin 1999). Per the [Salmon Habitat Limiting Factors Report for Watershed Resource Inventory Area 10](#) (Kerwin 1999), primary factors limiting salmonid habitat are present throughout the Boise Creek Basin, except for the steep headwater areas in Basin 6. These factors include high water temperature, riparian conditions, road density, bank/streambed/channel stability, in-stream large woody debris (LWD), pool habitat, dissolved oxygen, and hydrologic low flows.

[King County's Draft Shoreline Master Program](#) (SMP) identifies the area, including SMZ 1, as being in moderate condition for both the sub-basin and the mainstem of Newaukum Creek. The Mid Puget Sound Fisheries Enhancement Group has implemented a number of restoration projects along the mainstem of Newaukum Creek working with local citizens, including Enumclaw High School students (MPSFEG website 2008).

The following species of concern are documented as occurring in the basin, within ½ mile of the Newaukum Creek shoreline: Chinook salmon, bull trout, steelhead, and bald eagle. In addition, lands within the City's shoreline jurisdiction support large mammal priority habitat areas (elk species), wildlife habitat networks, and additional fish species including coho, chum, and pink salmon; resident rainbow trout; and cutthroat trout (WDFW 2008). The Washington Department of Fish and Wildlife (WDFW) lists the status of coho as a depressed stock, which means that production is below expected levels, based on available habitat and natural variation in survival rates, but above the level where permanent damage is likely (WDFW website 2002).

3.1.1.1 SMZ 1 Sub-Area A (Mahler Park and Areas to the West)

Conservation and enhancement projects are appropriate for this area (see [Figure B-2](#)). The Mid Puget Sound Fisheries Enhancement Group is completing a side channel habitat enhancement project located on a 58-acre parcel surrounding 4,000 ft of Newaukum Creek, located west of Mahler Park, which the City purchased to manage as green space (MPSFEG website 2008).

3.1.1.2 Tributaries to Watercress Creek

The large wetlands present within agricultural fields and associated tributaries to Watercress Creek are of moderate priority for restoration. Restoration via hydrologic rehabilitation, creation of side channels or channel realignment of straightened areas, and vegetation enhancement may be technically simple and feasible given that the land is not confined by development (Photograph 1); however, the land is privately owned and managed for agricultural purposes, making restoration politically challenging.



Photograph 1. Tributary to Watercress Creek, channelized within agricultural land.

3.1.1.3 SMZ 1 Tributary A

Restoration actions for such areas include conservation, enhancement, creation, and restoration. Tributary A, within SMZ 1, is of moderate priority because it is severely degraded; however, the feasibility of restoring processes and function may be difficult in its upper extent due to presence of roadways and other infrastructure. The lower extent, north of SE 436th Way (Photograph 2), will be easier to restore.



Photograph 2. SMZ 1, Upper portion of Tributary A (facing north from 436th Way).

3.1.1.4 SMZ 1 Sub-Area B

SMZ 1 Sub-area B includes riparian, wetland and floodplain south of and directly up to the mainstem of Newaukum Creek (see [Figure B-1](#)). The lack of LWD in the in-stream or riparian zones of

the creek has been identified as a significant limiting factor in habitat extent and quality (Kerwin 1999). In conjunction with conservation of existing forested buffers, LWD could be added to improve in-stream habitat. These areas are not easily accessible by road and any restoration projects should be coordinated with King County. King County's Big Spring/Newaukum Creek Natural Area is located adjacent to Sub-area B and includes areas that are designated as "parcels providing public access" and [Natural Environment](#) under its Draft SMP (King County website 2007). Access to the Big Spring/Newaukum Creek Natural Area is via small King County-owned parcels that intercept both SE 424th Street and McHugh Avenue (see [Figure B-2](#)).

3.1.2 BOISE CREEK SHORELINES

The [Salmon Habitat Limiting Factors Report for Watershed Resource Inventory Area 10](#) identified numerous habitat impairments in the Boise Creek watershed (Kerwin 1999). These impairments include poor floodplain connectivity, bank instability, lack of LWD, limited pool habitat, few side channel habitats, fine substrate deposition in some stream reaches, poor riparian habitat, water quality impairment (high water temperature), and water quantity problems, specifically low base flow conditions. The report also notes that several small bridges constrict the channel. Many of these factors are applicable to areas within the City SMZ, as described below.

3.1.2.1 SMZ 2 Golf Course

SMZ 2 is of high priority. The relative lack of tree canopy and overhanging vegetative cover within the golf course allows for greater thermal effect and increased water temperatures that contribute to low dissolved oxygen content, both of which impair salmonid spawning habitat (Photograph 3). The reach of Boise Creek within the golf course is an important Chinook spawning area. The lack of a riparian buffer through much of the golf course reach deprives salmon and other aquatic organisms of many benefits



Photograph 3. Boise Creek within SMZ 2 showing rock-lined edge, lawns, and invasive Himalayan blackberry along the riparian edge.

that vegetative buffers provide such as biofiltration, shade, cover, LWD recruitment, and habitat for terrestrial insect populations. Flooding and sedimentation are management and ecological concerns that may be partially addressed by restoring floodplain and connectivity to the main channel, improving wetland functions (Photographs 3, 4, and 5), and managing the golf course to allow for a greater degree of

functions that are self-sustaining (e.g., that do not require ongoing management). Because the area is publicly-owned and managed as a golf course, it should be prioritized for restoration projects, as well as management plan development, including Best Management Practices (BMPs) for golf courses.

[King County's Draft SMP](#) identifies a segment of Boise Creek Reach 4 (within the northern portion of the golf course) as being in moderate condition for both the sub-basin and the reach. Restoration actions for such areas include conservation, enhancement, creation, and restoration. A number of restoration projects have been identified in the [Newaukum Creek Basin Characterization Project Report](#) (NCBCPR), which primarily focus on solving flooding along the golf course and enhancing fish habitat. Opportunities range in scale from installation of LWD and riparian vegetation enhancement to stream channel realignment and culvert replacement. Due to the continual deposition of gravels in the stream, clean gravel substrates persist despite a high level of alteration to the stream channel and the riparian habitat (King County 2004). For this reason, we do not recommend channel realignment, but do recommend riparian buffer restoration and hydrologic rehabilitation, among other actions.



Photograph 4. Boise Creek within SMZ 2 showing stream bank erosion and lack of riparian vegetation.



Photograph 5. Wetland area within SMZ 2 Sub-area A with native plantings.

Some restoration projects have been completed to date; one of the cart path bridges was removed and several were modified to provide additional flow depth under the bridge spans (Latterell et al. 2007). Other projects proposed in previous studies have been completed upstream to help reduce erosion.

3.1.2.2 SMZ 3 Boise Creek South

[King County's Draft SMP](#) identifies most of SMZ Area 3 as being in moderate condition for the reach but high condition for the sub-basin. Note that the basin condition in adjacent areas within King County (to the east) is in moderate condition. Restoration actions for such areas include enhancement, creation, and restoration.

Much of the stream channel has been channelized, straightened, and dredged, which has led to channel incision. The riparian habitat is in moderate to poor condition due to encroachment by

agricultural and rural residential development. The reach is also devoid of LWD. Deposition of fine sediments in this reach that have eroded from upstream areas has also degraded substrate conditions. The habitat in this reach is degraded and homogeneous. Although a portion of the sub-basin is a floodplain channel type, it lacks sinuosity, pools, structure, and cover typically found in these channel types (R2 Resources 2001). According to the [NCBCPR](#), restoration efforts in this sub-basin should address its overall basin processes (Latterell et al. 2007).

3.1.2.3 SMZ 3 Main Channel

Stream flows are not expected to increase significantly in the future, but stream erosion and channel capacity problems are expected to worsen unless actions are taken to reduce existing problems. Seven improvement projects were detailed in the [NCBCPR](#) to address drainage and erosion problems, some of which also address fish passage. In addition to these projects, King County specifies that development practices adjacent to the stream need to be changed and buffer strips secured adjacent to the stream banks.

3.1.2.4 SMZ 3 Tributaries A, B, and C

SMZ 3, specifically the tributaries in its northern end, is a high priority because the area is highly degraded, yet it contains fish species (including those that use it for spawning). The streams/wetlands have been channelized with stormwater from adjacent residential uses and roadways draining directly into streams/wetlands (Photographs 6 and 7). Furthermore, the basin in this area is likely to become more developed and stormwater management is a primary concern.



Photograph 6. Degraded wetland within SMZ 3, surrounded by urban development.

A number of restoration strategies are needed to improve functions, including implementing the Critical Areas Ordinance. Some strategies may be simpler to implement, such as those on public property, while others may require more wide-scale stormwater treatment technologies. Within the lower portion of SMZ 3, the actual stream channel is located within King County; however, important buffer and drainage areas are located within the City. It is recommended that a fish passage and access management plan is developed to determine where fish are currently present; to make culverts fish-passable and; potentially, to screen access to stormwater ditches (Photograph 8).



Photograph 7. Degraded wetland and floodplain in SMZ 3 near the Enumclaw Foothills Trail.



Photograph 8. Culvert under Warner Avenue connecting tributaries to Boise Creek in SMZ 3.

3.1.2.5 SMZ 4 Boise Creek Upper Basin

Conservation is appropriate for SMZ 4 (see [Figure B-2](#)) because it is forested and exhibits a low level of degradation (Photograph 9). The upper basin for Boise Creek is located in a forest reserve area and minor changes are expected in this area. Furthermore, the reach of Boise Creek in this area does not contain anadromous or Endangered Species Act-listed species. Fish presence within Tributary A is unknown, but may include resident trout in lower-gradient areas since it is adjacent to Reach 5 of Boise Creek, which provides outstanding habitat for resident trout. Any restoration to this area would likely consist of large-scale channel realignment of the Boise Creek mainstem that would be spearheaded by King County.



Photograph 9. Aerial photograph of SMZ 4 showing relatively undisturbed forested cover.

3.2 RESTORATION PROJECT TYPES

We have identified five major management types related to ecological restoration, enhancement, and protection. In order of degree of increasing complexity (including both cost and feasibility considerations), they consist of: conservation, riparian area vegetation enhancement, in-stream habitat features installation (LWD), wetland and hydrology rehabilitation, and stream channel realignment.

Primary areas identified for each priority are shown on [Figure B-2](#) and calculated areas for each type are shown in the table below.

Restoration Type	Area for Implementation
Protection and Conservation	175 acres
Stream Channel Realignment or Side Channel Creation	60 acres
Hydrologic Connectivity and Wetland Rehabilitation	30 acres
Stormwater Treatment and/or Wetland Creation	225 acres
Wetland, Riparian, and Buffer Enhancement	450 acres
In-stream Habitat Enhancement (LWD)	9,500 linear ft

General descriptions of and the rationale for each of the protection and restoration types are provided below.

3.2.1 CONSERVATION

Conservation is an appropriate method for sustaining and improving functions over time in areas that are not currently degraded, or will improve on their own if human impacts are removed from the setting. Costs associated with this include foregoing future development costs, but may also offset future management costs, such as stormwater management, but allowing these functions to be provided within the conserved area. Installation of fencing and signage is recommended for protection.

3.2.2 RIPARIAN AREA VEGETATION ENHANCEMENT

The [Boise Creek Rapid Rural Reconnaissance Report](#) cited improvement of riparian conditions along Boise Creek as having the greatest potential for beneficial long-term improvement of in-stream habitat (King County 2004). This is because providing healthy riparian conditions may address many of the limiting factors including stream temperature, bank stabilization, erosion, and sedimentation, and provide long-term recruitment of LWD to the channel (King County 2004). A main focus of restoration should be providing vegetated riparian buffers (Photograph 10). Providing healthy riparian conditions may address many of the limiting factors. This option is relatively cost-effective and can be easily implemented on project, programmatic, and volunteer levels, as well as under the [City's Critical Areas Ordinance](#). Installation of fencing and signage along riparian buffers and restoration areas is necessary for added protection of critical areas.



Photograph 10. Volunteers planting native riparian species along Newaukum Creek.

3.2.3 IN-STREAM HABITAT FEATURES – LARGE WOODY DEBRIS

Most of the major stream channels within the Boise Creek Basin are homogeneous, dominated by riffle and run habitats, and lacking pools, primarily due to the lack of LWD recruitment (King County 2004). Increasing the abundance of LWD is needed in order to increase in-stream habitat complexity by creating pools and a more complex stream edge, thereby increasing hydraulic refuge and cover (Hicks 1995). In Boise Creek, pools were more abundant in areas with healthy riparian vegetation and LWD, and 63 percent of the pools observed in these more pristine areas were formed by LWD (O’Rollins 1993), suggesting that the lack of in-stream LWD causes poor habitat diversity in the stream. LWD can be directly installed in mainstem areas and recruitment can be encouraged via riparian re-vegetation within the 100- to 200-ft buffer width (Photograph 11).



Photograph 11. Large woody debris installment and side channel creation by Mid Puget Sound Fisheries Enhancement Group, located west of Mahler Park.

3.2.4 STORMWATER MANAGEMENT

Stormwater management is a critical priority that will improve ecological functions throughout the City and the SMZ. A number of alternatives may be used depending on site constraints, storm water sources, and loading rates. These may include low-impact development, bioswales, created wetlands for water quality and storage, standard detention ponds, farming BMPs, passive or active treatment, and/or relocation of outfalls (Photograph 12). This issue may be addressed as part of a comprehensive plan and under the Shoreline Master Program policies and regulations. A study of fish use in ditches/tributaries is recommended to determine whether it is appropriate to screen off fish access from man-made stormwater ditches. A detailed survey of stormwater outfalls and sources that affect the SMZ is needed.



Photograph 12. Example of a publicly accessible created treatment wetland with water quality and storage

3.2.5 WETLAND AND HYDROLOGY REHABILITATION

A large wetland complex was likely historically present on the Plateau in the vicinity of the City of Enumclaw (King County 2004). This and other wetland complexes may have been connected by numerous tributary streams (King County 2004). Beavers played an important role in forming wetlands across the Plateau. Wetlands that are formed by beaver dams generally vary considerably in composition, including forested, scrub-shrub, emergent, herbaceous, and open-water types. Extensive wetland complexes would have provided the varying types of breeding habitats required by different frogs and salamanders, and salmonid-rearing habitat would have been accessible (King County 2004).

In order to restore processes and functions, it is necessary to restore as much wetland and tributary systems as possible, given existing and future development pressure (Photograph 13). Thus, another primary focus should be rehabilitation of associated wetlands and floodplains including restoring hydrology (filling some ditches and removing artificial drainages) and re-vegetation of these areas. These methods of restoration are considered priorities because they are less expensive than projects such as channel relocation and large culvert replacement projects, and these methods can make a significant improvement in a number of functions and values within the shoreline areas.



Photograph 13. Wetland adjacent to commercial development within SMZ 1 showing drainage ditch and invasive reed canary grass.

Key areas for rehabilitation of wetlands and hydrology can be identified by soil characteristics, followed by site visits. The table below describes hydrologic regime in common hydric soils found within the SMZ.

Soil Name:	Buckley Silt Loam	Normal Sandy Loam	River-wash	Sultan Silt Loam	Snohomish Silt Loam	Seattle Muck	Shalcar Muck	Tukwila Muck
Location:	Depressions	Floodplains	Sloughs	Floodplains	Floodplains	Depressions, Till Plains, Valleys	Depressions, Outwash Terraces, Till Plains	Depressions, Stream Terraces
Hydric Criteria	A X	X	X	X	X	X	X	X
	B	X	X	X	X	X	X	X
	C			X				

Legend:

- A Water table below or equal to 1.0 ft BGS during growing season if permeability is less than 6.0 in/hr in any layer
- B Frequently ponded for long duration or very long duration during the growing season.
- C Frequently flooded for long duration or very long duration during the growing season.

([NRCS website 2008](#))

3.2.6 WETLAND VEGETATION ENHANCEMENT

Vegetation enhancement is needed in many wetlands to improve habitat, water quality, and shoreline erosion control functions. Many wetlands are degraded and are becoming confined by surrounding residential and commercial development, as shown for wetlands located north of Warner Avenue and north of Battersby Avenue in Photographs 14a and 14b.



Photographs 14a and 14b. Roadside ditch that drains water from roadway and wetlands located adjacent to the Enumclaw Sportsman Park toward tributaries to Newaukum Creek within SMZ 1 (left – facing west from wetland; right – facing east from tributary).

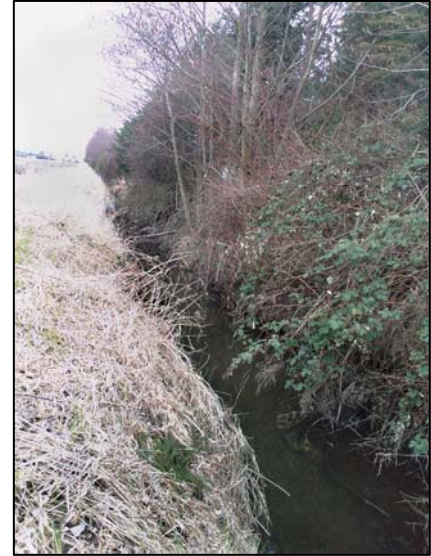
Some wetlands in the area still support woody plant species such as willow (*Salix* spp.), red osier dogwood (*Cornus sericea*), and spirea (*Spiraea douglasii*), and herbaceous vegetation such as cattails (*Typha latifolia*), rushes (*Juncus* spp.), and, most commonly, reed canary grass (*Phalaris arundinacea*). Reed canary grass, an aggressive and shade-intolerant invasive species, often densely grows in wetlands and lines open ditches and channels. Some upland and riparian areas are dominated by black cottonwood (*Populus balsamifera*) and red alder (*Alnus rubra*); however, much of their native understory vegetation has been replaced by Himalayan blackberry (*Rubus armeniacus*), or mowed agricultural fields.

3.2.7 SIDE CHANNEL CREATION AND/OR STREAM CHANNEL REALIGNMENT

Straightening and channelization has decreased the natural sinuosity of streams in many locations, reduced habitat complexity, and eliminated off-channel habitats (King County 2004). Based on historical analyses that show that lateral channel movement of Newaukum Creek and its tributaries has been very limited across the Plateau (Latterell et al. 2007), side channel creation and realignment of low-

gradient tributaries is expected to be self-sustaining and may not require significant stabilization methods. For these reasons, side channel creation, tributary realignment, re-establishment of floodplain connectivity (via removal of riprap, etc.), and wetland creation may be better options to address channel incision and flooding issues while also enhancing multiple habitat and water quality functions, particularly in areas where infrastructure does not confine such projects.

Side channel creation is specifically recommended for many areas within the shoreline jurisdiction, including adjacent to shorelines of the state and tributaries (see [Figure B-2](#)). Side channel creation is often more feasible to implement (in terms of cost, design, and permitting) than major realignment of the main channel (because construction may be conducted in the dry and simply connected to the mainstem; Photograph 15).



Photograph 15. Floodplain adjacent to ditched and channelized tributary to Boise Creek that is an ideal site for side channel creation.

In contrast, complete channel realignment is considered to be a low priority restoration project type for shorelines of the state within the City's SMZ areas. Realignment of the main Boise Creek channel has occurred in the past (and may be a major cause of the degradation to ecological processes and functions). Channel realignment has been proposed again recently by King County as a restoration project for some areas in or near the Boise Creek SMZ, including within the Enumclaw Golf Course. High flows in the proposed project area make projects like this much larger in scale (requiring more extensive design, permitting, and construction costs) than creation of side channels. Complete channel realignment is also more risky than side-channel creation because it abandons existing stream habitat. For instance, many of the mainstem areas (including Reach 3) within the Enumclaw Golf Course currently contain spawning or rearing habitat for salmon, and should be enhanced rather than abandoned. Therefore, riparian enhancement and wetland rehabilitation projects should be considered and implemented prior to relocation of entire stream reaches. These types of projects need to be coordinated with additional projects (including those referenced in this section) and with King County and other stakeholders.

3.3 ADDITIONAL MANAGEMENT CONCERNS

Throughout the shoreline zone, stream crossings should be updated with fish-passable culverts, as needed (Photographs 16 and 17). Another management issue that applies mostly to areas outside of the City, that can affect stream resources within the SMZ, is forestry practices, which can contribute to lack of LWD contribution and soil erosion downstream. Up stream (outside of the shoreline jurisdiction),

culverts, logging roads, and logging areas that are maintained by the forest service and/or Weyerhaeuser must be to be managed to prevent sediment deposition in downstream areas. Programmatic options for shoreline management within the City may be included in the [SMP](#).



Photograph 16. Culvert under SE 440th Street within SMZ 1.



Photograph 17. Example of a fish-friendly culvert (photograph courtesy of Mid Puget Sound Fisheries Enhancement Group).

4.0 USE OF THIS REPORT

This report has been prepared for the exclusive use of the City of Enumclaw and applicable regulatory agencies for specific application to the City of Enumclaw Shoreline Master Program. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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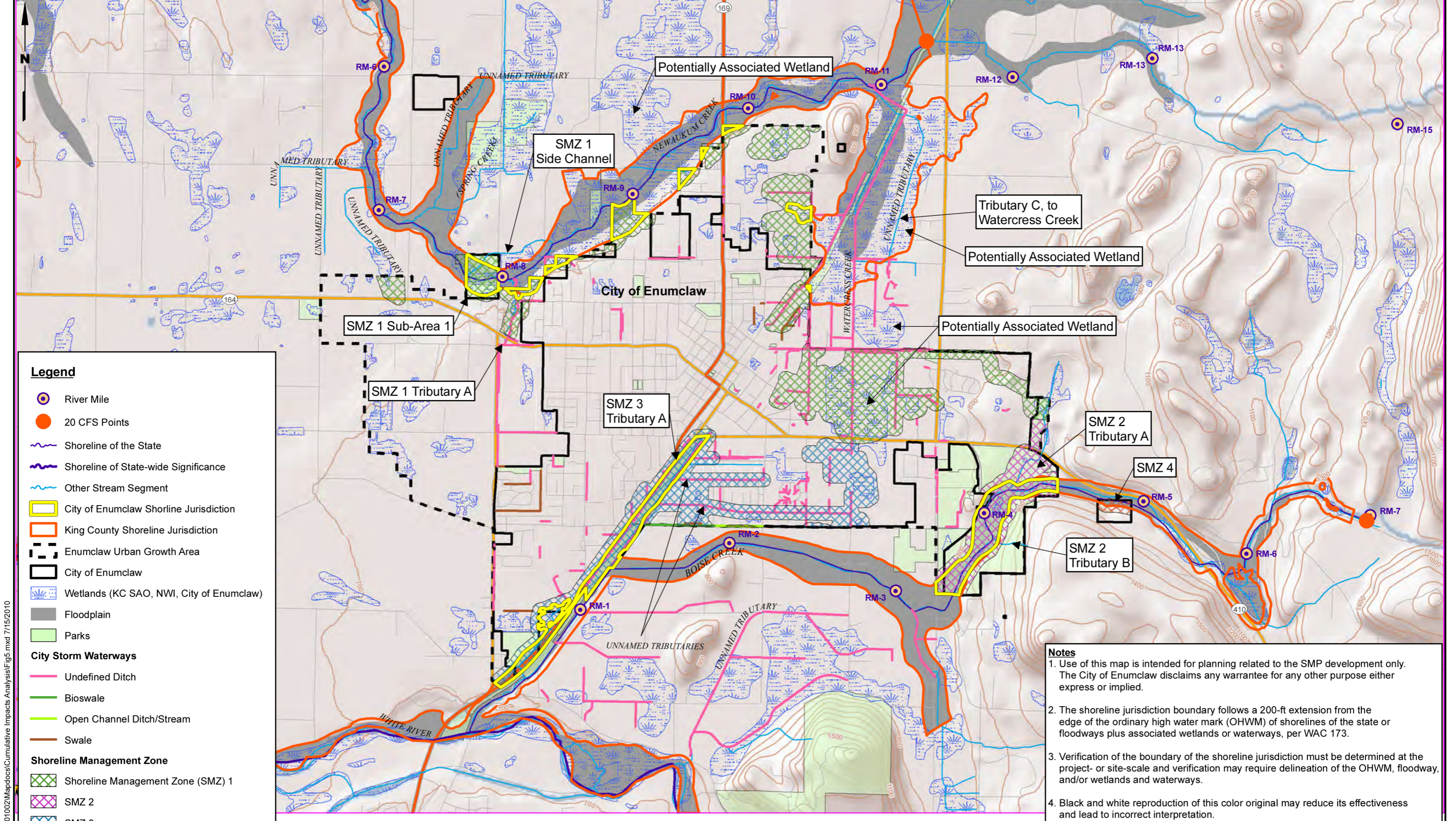
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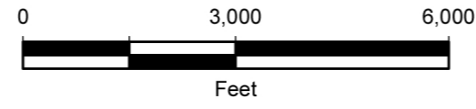


Legend

- River Mile
- 20 CFS Points
- Shoreline of the State
- Shoreline of State-wide Significance
- Other Stream Segment
- City of Enumclaw Shoreline Jurisdiction
- King County Shoreline Jurisdiction
- Enumclaw Urban Growth Area
- City of Enumclaw
- Wetlands (KC SAO, NWI, City of Enumclaw)
- Floodplain
- Parks
- City Storm Waterways**
- Undefined Ditch
- Bioswale
- Open Channel Ditch/Stream
- Swale
- Shoreline Management Zone**
- Shoreline Management Zone (SMZ) 1
- SMZ 2
- SMZ 3
- SMZ 4

- Notes**
1. Use of this map is intended for planning related to the SMP development only. The City of Enumclaw disclaims any warranty for any other purpose either express or implied.
 2. The shoreline jurisdiction boundary follows a 200-ft extension from the edge of the ordinary high water mark (OHWM) of shorelines of the state or floodways plus associated wetlands or waterways, per WAC 173.
 3. Verification of the boundary of the shoreline jurisdiction must be determined at the project- or site-scale and verification may require delineation of the OHWM, floodway, and/or wetlands and waterways.
 4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: WA DNR; King County GIS; City of Enumclaw; Ecology; WDFW; ESRI



City of Enumclaw
Restoration Plan
Enumclaw, Washington

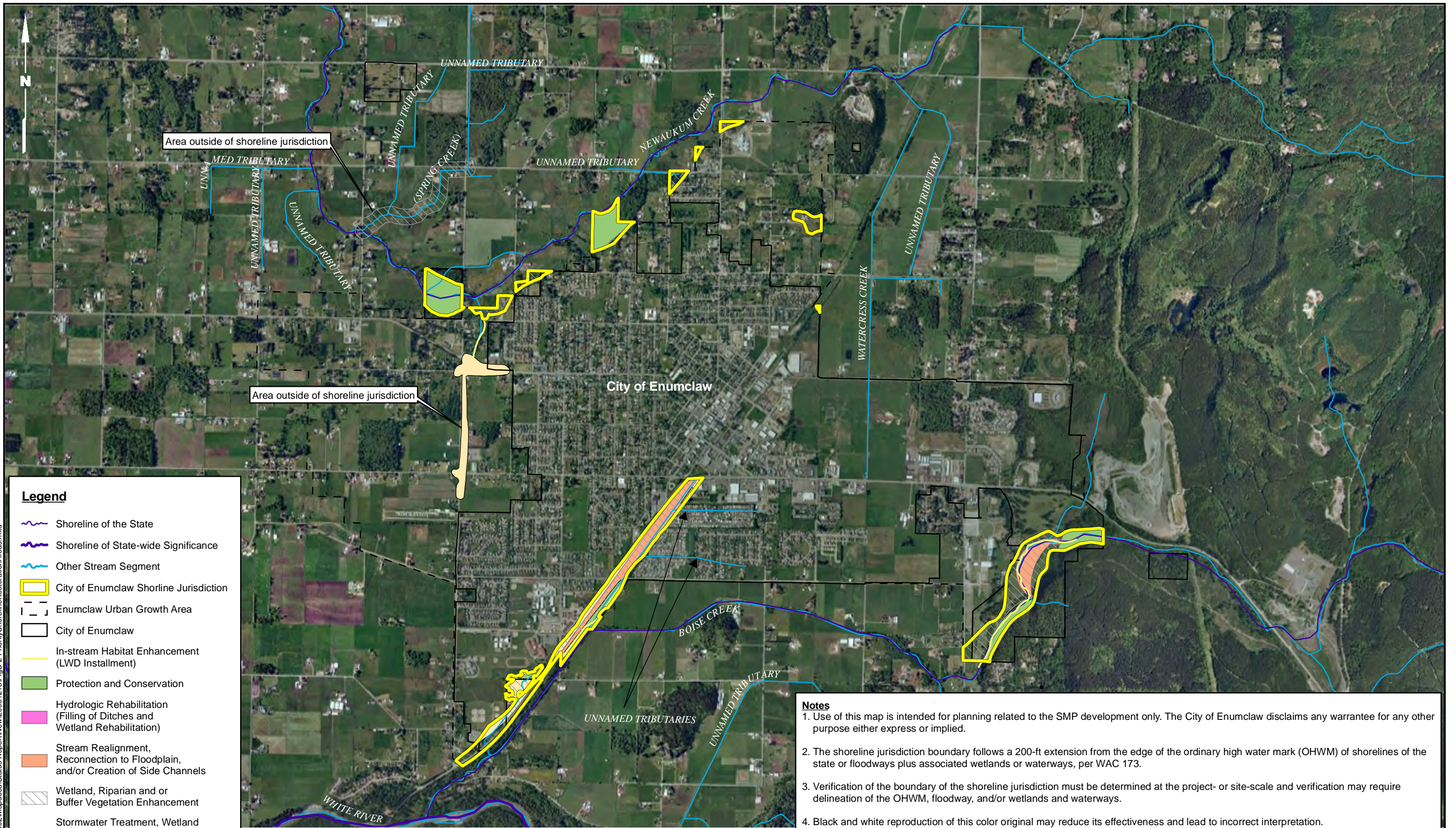
**Shoreline Jurisdiction
and Management Zones**

Figure
B-1

Y:\Projects\601002\Mapdocs\Cumulative Impacts Analysis\Fig5.mxd 7/15/2010



Y:\Projects\601002\Mapdocs\Status Report\New20081215\FigB-2-PriorityShorelineRestorationAreas.mxd



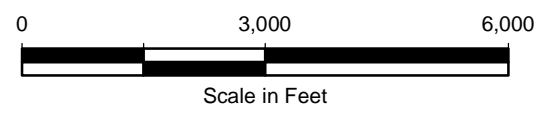
Legend

- Shoreline of the State
- Shoreline of State-wide Significance
- Other Stream Segment
- City of Enumclaw Shoreline Jurisdiction
- Enumclaw Urban Growth Area
- City of Enumclaw
- In-stream Habitat Enhancement (LWD Installment)
- Protection and Conservation
- Hydrologic Rehabilitation (Filling of Ditches and Wetland Rehabilitation)
- Stream Realignment, Reconnection to Floodplain, and/or Creation of Side Channels
- Wetland, Riparian and or Buffer Vegetation Enhancement
- Stormwater Treatment, Wetland Creation and/or Stormwater Re-routing

Notes

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Data Sources: Ecology; WDFW; City of Enumclaw; ESRI Image Server



City of Enumclaw Shoreline Master Program Enumclaw, Washington	Priority Shoreline Restoration Areas and Types	Figure B-2
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