

Town of Wilkeson

SHORELINE MASTER PROGRAM



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Shoreline Master Program Town of Wilkeson

READER'S GUIDE

Washington's Shoreline Management Act was passed by the legislature in 1971 and affirmed by voters in 1972. The Town of Wilkeson (Town) has been utilizing the Pierce County Shoreline Master Program (SMP) since its adoption in 1975. The program was updated in 1981.

This document represents a comprehensive update to the Town's SMP. Much has changed along the Town's shorelines since the original SMP was developed. In addition, knowledge of best practices in the fields of development and conservation has evolved. There have also been changes in state laws and rules.

This SMP has been prepared to meet the requirements of the Shoreline Management Act of 1971 (RCW 90.58), the implementing state rules codified as Chapter 173-26 of the Washington Administrative Code (WAC) "State Master Program Approval/Amendment Procedures and Master Program Guidelines" that were revised in 2003, and other applicable local, state, and federal laws. While developed locally, this SMP must meet the Shoreline Management Act and implementing state rules, and is subject to approval by the Washington State Department of Ecology (Ecology) before it can be implemented.

To guide the reader, most sections or provisions show the source of the goal, policy, or regulation either in the body of the text or in parentheses, which may include citations to: the Shoreline Management Act (RCW 90.58), Washington State Shoreline Master Program Guidelines (WAC 173-26), Shoreline Management Permit and Enforcement Procedures (WAC 173-27), current Town comprehensive plan elements, or other example SMPs recently adopted and approved by the state.

When reading the SMP, it is useful to consider the definitions of the following terms that are based on definitions in the State Shoreline Master Program Guidelines (WAC 173-26-020):

- "Shall" or "must" means a mandate; the action must be done.
- "Should" means that the particular action is required unless there is a demonstrated, compelling reason, based on policy of the Shoreline Management Act and shoreline master program, against taking the action.
- "May" means the action is acceptable, provided it conforms to the provisions of this SMP.

In general, this SMP uses the word “should” in goals, objectives, and policies, and “shall” in the regulations. Additional definitions are located in Chapter 8.

The SMP is intended to be detailed for the following reasons:

- To allow for more shoreline applications to be approved administratively for an efficient and cost-effective process.
- To cross-reference applicable state and federal laws to help consolidate requirements and be a resource for property owners and local government staff.
- To provide some certainty of interpretation and application that benefits property owners and local government staff over time.

1 AUTHORITY AND PURPOSE

1.1 The Shoreline Management Act

Washington State's citizens voted to approve the Shoreline Management Act of 1971 in November 1972. The adoption of the Shoreline Management Act (Act) recognized "that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation" and that "coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest" (RCW 90.58.020). The Act seeks to provide environmental protection for shorelines, preserve and enhance shoreline public access, and encourage appropriate development that supports water-oriented uses as follows: (RCW 90.58.020)

The legislature finds that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation. In addition it finds that ever increasing pressures of additional uses are being placed on the shorelines necessitating increased coordination in the management and development of the shorelines of the state. The legislature further finds that much of the shorelines of the state and the uplands adjacent thereto are in private ownership; that unrestricted construction on the privately owned or publicly owned shorelines of the state is not in the best public interest; and therefore, coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest. There is, therefore, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines.

It is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto.

In the implementation of this policy the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally. To this end uses shall be preferred which are consistent with control of

pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline. Alterations of the natural condition of the shorelines of the state, in those limited instances when authorized, shall be given priority for single family residences and their appurtenant structures, ports, shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state. Alterations of the natural condition of the shorelines and shorelands of the state shall be recognized by the department. Shorelines and shorelands of the state shall be appropriately classified and these classifications shall be revised when circumstances warrant regardless of whether the change in circumstances occurs through man-made causes or natural causes. Any areas resulting from alterations of the natural condition of the shorelines and shorelands of the state no longer meeting the definition of "shorelines of the state" shall not be subject to the provisions of chapter 90.58 RCW.

Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water.

Under the Act, shoreline master programs are created and implemented based on a "cooperative program of shoreline management between local government and the state" (RCW 90.58.050). The roles of local governments and the state are:

Local government shall have the primary responsibility for initiating the planning required by this chapter and administering the regulatory program consistent with the policy and provisions of this chapter. The department [of Ecology] shall act primarily in a supportive and review capacity with an emphasis on providing assistance to local government and on insuring compliance with the policy and provisions of this chapter. (RCW 90.58.050)

In recognition of the Act and citizen ideas collected through a local shoreline planning process, the Town of Wilkeson has developed this Shoreline Master Program (SMP) and will continually implement and administer it through shoreline permits and reviews. The Washington State Department of Ecology (Ecology) reviews and approves local SMPs and certain local permit decisions.

1.2 Authority

The Shoreline Management Act of 1971, Chapter 90.58 RCW, is the authority for the enactment and administration of this SMP.

1.3 Applicability

All proposed uses, activities, and development occurring within shoreline jurisdiction (See Chapter 3 for the definition of shoreline jurisdiction) must conform to the intent and requirements of Chapter 90.58 RCW, the Act, and this SMP, whether or not a permit or other form of authorization is required.

As recognized by RCW 90.58.350, the provisions of this SMP shall not affect treaty rights of Indian Nations or tribes.

1.4 Purpose and Intent

The purposes of this SMP are:

- A. To promote the public health, safety, and general welfare of the community by providing comprehensive policies and effective, reasonable regulations for development and use and protection of jurisdictional shorelines; and
- B. To further assume and carry out the local government responsibilities established by the Act in RCW 90.58.050 including planning and administering the regulatory program consistent with the policy and provisions of the Act in RCW 90.58.020; and
- C. Protect against adverse effects to the land, its vegetation and wildlife, and the waters and their aquatic life within jurisdictional shorelines; and
- D. To give preference to those uses that are consistent with the control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon uses of the state's shoreline areas; and
- E. Reduce use conflicts by including provisions to prohibit or apply special conditions to those uses which are not consistent with the control of pollution and prevention of damage to the natural environment or are not unique to or dependent upon use of the state's shoreline. In implementing this provision, preference shall be given first to water-dependent uses, then to water-related uses and water-enjoyment uses; and.
- F. Assure no net loss of ecological functions associated with the shoreline.

1.5 Relationship to Other Codes, Ordinances and Plans

All applicable federal, state, and local laws shall apply to properties in the shoreline jurisdiction.

Consistent with RCW 36.70A.480, the goals and policies of this SMP approved under chapter 90.58 RCW shall be considered an element of the Town of Wilkeson Comprehensive Plan. All regulatory elements of this SMP, including, but not limited to definitions and use regulations, shall be considered a part of the Town of Wilkeson's development regulations.

Except as otherwise stated, the Town comprehensive plan, zoning regulations, subdivision regulations, health regulations, and other adopted regulatory provisions apply within shoreline jurisdiction. In the event provisions of this SMP conflict with provisions of federal, state, or other Town regulations, the provision that is most protective of shoreline resources shall prevail, when consistent with policies set out in the Act.

1.6 Liberal Construction

As provided for in RCW 90.58.900, the Act is exempted from the rule of strict construction; the Act and this SMP shall therefore be liberally construed to give full effect to the purposes, goals, objectives, and policies for which they were enacted.

1.7 Severability

Should any section or provision of this SMP be declared invalid, such decision shall not affect the validity of this SMP as a whole.

1.8 Effective Date

The SMP is hereby adopted on the 14th date of August, 2013. This SMP and all amendments thereto shall become effective immediately upon final approval and adoption by Ecology.

2 GOALS AND OBJECTIVES

Per WAC 173-26-186(3), all relevant policy goals must be addressed in the planning policies of a shoreline master program (SMP). This section contains shoreline goals and objectives. Goals express the ultimate aims of the Town and its citizens. An objective identifies a more specific step that moves toward achieving a long-term goal. Goals and objectives provide a framework upon which the more detailed SMP shoreline use environments, policies, regulations, and administrative procedures are based in subsequent chapters.

2.1 Economic Development Element

Goal ED-1. Promote a strong, diversified, and sustainable local and regional economy, while respecting the shoreline environment and preserving or enhancing public access to the shoreline.

Objective ED-1. Promote new water-dependent, water-related, and water-enjoyment economic development.

2.2 Public Access Element

Goal PA-1. Ensure public access to shorelines:

- is safe, convenient, and diversified;
- makes provisions for public access to publicly owned shoreline jurisdiction areas;
- avoids adverse effects on fragile natural features; and
- minimizes conflicts between the public and private property.

Objective PA-1. Increase public access to shorelines by developing and implementing parks, recreation, and trails plans.

Objective PA-2. Require public access as part of public shoreline development where appropriate.

Objective PA-3. Require and/or encourage public access as part of private shoreline development in accordance with adopted jurisdiction shoreline public access plans, where appropriate.

Objective PA-4. Protect and enhance visual and physical access to shorelines.

Objective PA-5. Assure that public access improvements do not result in a net loss of shoreline ecological functions.

Objective PA-6. Encourage development of public access by using tools such as acquisition of land, incentives, etc.

2.3 Recreation Element

Goal REC-1. Maintain and support existing and future recreational opportunities in the shoreline.

Objective REC-1. Work with developers, landowners, and others from the private sector to develop and/or preserve parks, trails, and open space by encouraging donations, dedications, conservation easements, and other methods.

Objective REC-2. Ensure shoreline recreation facilities are preserved and enlarged as necessary to serve projected Town growth in accordance with adopted levels of service.

Objective REC-3. Encourage the provision of art, interpretive, and educational facilities in parks and locations along the shoreline.

2.4 Circulation Element

Goal CIRC-1. Plan, develop, and maintain a balanced transportation system for the efficient movement of people, goods, and services within the Town and between the Town and other communities in the region.

Objective CIRC-1. Encourage multiple modes of transportation.

Objective CIRC-2. Promote non-motorized travel and public access opportunities.

Objective CIRC-3. Locate new or expanded road corridors for motorized vehicles outside of shoreline jurisdiction unless there is no reasonably feasible alternative or location.

2.5 Shoreline Use Element

Goal SU-1. Ensure that the character and location of shoreline land uses optimizes the combined potentials for economic benefit and the enjoyment and protection of natural resources while minimizing the threat to health, safety, and welfare posed by hazards, nuisances, incompatible land uses, and environmental degradation.

- Objective SU-1.* Give preference along the shoreline to water-oriented and single-family residential uses, consistent with the control of pollution and prevention of damage to the natural environment.
- Objective SU-2.* Encourage shoreline uses and development that enhance and/or increase public access to the shoreline or provide significant public benefit.

2.6 Conservation Element

- Goal CONS-1.** The Town should respect the natural environment in any future development.
- Objective CONS-1.* Continue to amend and adopt land development regulations that ensure no net loss of shoreline ecological functions.
- Objective CONS-2.* Ensure compatibility of shoreline land uses with topography, geology, soil suitability, surface water, groundwater, wetlands, and wildlife.
- Objective CONS-3.* Preserve existing vegetation as much as possible to maintain vital shoreline ecological functions.
- Objective CONS-4.* The Town considers, and deems worth of conservation, the following sensitive resources: slopes in excess of 40 percent, wetlands, and Wilkeson Creek.

2.7 Historic, Cultural, Scientific, and Educational Element

- Goal HCSE-1.** Protect and restore areas having significant historic, cultural, scientific, or educational value.
- Goal HCSE-2.** Protect shoreline features to prevent the destruction of, or damage to, any site having archaeological, historic, cultural, or scientific value through coordination and consultation with the appropriate local, state, tribal, and federal authorities.
- Goal HCSE-3.** The Town should preserve the character of the existing business district.
- Objective HCSE-1.* Protect sites in collaboration with appropriate tribal, state, federal, and local governments. Encourage cooperation among public and private parties in the identification, protection, and management of cultural resources.

Objective HCSE-2. When and/or where appropriate, make access to such sites available to parties of interest. Design and manage access to such sites in a manner that gives maximum protection to the resource.

Objective HCSE-3. Provide opportunities for education related to archaeological, historical, and cultural features when and/or where appropriate and incorporate into public and private management efforts, programs and development.

2.8 Flood Hazard Prevention Element

Goal FHP-1. Prevent and minimize flood damages.

Objective FHP-1. Regulate land use and development to protect the citizens from flood hazards.

3 SHORELINE JURISDICTION AND ENVIRONMENT DESIGNATIONS

3.1 Shoreline Jurisdiction

As defined by the Shoreline Management Act (SMA) of 1971, “shorelines of the state” include certain waters plus their associated “shorelands.”

In the Town of Wilkeson, shorelines of the state include rivers and streams whose mean annual flow is 20 cubic feet per second (cfs) or greater.

Shorelands are minimally defined by the SMA as:

“those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter....” (RCW 90.58.030)

Shoreline jurisdiction for the Town of Wilkeson consists of Wilkeson Creek and up to 200 feet of floodway-contiguous floodplain, and associated wetlands, and is shown on the maps included in Appendix A. The maps only approximately identify or depict the lateral extent of shoreline jurisdiction. The actual lateral extent of the shoreline jurisdiction shall be determined on a case-by-case basis based on the location of the ordinary high water mark (OHWM), floodway, and presence of associated wetlands.

In circumstances where shoreline jurisdiction does not include an entire parcel, only that portion of the parcel and any use, activity, or development on that portion of the parcel is subject to this Shoreline Master Program. However, if a structure is situated on the border of shoreline jurisdiction, the entire structure is subject to this Shoreline Master Program. The other portions of the parcel are still subject to all Town planning and zoning ordinances. Town planning shall include concurrency planning with this SMP.

3.2 Environment Designations

This SMP is intended to meet the requirements in WAC 173-26-211. It states that:

Master programs shall contain a system to classify shoreline areas into specific environment designations. This classification system shall be based on the existing use pattern, the biological and physical character of the shoreline, and the goals and aspirations of the community as expressed through comprehensive plans as well as the criteria in this section. Each master program’s classification system shall be consistent with that described in WAC 173-26-211 (4) and (5) unless the alternative proposed provides equal or better implementation of the act.

This SMP is consistent with these requirements. Each environment designation contains purpose statement, designation criteria, and management policies components.

3.2.1 Aquatic

- A. Purpose: The purpose of the "Aquatic" environment is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the OHWM.
- B. Designation Criteria: An "Aquatic" environment designation will be assigned to shoreline areas waterward of the OHWM.
- C. Management Policies: Development within the "Aquatic" environment shall be consistent with the following policies:
 - 1. New over-water structures should be prohibited except for water-dependent uses, public access, or ecological restoration.
 - 2. The size of new over-water structures should be limited to the minimum necessary to support the structure's intended use.
 - 3. In order to reduce the impacts of shoreline development and increase effective use of water resources, multiple uses of over-water facilities should be encouraged.
 - 4. All developments and uses on waters or their beds should be located and designed to minimize interference with surface navigation, to consider impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.
 - 5. Uses that adversely impact the ecological functions of critical freshwater habitats should not be allowed. Where those uses are necessary to achieve the objectives of RCW 90.58.020, their impacts shall be mitigated according to the sequence described in WAC 173-26-201(2)(e).
 - 6. Shoreline uses and modifications should be designed and managed to prevent degradation of water quality and alteration of natural hydrographic conditions.

3.2.2 Shoreline Residential

- A. Purpose: The purpose of the "Shoreline Residential" environment is to accommodate residential development and appurtenant structures that are consistent with this chapter. An additional purpose is to provide appropriate public access and recreational uses.

- B. Designation Criteria: A "Shoreline Residential" environment designation will be assigned to shorelands if they are predominantly single-family or multi-family residential development or are planned and platted for residential development.
- C. Management Policies: Development within the "Shoreline Residential" environment shall be consistent with the following policies:
 - 1. Commercial development should be limited to water-oriented uses and not conflict with the residential character of lands in the "Shoreline Residential" environment.
 - 2. Water-oriented recreational uses should be allowed.
 - 3. Land division and development should be permitted only:
 - a. when adequate buffers are provided to protect ecological functions; and
 - b. where there is adequate access, water, sewage disposal, and utilities systems, and public services available; and
 - c. where the environment can support the proposed use in a manner which protects or restores the ecological functions.
 - 4. Development standards for buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality should be established to protect and, where significant ecological degradation has occurred, restore ecological functions over time.
 - 5. Multi-family and multi-lot residential and recreational developments should provide public access to the shoreline and joint-use community recreational facilities.
 - 6. New residential development should be located and designed so that future shoreline stabilization is not required.

3.2.3 Historic Downtown

- A. Purpose: The purpose of the "Historic Downtown" environment is to protect historic resources, provide for continued commercial uses that are consistent with the historic character of the area, while protecting existing ecological functions, restoring ecological functions in areas that have been previously degraded, and enhancing public access to the shoreline.
- B. Designation Criteria: A "Historic Downtown" environment designation will be assigned to areas where more intense uses and development have historically

occurred, are planned for in the future, and will not result in significant adverse impacts to the shoreline environment.

C. Management Policies: Development within the "Historic Downtown" environment shall be consistent with the following policies:

1. Encourage a mixture and variety of uses and activities in the Historic Downtown District, particularly those that:
 - a. preserve and/or restore the historic character of the Town;
 - b. provide an opportunity for the public to actively or passively enjoy Wilkeson Creek.
2. Maintain and enhance the historic character of the district by prohibiting incompatible uses and requiring compliance with design guidelines.
3. Allow development only in those areas where impacts and hazards caused by the proposed development can be effectively mitigated and where the environment is capable of supporting the proposed use in a manner that protects ecological functions.
4. Where feasible, visual and physical public access should be required as provided for in WAC 173-26-221(4)(d).
5. Implement ecological and aesthetic objectives by restoring native shoreline vegetation where feasible.

3.2.4 Urban Conservancy

- A. Purpose: The purpose of the "Urban Conservancy" environment is to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses.
- B. Designation Criteria: An "Urban Conservancy" environment designation will be assigned to shorelines that are within areas planned for development that are compatible with maintaining or restoring the ecological functions of the area, and that are not generally suitable for water-dependent uses other than those uses that support public access and recreation, that are suitable for water-related or water-enjoyment uses; that may be designated as open space, floodplain or other sensitive areas that should not be more intensively developed; and those that retain important ecological functions, even though partially developed.

C. Management Policies: Development within the “Urban Conservancy” environment shall be consistent with the following policies:

1. Uses that preserve the natural character of the area or promote preservation of open space, floodplain, or sensitive lands either directly or over the long term should be the primary allowed uses. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting.
2. Standards should be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications. These standards shall ensure that new development does not result in a net loss of shoreline ecological functions or further degrade other shoreline values.
3. Public access and public recreation objectives should be implemented whenever feasible and significant ecological impacts can be mitigated.
4. Water-oriented uses should be given priority over nonwater-oriented uses.

3.2.5 Use Matrix and Development Standards

- A. Table 3-1 indicates which uses and modifications may be allowed or are prohibited in shoreline jurisdiction within each shoreline environment. Accessory uses, such as parking and utilities, shall be subject to the same shoreline permit process as its primary use. Where there is a conflict between the chart and the written provisions in this SMP, the written provisions shall apply.
- B. Authorized uses and modifications are only allowed in shoreline jurisdiction where the underlying zoning allows for it and subject to the policies and regulations of this SMP.
- C. Any use, development or modification not classified elsewhere in the SMP or listed below shall require a Shoreline Conditional Use Permit.
- D. Uses and modifications identified as “Permitted” require either a Shoreline Substantial Development Permit or may be exempt from the requirement to obtain a Shoreline Substantial Development Permit, as outlined in the definition of Substantial Development included in Chapter 8, Definitions. Exempted uses and modifications, however, are not exempt from the Act or this SMP, and must be consistent with the applicable policies and provisions.
- E. If any part of a proposed development is not eligible for exemption, then a shoreline permit is required for the entire proposed development project.

- F. A development or use that is listed as a Conditional Use pursuant to this SMP or is an unlisted use, must obtain a Shoreline Conditional Use Permit even though the development or use does not require a Substantial Development Permit.
- G. To preserve the existing and planned character of the shoreline consistent with the purposes of the shoreline environment designations, shoreline development standards regarding shoreline buffers, lot frontage, side setbacks, and height are provided in Table 3-2. In addition, shoreline developments shall comply with all density, lot area, setback and other dimensional requirements of the Town.
- H. The permit processes indicated below applies to new, expanded, modified, or replacement uses and modifications. For those uses and modifications that meet one of the exemptions outlined in Section 7.6.2, Exemptions, a shoreline substantial development permit is not required. However, if “CUP” is listed for the use or modification, a shoreline conditional use permit is required, even if a use or modification may be exempt from the shoreline substantial development permit.
- I. An accessory use shall not be established on a property independent of its primary use.
- J. When a development or use is proposed that does not comply with the shoreline buffer, lot frontage, side yard setback, and other dimensional performance standards of this SMP not otherwise allowed by administrative reduction, such development or use can only be authorized by approval of a Shoreline Variance. Departures from the maximum height limit shall be subject to a view corridor analysis and demonstration that criteria are met consistent with Section 7.7. Shoreline Variances or Shoreline Conditional Use Permits are not required to modify development standards expressly allowed to be modified for visual access in Section 4.5.2.F or for vegetation conservation reductions as allowed in Section 4.5.2.Q, provided the modifications are consistent with the applicable zoning standards. Modifications to or greater reductions to standards established in Section 4.5.2.F and Section 4.5.2.Q shall require a Shoreline Variance.

Table 3.1 Shoreline Use and Modification Matrix.

SDP = Permitted, may be subject to Shoreline Substantial Development Permit CUP = Shoreline Conditional Use X = Prohibited or Not Applicable; the use is not eligible for a Shoreline Variance or Shoreline Conditional Use Permit	Aquatic	Shoreline Residential	Historic Downtown	Urban Conservancy
Agriculture	X	X	X	X

SDP = Permitted, may be subject to Shoreline Substantial Development Permit CUP = Shoreline Conditional Use X = Prohibited or Not Applicable; the use is not eligible for a Shoreline Variance or Shoreline Conditional Use Permit	Aquatic	Shoreline Residential	Historic Downtown	Urban Conservancy
Aquaculture	X	X	X	X
Boating Facilities and Private Moorage	X	X	X	X
Breakwaters, jetties, rock weirs, groins	X	X	X	X
Clearing and grading	X	SDP	SDP	SDP
Commercial uses				
Water-dependent uses	X	CUP	SDP	SDP
Water-related	X	CUP	SDP	SDP
Water-enjoyment uses	X	CUP	SDP	SDP ¹
Nonwater-oriented uses	X	X	SDP	X
Dredging and Dredge Material Disposal	CUP	CUP	CUP	CUP
Fill ² and Excavation	CUP ³	SDP	SDP	SDP
Structural Flood Hazard Reduction (e.g. levees)	X	X	X	X
Forest Practices	X	X	X	X
Industrial Uses	X	X	X	X
Institutional				
Water-oriented	X	X	SDP	X
Nonwater-oriented	X	X	SDP	X
In-Stream Structures	CUP	X	X	X
Mining	X	X	X	X
Parking				
Primary	X	X	X	X
Accessory	X	SDP ⁴	SDP ⁴	SDP ⁴
Recreational Development				
Water-dependent	SDP	SDP ⁵	SDP	SDP
Water-enjoyment	X	SDP ⁵	SDP	SDP
Nonwater-oriented	X	X	SDP	SDP ⁶
Residential Development				
Single-family	X	SDP	SDP	SDP
Multi-family	X	SDP	SDP	SDP
Shoreline Habitat and Natural Systems Enhancement Projects	SDP	SDP	SDP	SDP
Shoreline Stabilization				
Modification of existing	SDP	SDP	SDP	SDP
New	CUP	CUP	CUP	CUP
Transportation	CUP	CUP	SDP	SDP
Utilities (primary)	CUP	SDP	SDP	SDP

¹ Park concessions, such as small food stands, cafes, and restaurants with views and seating oriented to the water, and uses that enhance the opportunity to enjoy publicly accessible shorelines are allowed.

² Fill in the floodplain must meet all federal, state, and local flood hazard reduction regulations.

³ Fill in aquatic areas for the purposes of shoreline ecological restoration may be allowed as a permitted use if the Shoreline Administrator determines that there will be an increase in desired ecological functions.

- ⁴ Accessory parking is allowed in shoreline jurisdiction only if there is no other feasible option, as determined by the Town.
- ⁵ Passive activities, such as nature watching and trails that require little development with no significant adverse impacts may be allowed.
- ⁶ Nonwater-oriented uses may be allowed as a permitted use where the Town determines that water-dependent or water-enjoyment use of the shoreline is not feasible due to the configuration of the shoreline and water body or due to the underlying land use classification in the comprehensive plan.

K. Prohibited Uses/Modifications. As identified in Table 3.1, the following uses and modifications are prohibited within all environment designations in shoreline jurisdiction: agriculture; aquaculture; boating facilities and private moorage; breakwaters, jetties, rock weirs, and groins; structural flood hazard reduction (levees); forest practices; industrial uses; mining; and parking as a primary use.

Table 3.2 Shoreline Development Standards Matrix.

Legend: -- = Not applicable Note: All dimensions are in feet.				
	Aquatic	Shoreline Residential	Historic Downtown	Urban Conservancy
Shoreline Buffer – All Uses	--	50-ft	20-ft	100-ft
Shoreline Lot Frontage Minimum – Residential	--	50-ft	--	50-ft
Side Yard Setback Minimum – Residential	--	5-ft	--	5-ft
Maximum Height	---	35-ft	35-ft	35-ft

3.2.6 Official Shoreline Map and Unmapped or Undesignated Shorelines

- A. Appendix A (Shoreline Jurisdiction Boundaries and Environment Designations Maps) includes the Official Shoreline Maps, which illustrate the delineation of shoreline jurisdiction environment designations in the Town of Wilkeson.
- B. Any areas within shoreline jurisdiction that are not mapped and/or designated due to minor mapping inaccuracies in the lateral extent of shoreline jurisdiction from the shoreline waterbody related to site-specific surveys of ordinary high water mark, floodway, and/or floodplain are automatically assigned the category of the contiguous waterward shoreline environment designation. Where the mapping inaccuracy results in inclusion of an unmapped associated wetland (not already included as part of another environment designation), that wetland shall be assigned an Urban Conservancy environment designation.

- C. All other areas of shoreline jurisdiction that were neither mapped as jurisdiction nor assigned an environment designation shall be assigned an Urban Conservancy designation until the shoreline can be redesignated through an SMP amendment.
- D. In addition, any property shown in shoreline jurisdiction that does not meet the criteria for shoreline jurisdiction (e.g., is more than 200 feet from the OHWM or floodway, is no longer in floodplain jurisdiction as documented by a Letter of Map Revision from FEMA, and does not contain associated wetlands) shall not be subject to the requirements of this SMP. Note that the actual location of the OHWM, floodplain, floodway, and wetland boundaries must be determined at the time a development is proposed. Floodplain and floodway boundaries should be assessed using the most recently revised FEMA maps.

3.2.7 Interpretation of Environment Designation Boundaries

- A. If disagreement develops as to the exact location of an environment designation boundary line, the Official Shoreline Maps shall prevail.
- B. If disagreement develops as to the exact location of an environment designation boundary line, the following rules shall apply:
 - 1. Boundaries indicated as approximately following lot, tract, or section lines shall be so construed. Where boundary line adjustments or other modifications are not indicated on the Official Shoreline Maps and where the adjustments involve two or more parcels with different environment designations, a designation of Urban Conservancy shall be assigned to shoreline jurisdiction on the subject properties until the shoreline can be redesignated through an SMP amendment.
 - 2. Boundaries indicated as approximately following roads or rail lines shall be respectively construed to follow the nearest right-of-way edge.
 - 3. Boundaries indicated as approximately parallel to or extensions of features indicated in (1) or (2) above shall be so construed.
- C. In the event of an environment designation mapping error, the Shoreline Administrator shall utilize the criteria contained in RCW 90.58.030(2), chapter 173-22 WAC, and the environment designation criteria contained in this SMP to establish the appropriate environment designation. Appeals of such interpretations may be filed pursuant to Section 7.13.
- D. All shoreline areas waterward of the OHWM shall be designated Aquatic.
- E. Upland environment designations shall apply to shorelands.

- F. Only one environment designation shall apply to a given shoreland area. In the case of parallel designations, designations shall be divided along an identified linear feature or clearly described boundary.

3.3 Shoreline Use Preferences

This SMP adopts the following policy provided in RCW 90.58.020, and fully implements it to the extent of its authority under this SMP:

It is the policy of the State to provide for the management of the shorelines of the State by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the State and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto...

In the implementation of this policy, the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the State shall be preserved to the greatest extent feasible consistent with the overall best interest of the State and the people generally. To this end uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline. Alterations of the natural condition of the shorelines of the state, in those limited instances when authorized, shall be given priority for single family residences and their appurtenant structures, ports, shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state....

Permitted uses in the shorelines of the State shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water.

When determining allowable uses and resolving use conflicts on shorelines within jurisdiction consistent with the above policy, the following preferences and priorities as listed in WAC 173-26-201(2)(d) shall be applied in the order presented below:

- (i) *Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.*

- (ii) *Reserve shoreline areas for water-dependent and associated water related uses ...
Local governments may prepare master program provisions to allow mixed-use developments that include and support water-dependent uses and address specific conditions that affect water-dependent uses.*
- (iii) *Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.*
- (iv) *Locate single-family residential uses where they are appropriate and can be developed without significant impact to ecological functions or displacement of water-dependent uses.*
- (v) *Limit non-water-oriented uses to those locations where the above described uses are inappropriate or where non-water-oriented uses demonstrably contribute to the objectives of the Shoreline Management Act.*

4 GENERAL POLICIES AND REGULATIONS

Chapter 4 presents general policies and regulations that apply to any developments, uses, or activities in any environment designation in order to protect environmental and cultural resources, reduce likelihood of harm to life or property from hazardous conditions, and promote access to shorelines.

Policies are statements of principles that guide and determine present and future decisions. Regulations are rules that govern developments, uses, or activities.

4.1 Archaeological and Historic Resources

4.1.1 Policies

- A. **Impact Avoidance.** Due to the limited and irreplaceable nature of the resource(s), prevent the destruction of or damage to any site having historic, cultural, scientific, or educational value as identified by the appropriate authorities, including affected Indian tribes, and the Washington State Department of Archaeology and Historic Preservation (DAHP), or any site having such resource(s) that have been inadvertently uncovered.

Any proposed site development and/or associated site demolition work should be planned and carried out so as to avoid impacts to the cultural resource or to provide appropriate mitigation. Impacts to neighboring properties and other shoreline uses should be limited to temporary or reasonable levels.

- B. **Adjacent Cultural Site.** If development or demolition is proposed adjacent to an identified historic, cultural or archaeological site, then the proposed development should be designed and operated so as to be compatible with continued protection of the historic, cultural or archaeological site.

4.1.2 Regulations

- A. **Known Archaeological Resources.** Permits issued in areas documented to contain archaeological resources shall require a site inspection or evaluation by a professional archaeologist in coordination with affected Indian tribes.
- B. **Uncovered Archaeological Resources.** Developers and property owners shall immediately stop work and notify the Town, DAHP, and affected Indian tribes (including the Muckleshoot and Puyallup tribes) if archaeological resources are uncovered during excavation.
- C. **Other Laws and Rules.** Archaeological sites located both in and outside shoreline jurisdiction are subject to chapter 27.44 RCW (Indian graves and records) and chapter 27.53 RCW (Archaeological sites and records) and development or uses that

may impact such sites shall comply with chapter 25-48 WAC, as well as the provisions of this shoreline master program (SMP).

4.2 Ecological Protection and Critical Areas

4.2.1 Policies

- A. **Impact Avoidance.** Shoreline use and development should be carried out in a manner that prevents or mitigates adverse impacts, both on site and to the extent that impacts may propagate up- or downstream.
- B. **No net loss of ecological functions.** Development should assure there is no net loss of ecological functions and processes relative to the existing condition. This can be accomplished by protecting critical areas designated in Appendix B of this SMP, and protecting additional established shoreline buffers in a manner consistent with all relevant constitutional and other legal limitations on the regulation of private property.

Shoreline ecological functions that should be protected include, but are not limited to: fish and wildlife habitat, wildlife migration corridors, food chain support, and water temperature maintenance. Shoreline processes that should be protected include, but are not limited to: water flow; erosion and accretion; infiltration; ground water recharge and discharge; sediment delivery, transport, and storage; large woody debris recruitment; organic matter input; nutrient and pathogen removal; and stream channel formation/maintenance.

- C. **Consider project and cumulative impacts.** In assessing the potential for net loss of ecological functions or processes, project-specific and cumulative impacts should be considered.
- D. **Development standards should protect functions.** Development standards for density, frontage, buffers, impervious surface, shoreline stabilization, vegetation conservation, buffers, critical areas, and water quality should protect existing shoreline ecological functions and processes. During permit review, the Shoreline Administrator should consider the expected impacts associated with proposed shoreline development when assessing compliance with this policy.

4.2.2 Regulations

- A. **Mitigation sequencing.** Applicants shall demonstrate all reasonable efforts have been taken to mitigate potential adverse impacts to ecological function resulting from new development and redevelopment in shorelines in the following prioritized order:
 - 1. Avoiding the impact altogether by not taking a certain action or parts of an action;

2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;
 3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project;
 4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
 5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
 6. Monitoring the impact and the compensation projects and taking appropriate corrective measures.
 7. Lower priority measures shall be applied only where higher priority measures are determined to be infeasible or inapplicable.
- B. **Applicability.** The provisions of this section and Appendix B, Critical Areas Regulations, shall apply to any use, alteration, or development within shoreline jurisdiction, whether or not a shoreline permit or written statement of exemption is required.
- C. **Protection of buffers.** Unless otherwise stated, critical area buffers and shoreline buffers shall be protected and/or enhanced pursuant to Appendix B and all other applicable provisions of this SMP.
- D. **Mitigation required for impacts.** Mitigation shall be required for all projects within shoreline jurisdiction, including those waterward of the OHWM, having impacts on ecological functions. Mitigation ratios are specifically established in Appendix B, Critical Areas Regulations, for impacts to wetlands and wetland buffers. All other mitigation must be designed to result in no net loss of ecological functions to the extent feasible. In general, mitigation is required at a ratio greater than one unit of mitigation for one unit of impact by area. However, depending on the nature and extent of impacts and proposed mitigation, a reduction in the ratio may be allowed or an increase in the ratio may be required to meet the no net loss of ecological functions standard if justified in a plan submitted to the Town.
- E. **Location of mitigation.** When mitigation is required, preferential consideration shall be given to measures that replace the impacted functions directly and in the immediate vicinity of the impact. However, alternative compensatory mitigation

within the watershed sub-basin that addresses limiting factors or identified critical needs for shoreline resource conservation based on watershed or comprehensive resource management plans applicable to the area of impact may be authorized. Authorization of compensatory mitigation measures may require appropriate safeguards, terms, or conditions as necessary to ensure no net loss of ecological functions.

- F. **Hydrologic connections.** Protect hydrologic connections between waterbodies and associated wetlands.
- G. **Cumulative effects.** The cumulative effects of individual development proposals shall be identified and evaluated to assure that no net loss standards are achieved.

4.3 Flood Hazard Reduction

The following provisions apply to actions taken to reduce flood damage or hazard and to uses, development, and shoreline modifications that are proposed in flood hazard areas. Flood hazard reduction measures may consist of nonstructural measures, such as shoreline buffers, land use controls, wetland restoration, dike removal, use relocation, biotechnical measures, and stormwater management programs, and of structural measures, such as dikes, levees, revetments, floodwalls, channel realignment, and elevation of structures consistent with the National Flood Insurance Program.

Although some flood hazard reduction measures may serve a dual function as shoreline stabilization, their primary purpose is to control the location of flood waters directly. Alternatively, the primary purpose of shoreline stabilization measures is to prevent erosion of land from currents and waves originating in the shoreline waterbody (rather than upland sources of erosion), which is a more indirect control of the location of flood and non-flood water. Shoreline stabilization is addressed in Section 5.10.

The Town of Wilkeson implements flood hazard reduction through the following means:

- Plans and Policies: Town of Wilkeson Comprehensive Plan, Pierce County Rivers Flood Hazard Management Plan
- Regulations: Flood hazard area regulations

4.3.1 Policies.

- A. A comprehensive approach to flood hazard management should be taken by incorporating other flood regulations and plans.
- B. **Non-structural Methods Preferred.** Non-structural flood hazard reduction methods are preferred over structural methods. Examples of non-structural flood hazard methods are: building setbacks, wetlands restoration, dike removal, and relocation of structures to less flood-prone areas.

- C. **New or Expanded Structures.** New or expanded structures should be located to avoid the need of need flood hazard reduction measures.
- D. **Bioengineered Flood Control Works.** Flood control works should be bioengineered to enhance ecological functions, create a more natural appearance, and improve ecological processes unless proven to be infeasible.

4.3.2 Regulations

- A. **Avoid Increase in Flood Hazards.** Development in floodplains shall, consistent with applicable flood hazard plans and regulations, avoid significantly or cumulatively increasing flood hazards.
- B. **Channel Migration Zone (CMZ) Maps.**
 - 1. Channel migration zone maps prepared consistent with WAC 173-26-221(3)(b) are included in Appendix E of this SMP.
 - 2. Applicants for shoreline development or modification may submit a site-specific channel migration zone study if they do not agree with the mapping in Appendix E.
 - 3. Documentation of alternate channel migration zone boundaries must be prepared consistent with WAC 173-26-221(3)(b), and may include, but are not limited to, historic aerial photographs, topographic mapping, flooding records, and field verification.
- C. **Uses and Activities Authorized in Floodway or CMZ.** The following uses and activities may be authorized where appropriate and/or necessary within the channel migration zone or floodway:
 - 1. Actions that protect or restore the ecosystem-wide processes or ecological functions or development with a primary purpose of protecting or restoring ecological functions and ecosystem-wide processes.
 - 2. Bridges, utility lines, public stormwater facilities and outfalls, and other public utility and transportation structures where no other feasible alternative exists or the alternative would result in unreasonable and disproportionate costs. For the purposes of this section unreasonable and disproportionate means that locations outside of the floodway or channel migration zone would add more than 20% to the total project cost, and the long-term maintenance or repair costs are not significantly different between options inside or outside of the floodway or channel migration zone. Where such structures are allowed, mitigation shall address impacted functions and processes in the affected shoreline.

3. Repair and maintenance of an existing legally established use, provided that channel migration is not further limited, or flood hazards to other uses increased, and that the new development includes appropriate protection of ecological functions.
 4. Development that prevents active channel movement and flooding and where necessary for protection of legally existing structures or public safety.
 5. Modifications or additions to an existing nonagricultural legal use, provided that channel migration is not further limited and that the new development includes appropriate protection of ecological functions.
 6. Measures to reduce shoreline erosion, provided that it is demonstrated that the erosion rate exceeds that which would normally occur in a natural condition, that the measure does not interfere with fluvial hydrological and geo-morphological processes normally acting in natural conditions.
- D. **Structural Flood Hazard Reduction Measures.** New structural flood hazard reduction measures in shoreline jurisdiction shall be allowed only when it can be demonstrated by a scientific and engineering analysis that they are necessary to protect existing development and that nonstructural measures are not feasible.
- E. **Placement of Structural Flood Hazard Reduction Measures.** New structural flood hazard reduction measures shall be placed landward of associated wetlands and designated shoreline buffers, except for actions that increase ecological functions, such as wetland restoration.
- F. **Public Access.** See Section 4.4.2.
- G. **Gravel Removal.** The removal of gravel for flood management purposes shall be consistent with Section 5.7 Dredging, and be allowed only after a biological and geo-morphological study shows that extraction has a long-term benefit to flood hazard reduction, does not result in a net loss of ecological functions, and is part of a comprehensive flood management solution.
- H. **New Development and Subdivisions.** Approve new development or subdivisions when it can be reasonably foreseeable that the development or use would not require structural flood hazard reduction measures within the channel migration zone or floodway during the life of the development.

4.4 Public Access

4.4.1. Policies

- A. Public access should be considered in the review of all private and public developments with the exception of the following:

1. Single-family dwelling units; or
 2. Where deemed inappropriate due to health, safety and environmental concerns.
- B. Developments, uses, and activities on or near the shoreline should not impair or detract from the public's access to the water.
 - C. Public access should be provided as close as possible to the water's edge without causing significant ecological impacts and some portion of access should be designed in accordance with the Americans with Disabilities Act.
 - D. Opportunities for public access should be identified on publicly owned shorelines. Public access afforded by shoreline street ends, public utilities and rights-of-way should be preserved, maintained and enhanced.
 - E. Public access should be designed to provide for public safety and comfort and to minimize potential impacts to private property and individual privacy. There should be a physical separation or other means of clearly delineating public and private space in order to avoid unnecessary user conflict.
 - F. Public views from the shoreline upland areas should be enhanced and preserved. Enhancement of views should not be construed to mean excessive removal of existing native vegetation that partially impairs views, as a healthy shoreline condition includes mature riparian forest.
 - G. Public access and interpretive displays should be provided as part of publicly funded restoration projects where significant ecological impacts can be avoided.
 - H. Town parks, trails, and public access facilities adjacent to shorelines should be maintained and enhanced in accordance with Town plans.
 - I. The acquisition of suitable upland shoreline properties to provide access to publicly owned shorelands should be encouraged.

4.4.2 Regulations

- A. Shoreline development (including land division into more than four lots, water enjoyment, water-related, and non-water dependent uses) which fronts directly on the shoreline shall provide physical public access where any of the following conditions are present:
 1. Where a development or use will interfere with an existing public access way. Impacts to public access may include blocking access or discouraging use of existing on-site or nearby accesses.

2. Where the development is proposed by a public entity or on public lands unless such access is shown to be incompatible due to reasons of safety, security, or impact to the shoreline environment or where more effective public access is identified in the Town planning documents.
- B. For multi-family development and subdivisions of land into more than four parcels, public access need not be provided, however, community access for residents of that development shall be provided.
 - C. Shoreline development (including land division into more than four lots) shall minimize impact to public views of shoreline waterbodies from public land or substantial numbers of residences.
 - D. Public access provided by shoreline street ends, public utilities, and rights-of-way shall not be diminished
 - E. Public access sites shall be connected directly to the nearest public street or public right-of-way and shall include provisions for physically impaired persons, where feasible.
 - F. Required public access sites shall be fully developed and available for public use at the time of occupancy of the use or activity.
 - G. Public access easements and permit conditions shall be recorded as a covenant against the title and/or on the face of a plat or short plat as a condition running simultaneous with the authorized land use. Said recording with the County Assessor's Office shall occur prior to permit approval.
 - H. Minimum width of public access easements shall be 20 feet or the maximum width determined to be feasible by the applicant (without resulting in undue hardship), whichever is greater.
 - I. The standard state approved logo or other approved signs that indicate the public's right of access and hours of access shall be constructed, installed and maintained by the applicant in conspicuous locations at public access sites. Signs may control or restrict public access as a condition of permit approval.
 - J. Future actions by the applicant, successors in interest, or other parties shall not diminish the usefulness or value of the public access provided.
 - K. Public access facilities may be developed over water provided that all ecological impacts are mitigated to achieve no net loss of ecological functions.

4.5 Vegetation Conservation and Shoreline Buffers

4.5.1 Policies

- A. **Conserve native vegetation.** Where new developments and/or uses or redevelopments are proposed, native shoreline vegetation should be conserved to maintain shoreline ecological functions and/or processes. Vegetation conservation and restoration should be used to mitigate the direct, indirect and/or cumulative impacts of shoreline development, wherever feasible. Important functions of shoreline vegetation include, but are not limited to:
1. Providing shade necessary to maintain water temperatures required by salmonids and other organisms that require cool water for all or a portion of their life cycles.
 2. Regulating microclimate in riparian and nearshore areas.
 3. Providing organic inputs necessary for aquatic life, including providing food in the form of various insects and other benthic macroinvertebrates.
 4. Stabilizing banks, minimizing erosion and sedimentation, and reducing the occurrence/severity of landslides.
 5. Reducing fine sediment input into the aquatic environment by minimizing erosion, aiding infiltration, and retaining runoff.
 6. Improving water quality through filtration and vegetative uptake of nutrients and pollutants (including the retention of forest duff to support the biological components of pollutant transformation).
 7. Providing a source of large woody debris to moderate flows, create hydraulic roughness, form pools, and increase structural diversity for salmonids and other species.
 8. Providing habitat elements for riparian-associated species, including downed wood, snags, migratory corridors, food, and cover.
- B. **Restoration native plant list.** A native plant list will be used that identifies the native species most suitable for shoreline restoration and enhancement projects. At a minimum, all plants utilized in shoreline buffers should be native as indicated by the Washington Native Plant Society.
- C. **Noxious and invasive weeds.** Encourage management and control of noxious and invasive weeds. Control of such species should be done in a manner that retains

onsite native vegetation, provides for erosion control, and protects water quality. Use of non-toxic or natural controls is preferred.

- D. **Shoreline Buffer.** A shoreline buffer of the width established in Table 3.2 should be provided in each environment designation.

4.5.2 Regulations

- A. **Conserve vegetation.** Shoreline developments shall address the conservation and maintenance of vegetation and forest soils through compliance with this Section, the critical area standards in Appendix B, and any other regulations specific to vegetation management that may be contained in other chapters of this SMP.
- B. **Shoreline Buffer.** As established in Table 3.2 shoreline buffers, along the full width of the shoreline, shall be required unless otherwise allowed by this Shoreline Master Program. Within buffers, conservation of existing native vegetation shall be required. The buffer shall consist of a continuous mixture of native trees, shrubs, and groundcover at a range and density appropriate to the site. Structures shall be located outside of the buffer. Buffers shall only be reduced as allowed by Section 4.5.2.Q.
- C. **Minimize clearing.** Vegetation clearing within shoreline jurisdiction shall be limited to the minimum necessary to accommodate approved shoreline development.
- D. **Mitigation required.** Where impacts to shoreline or critical area buffers are permitted and after mitigation sequencing has been applied as outlined in Section 4.2.2(A), new developments or site alterations shall be required to develop and implement a mitigation plan.
- E. **Tree Pruning and Removal.** Selective pruning of trees for safety or view protection is allowed if consistent with the provisions of Section 4.2, Ecological Protection and Critical Areas; Appendix B, Critical Areas Regulations; and F, below. Where trees pose a significant safety hazard as indicated in a written report by a certified arborist or other qualified professional, they may be removed from shoreline and critical area buffers if the hazard cannot be removed by topping or other technique that maintains some habitat function. All other tree removal in shoreline jurisdiction shall be minimized through site design, and mitigated. In general, trees that are cut down should be retained in the protected area to provide continued biological or soil stabilization functions.
- F. **View Corridors.** The development or maintenance of view corridors can provide opportunities for visual access to waterbodies associated with waterfront lots. One view corridor, limited to 25 percent of the width of the lot, or 25 feet, whichever distance is less, may be permitted per lot, when consistent with the provisions of Section 4.2, Ecological Protection and Critical Areas; Appendix B, Critical Areas

Regulations; and this Section. A mitigation plan as required by C above must be submitted for review and approval; either with the appropriate shoreline permit application or in association with a shoreline exemption proposal for a new development or associated with an existing development.

1. In addition to the submittal of a complete mitigation plan, an applicant must submit the following materials:
 - a. A graphic and/or site photos for the entire shoreline frontage which demonstrates that the existing or proposed development does or will not when constructed have a view corridor of the waterbody, taking into account site topography and the location of existing shoreline vegetation on the parcel.
 - b. Demonstration that where the applicant already has an accessible shoreline access corridor per the Vegetation Conservation section, the view corridor will include the existing shoreline access corridor to minimize alteration of the shoreline buffer.
2. Applications for view corridors must also be consistent with the following standards:
 - a. Native vegetation removal shall be prohibited, unless the entire shoreline buffer consists of native vegetation. Under those circumstances, native vegetation removal may be allowed provided that the view corridor is located to minimize removal of native trees (for example, by branch removal rather than complete tree removal) and shrubs.
 - b. Native shrubs shall not be pruned to a height less than 6 feet. No tree topping shall occur. Pruning of vegetation waterward of the OHWM is prohibited.
 - c. Non-native vegetation within a view corridor may be removed when the mitigation plan can demonstrate a net gain in site functions, and where any impacts are mitigated.
 - d. Whenever possible, view corridors shall be located in areas dominated with non-native vegetation and invasive species.
 - e. A view corridor may be issued once for a property. No additional vegetation pruning for the view corridor is authorized except as may be permitted to maintain the approved view corridor from regrowth.

Limitations and guidelines for this maintenance shall be established in the mitigation plan.

- G. **Unauthorized vegetation removal.** Vegetation removal conducted without the appropriate review and approvals requires the submittal and approval of a restoration plan prepared by a qualified professional, and must be consistent with the provisions of Section 4.2, Ecological Protection and Critical Areas and appropriate requirements of Appendix B, Critical Areas Regulations. The mitigation plan must utilize only native vegetation, and should be designed to compensate for temporal loss of function and address the specific functions adversely impacted by the unauthorized vegetation removal.
- H. **Non-native vegetation.** With the exception of hand removal or spot-spraying of invasive or noxious weeds, the determination of whether non-native vegetation removal may be allowed in a shoreline or critical area buffer must be evaluated in conformance with Section 4.2, Ecological Protection and Critical Areas and appropriate requirements of Appendix B, Critical Areas Regulations. Such removal of noxious weeds and/or invasive species shall be incorporated in mitigation plans, as necessary, to prevent erosion and facilitate establishment of a stable community of native plants. Non-native vegetation removal outside of shoreline or critical area buffers does not require mitigation, except as noted under Subsection D above.
- I. **Existing uses may continue.** Vegetation conservation standards shall not apply retroactively to existing uses and developments. Existing structures, uses and developments, including residential appurtenances, may be maintained, repaired, and operated within shoreline jurisdiction and within shoreline and critical area buffers established in this SMP. New structures or developments, including, but not limited to, pools, decks, patios, residence additions, sheds or other residential appurtenances, are not permitted in shoreline buffers except as specifically allowed in this SMP. New development positioned outside of the buffer shall not require the need for restoration of the buffer, unless another activity requires the need for mitigation within the buffer.
- J. **Water-dependent uses.** Consistent with the use allowances for each environment designation, water-dependent uses and activities may be located at the water's edge, or as prescribed by conditions added to a permit. Accessory uses, developments and activities should be located outside the standard or reduced shoreline buffer unless a location in the buffer is necessary for operation of the water-dependent use or activity or no other location is feasible (e.g., the water-dependent use or activity is located on a parcel entirely or substantially encumbered by the required buffer). All other accessory uses, developments and activities located in a shoreline buffer must obtain a Shoreline Variance.

- K. **Public facilities and other water-oriented uses.** Consistent with the use allowances for each environment designation, other essential water-oriented public facilities, water-oriented public access facilities, and their accessory uses and developments may be located in the shoreline buffer if the use or activity cannot be accommodated or accomplished outside of the standard or reduced shoreline buffer. These uses and modifications must be designed and located to minimize intrusion into the buffer and should also be consistent with Section 4.2, Ecological Protection and Critical Areas and Section 4.4, Public Access.
- L. **Passive allowed activities.** Education, scientific research, and passive recreational activities, including, but not limited to: fishing, bird watching, hiking, boating, horseback riding, skiing, swimming, canoeing, and bicycling, are allowed within shoreline jurisdiction and within established shoreline buffers, provided the activity does not alter the buffers by introducing impervious surfaces; removing native vegetation; impacting seasonal migration or nesting of wildlife; or changing existing topography, water conditions, or water sources.
- M. **Site investigation allowed.** Site investigative work necessary for land use application submittals such as surveys, soil logs, drainage tests and other related activities, may occur within shoreline jurisdiction and within shoreline and critical area buffers established in this SMP. In every case, buffer impacts should be avoided and/or minimized and disturbed areas shall be immediately restored.
- N. **Utilities.** Where no other practical alternative exists to the excavation for and placement of municipal wells or utilities in a shoreline and critical area buffer, these uses may be permitted if also allowed under Section 5.16, Utilities. A mitigation plan must be prepared by a qualified professional, and must be consistent with the provisions of Section 4.2, Ecological Protection and Critical Areas, and appropriate requirements of Appendix B.
- O. **Lighting.** Interior and exterior lighting shall be designed and operated to avoid illuminating nearby properties or public areas, prevent glare on adjacent properties, public areas, critical area buffers or roadways to avoid infringing on the use and enjoyment of such areas, adversely impacting wildlife (including breeding and migration) and to prevent hazards. Methods of controlling spillover light include, but are not limited to, limits on height of structure, limits on light levels of fixtures, light shields, setbacks, buffer areas and screening.
- P. **Trails.** Trails and associated facilities may be permitted in the outer 25 percent of shoreline buffers, but should conform to design guidelines found in Public Access sections of this SMP. A mitigation plan must be prepared by a qualified professional, and must be consistent with the provisions of Section 4.2, Ecological

Protection and Critical Areas, and appropriate requirements of Appendix B, Critical Areas Regulations.

Q. Shoreline Buffer Width Reduction.

1. **Roads.** Legally existing roads transecting a shoreline buffer may be improved and expanded when:
 - a. no other feasible option exists; and
 - b. the expansion does not further degrade the shoreline buffer; and;
 - c. the existing buffer provides minimal ecological function as existing and the mitigation for the new expansion activity will provide ecological lift.
2. Reductions of up to twenty-five (25) percent of the standard buffer may be approved if the applicant demonstrates that either:
 - a. enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means) will result in a reduced buffer that functions at a higher level than the existing standard buffer; or
 - b. conditions unique to the site, including existing uses, developments, or topographic barriers that may exist between the proposed development and the OHWM, which substantially prevent or impair delivery of most riparian functions from the subject upland property to the waterbody.
3. If the applicant can demonstrate that uses cannot be accommodated or accomplished outside of the standard or standard reduced buffer, a reduction in the buffer width not exceeding fifty (50) percent may be approved through a Shoreline Variance. Adequate space for a single-family residence and associated yard is available when the buildable lot depth is seventy (70) feet or greater under the standard buffer or standard reduced buffer. The approved reduction may be no more than that necessary to accommodate the allowed use. The Town may allow a decrease in property setback standards if those actions will reduce or eliminate the need for the buffer reduction.
4. The applicant must submit a mitigation plan that addresses the specific habitat components and/or ecological functions that may be lost as a result of either reduction mechanism.

5. Where opportunities to mitigate in kind and on site are not available or adequate, the mitigation plan may include off-site or out-of-kind mitigation, or contributions to a fee in lieu restoration program when established. When off-site mitigation is proposed, projects included in the Restoration Plan found in Appendix C of this SMP shall be considered first.
6. These provisions do not apply to those portions of water-dependent or public access development that require improvements or uses adjacent to the water's edge. Where space is available, the required native vegetation shall be planted in the shoreline setback area that is not being used for water-dependent or public access uses.

4.6 Water Quality, Stormwater and Nonpoint Pollution

4.6.1 Policies

- A. **Do not degrade waters.** The location, construction, operation, and maintenance of all shoreline uses and developments should maintain or enhance the quantity and quality of surface and groundwater over the long term.
- B. **Assess and mitigate stormwater impacts.** New developments or expansions or retrofits of existing development should assess the effects of additional stormwater runoff volumes and velocities, and mitigate potential adverse affects on shorelines through design and implementation of appropriate stormwater management facilities.
- C. **Low impact development.** Low Impact Development (LID) techniques should be considered and implemented to the greatest extent practicable throughout the various stages of development including site assessment, planning and design, vegetation conservation, site preparation (including the avoidance of soil disturbance), and retrofitting and built-out management techniques.
- D. **Minimize need for chemical applications.** Shoreline use and development, including invasive or noxious weed control, should minimize the need for chemical fertilizers, pesticides or other similar chemical treatments to prevent contamination of surface and ground water and/or soils and adverse effects on shoreline ecological functions and values.
- E. **Existing development.** For existing development, implementation of management plans that minimize or avoid the need for chemical treatments of vegetation in shoreline buffers is encouraged.

4.6.2 Regulations

- A. **Do not degrade waters.** Shoreline use and development shall incorporate measures to protect and maintain surface and groundwater quantity and quality in accordance with all applicable laws.
- B. **Requirements for new development.**
 - 1. New development shall provide stormwater management facilities designed, constructed, and maintained in accordance with the current stormwater management manual in effect at the time, including the use of best management practices. Deviations from these standards may be approved where it can be demonstrated that off-site facilities would provide better treatment, or where common retention, detention and/or water quality facilities meeting such standards have been approved as part of a comprehensive stormwater management plan.
 - 2. Additionally, new development shall implement LID techniques where feasible and necessary to fully implement the core elements of the stormwater management manual.
- C. **Maintenance of storm drainage facilities.** Maintenance of storm drainage facilities on private property shall be the responsibility of the property owner(s). This responsibility and the provision for maintenance shall be clearly stated on any recorded subdivision, short plat, or binding site plan map, building permit, property conveyance documents, maintenance agreements and/or improvement plans.
- D. **Use BMPs.** Best management practices (BMPs) for control of erosion and sedimentation shall be implemented for all development in shoreline jurisdiction through an approved temporary erosion and sediment control (TESC) plan.
- E. **Public stormwater systems.** Existing public stormwater management systems and facilities shall be retrofitted and improved to incorporate LID techniques whenever feasible.
- F. **Sewage management.** To avoid water quality degradation by malfunctioning or failing septic systems located within shoreline jurisdiction, on-site sewage systems shall be located and designed to meet all applicable water quality, utility, and health standards. On-site septic systems shall be located landward of structures and as far from the shoreline, unless site conditions preclude this.
- G. **Materials requirements.** All materials that may come in contact with water shall be constructed of materials, such as untreated wood, concrete, approved plastic composites or steel, that will not adversely affect water quality or aquatic plants or animals. Materials used for decking or other structural components shall be

approved by applicable state agencies for contact with water to avoid discharge of pollutants from wave splash, rain, or runoff. Wood treated with creosote, copper chromium arsenic, or pentachlorophenol is prohibited in shoreline waterbodies.

5 SHORELINE MODIFICATIONS AND USES

Chapter 5 presents specific policies and regulations that apply to particular developments, uses, or activities in any environment designation.

Each section includes policies and regulations. Policies are statements of principles that guide and determine present and future decisions. Regulations are rules that govern developments, uses, or activities. The Use Matrix and Development Standards found in Subsection 3.2.5 are considered part of the regulations.

5.1 General Upland Shoreline Modification and Use Regulations

This section provides policies and standards addressing preferred layouts of shoreline development and appropriate signage serving the intended use and recognizing shoreline locations.

5.1.1 Policies

- A. **Designs Avoid Sensitive Areas.** Development and uses should be designed in a manner that directs land alteration to the least sensitive portions of the site to maximize vegetation conservation; minimize impervious surfaces and runoff; protect riparian, nearshore and wetland habitats; protect wildlife and habitats; protect archaeological, historic and cultural resources; and preserve aesthetic values.
- B. **Location of Accessory Uses.** Non-water oriented accessory development or use should be located landward of shoreline jurisdiction unless such development is required to serve approved water-oriented uses and/or developments. When sited within shoreline jurisdiction, accessories should be located landward of shoreline, riparian and/or wetland buffers and landward of water-oriented developments and/or other approved uses.
- C. **Minimize Impacts on Shoreline and Upland Uses.** Development should be located, designed, and managed to minimize impacts on shoreline or upland uses through bulk and scale restrictions, setbacks, buffers, light shielding, noise attenuation, and other measures.
- D. **Vistas and Viewpoints.** Vistas and viewpoints should not be degraded and visual access to the water from such vistas should not be impaired by the placement of signs.

5.1.2 Regulations

- A. **Design Features for Compatibility.** Shoreline use and development activities shall be designed to complement the character and setting of the property, minimize noise and glare, and avoid impacts to view corridors. Shoreline applicants shall demonstrate efforts to minimize potential impacts to the extent feasible, including:

1. Building surfaces on or adjacent to the water shall employ materials that minimize reflected light.
 2. Building mechanical equipment shall be incorporated into building architectural features, such as pitched roofs, to the maximum extent possible. Where mechanical equipment cannot be incorporated into architectural features, a visual screen shall be provided consistent with building exterior materials that obstructs views of such equipment.
 3. Outdoor storage shall be screened from public view through techniques such as landscaping, fencing and/or other equivalent measures.
 4. Property screening in the form of fences or landscaping shall not block visual access to the shoreline, and shall be subject to Section 5.1.2.D below.
- B. **Preference for Water-Oriented Facility Location.** Shoreline developments shall locate the water-oriented portions of their developments along the shoreline and place all other facilities landward or outside shoreline jurisdiction.
- C. **Minimize Changes to Topography.** To the extent feasible, design of structures shall conform to natural contours and minimize disturbance to soils and native vegetation. Vehicle and pedestrian circulation systems shall be designed to minimize clearing, grading and alteration of topography and natural features, especially natural drainage patterns and springs. Roadway and driveway alignment shall follow the natural contours of the site and minimize width to the extent feasible while meeting applicable government standards.
- D. **Soil Disturbance.** All disturbed areas shall be restored and protected from erosion using vegetation and other means.
- E. **View Corridors.** Where commercial, mixed use, multi-family and/or multi-lot developments are proposed, primary structures shall provide for view corridors between buildings through the use of building separation, setbacks, upper story setbacks, pitched roofs, and other mitigation. Per WAC 173-27-180, applicants shall provide a depiction of the impacts to views from existing residential uses and public areas.

5.2 General Aquatic Shoreline Modification and Use Regulations

These policies and regulations apply to all modifications and uses taking place waterward of the OHWM, whether or not a shoreline permit or written statement of exemption is required.

5.2.1 Policies

- A. **Protect beneficial uses, including ecological functions and water-dependent uses.** Shoreline modifications and uses should be designed, located and operated in a manner that supports long-term beneficial use of the shoreline and protects and maintains shoreline ecological functions and processes.
- B. **Minimize and mitigate unavoidable impacts.** All significant adverse impacts to the shoreline should be avoided or, if that is not possible, minimized to the extent feasible and then mitigated.
- C. **Protect water quality and hydrograph.** Shoreline modifications and uses should be designed and managed to prevent degradation of water quality and alteration of natural hydrographic conditions, including the disturbance of recharge and discharge points of groundwater.

5.2.2 Regulations

The following regulations shall apply to in-water work, including, but not limited to, installation of new structures, repair of existing structures, restoration projects, and aquatic vegetation removal:

- A. **Siting and design requirements.** In-water structures and activities shall be sited and designed to avoid the need for future shoreline stabilization activities and dredging, giving due consideration to watershed functions and processes, with special emphasis on protecting and restoring priority habitat and species. Modifications and uses located in the Aquatic environment shall be the minimum size necessary.
- B. **Buffers do not apply.** Water-dependent in-water structures, activities and uses are not subject to the shoreline buffers established in this SMP.
- C. **Adhere to timing restrictions.** Projects involving in-water work shall comply with timing restrictions as set forth by state and federal project approvals.
- D. **Structure removal.** Removal of existing structures shall be accomplished so the structure and associated material does not re-enter the waterbody.
- E. **Disposal of waste material.** Waste material, such as construction debris, silt, excess dirt or overburden resulting from in-water structure installation, shall be deposited outside of shoreline jurisdiction in an approved upland disposal site. Proposals to temporarily store waste material or re-use waste materials within shoreline jurisdiction may be approved provided that use of best management practices is adequate to prevent erosion or water quality degradation.

- F. **Hazardous materials.** Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the waterbody during in-water activities. Necessary refueling of motorized equipment shall be done as far from the adjacent waterbody as is possible. Appropriate spill clean-up materials must be on-site at all times, and any spills must be contained and cleaned immediately after discovery.
- G. **Prevent siltation of adjacent areas.** In-water work shall be conducted in a manner that causes little or no siltation to adjacent areas. A sediment control curtain shall be deployed in those instances where siltation is expected. The curtain shall be maintained in a functional manner that contains suspended sediments during project installation.
- H. **Treatment of below-OHWM excavations.** Any trenches, depressions, or holes created below the OHWM shall be backfilled prior to inundation by water.
- I. **Concrete management.** Fresh concrete or concrete by-products shall not be allowed to enter the waterbody at any time during in-water installation. All forms used for concrete shall be completely sealed to prevent the possibility of fresh concrete from entering the waterbody.
- J. **Protection of bank and vegetation.** Alteration or disturbance of the bank and bank vegetation shall be limited to that necessary to perform the in-water work. All disturbed areas shall be restored and protected from erosion using vegetation or other means.
- K. **Trash removal required.** All trash and unauthorized fill, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, and paper, found below the OHWM at the time of project implementation shall be removed if the project includes use of equipment suited for that purpose. Where the trash or fill is visibly providing some habitat function, consult with Washington Department of Fish and Wildlife and/or the U.S. Army Corps of Engineers before removing. Disposal should occur in an approved upland disposal location, landward of the OHWM and the channel migration zone. See Sections 5.4, Dredging and Dredge Material Disposal and 5.5, Fill and Excavation for additional policies and regulations regarding dredging, fill and disposal.
- L. **Retain natural features.** Natural in-water features such as snags, uprooted trees, or stumps should be left in place unless it can be demonstrated that they are causing significant bank erosion or higher flood stages or pose a hazard to human safety.
- M. **Mitigation.** All aquatic shoreline modifications and uses are subject to the mitigation sequencing requirements in Section 4.2, Ecological Protection and Critical

Areas, with appropriate mitigation required for any unavoidable impacts to ecological functions. If critical areas in shoreline jurisdiction are impacted, the project is also subject to relevant requirements of Appendix B, Critical Areas Regulations.

5.3 Commercial Development

5.3.1 Policies

- A. **Commercial Use Preferences.** Preference should be given for water-dependent commercial uses above water-related uses. Water-related uses should have priority above water-enjoyment uses. All water-oriented commercial uses have preference over non-water-oriented commercial uses.

5.3.2 Regulations

- A. **Water Oriented Uses Allowed.** Water-dependent, water-related, and water-enjoyment uses are permitted where allowed by zoning and this SMP. Water-dependent commercial uses shall be given preference over water-related and water-enjoyment uses. The applicant shall demonstrate to the satisfaction of the Town that proposed uses meet the definitions of water-dependent, water-related or water-enjoyment (water-oriented use) and the Town shall give preference, in order, to water-dependent uses, water-related uses, and water-enjoyment uses. Water-enjoyment uses shall provide a clear public benefit, be open to the public at regular hours, and be oriented towards the water.
- B. **Mixed Use Development.** Residential and multi-family residential structures may be located with water-oriented or non-water oriented commercial uses provided:
 - 1. The mixed-use project includes one or more water-dependent uses.
 - 2. Water-dependent commercial uses as well as other water-oriented commercial uses have preferential locations along the shoreline.
 - 3. The underlying zoning district permits residential uses together with commercial uses.
 - 4. Public access is provided for significant number of persons in accordance with Section 4.4, and ecological restoration is provided as a public benefit.
 - 5. Residential uses meet requirements of Section 5.11 of this SMP.
- C. **Non-water-Oriented Commercial Uses Limited.** In areas designated for commercial use, non-water-oriented commercial uses are allowed if the site is physically separated from the shoreline by another property or public right of way. On properties fronting the shoreline, new non-water-oriented commercial development is prohibited in shoreline jurisdiction, except where such use provides

a significant public benefit with respect to the Act's objectives, such as providing public access and the use is part of a mixed-use project that includes water-dependent uses.

- D. **Accessory Uses to Water-Oriented Commercial Activities.** Accessory commercial development that does not require a shoreline location shall be located landward of the water-oriented portions of the development and comply with the general shoreline environment buffers found in Table 3.2. Accessory uses may be allowed in existing structures or where necessary in support of water-oriented uses. Accessory development includes, but is not limited to, parking, storage and service areas, and circulation.

- E. **Public Access.** See Section 4.4.

5.4 Dredging and Dredge Material Disposal

For the purposes of this section, dredging shall refer to the excavation or displacement of land waterward of the ordinary high water mark.

5.4.1 Policies

- A. Dredging should be permitted for water-dependent uses of economic importance to the region and/or essential public facilities only when necessary and when alternatives are infeasible or less consistent with this SMP.
- B. Dredging of bottom materials for the primary purpose of obtaining material for landfill, construction, or beach nourishment should not be permitted.
- C. Minor dredging as part of ecological restoration or enhancement, public access or public recreation should be permitted if consistent with this SMP.
- D. Spoil disposal on land outside of shoreline jurisdiction is generally preferred over disposal below the ordinary high water mark. Disposal of dredged material on shorelands or wetlands within the stream's channel migration zone should be discouraged.
- E. Long-term cooperative management programs that rely primarily on natural processes, and involve land owners and applicable local, state and federal agencies and tribes should be pursued to prevent or minimize conditions which make dredging necessary.
- F. New development should be sited and designed to avoid or, where avoidance is not possible, to minimize the need for new maintenance dredging.

- G. Dredging and dredge material disposal shall be done in a manner that avoids or minimizes significant ecological impacts. Impacts that cannot be avoided should be mitigated in a manner that assures no net loss of shoreline ecological functions.

5.4.2 Regulations

- A. **Siting and design.** New development shall be sited and designed to avoid the need for new and maintenance dredging.
- B. **Allowed dredging activities.** Dredging shall only be permitted for the following activities:
 - 1. Development of new or expanded essential public facilities and only when there are no feasible alternatives or other alternatives that may have a lesser ecological impact.
 - 2. Restoration or enhancement of shoreline ecological functions and processes benefiting water quality and/or fish and wildlife habitat. Dredging activity to drain wetlands shall not be allowed. Dredged material shall be placed waterward of the ordinary high water mark. Dredging projects for the purpose of restoration must either be associated with a MTCA or CERCLA habitat restoration project or otherwise must obtain a Shoreline Conditional Use Permit.
 - 3. Minor trenching to allow the installation or maintenance of necessary underground utilities if no alternative, including boring, is feasible, and:
 - a. Impacts to fish and wildlife habitat are avoided to the maximum extent possible.
 - b. The utility installation shall not increase or decrease the natural rate, extent, or opportunity of channel migration.
 - c. Appropriate best management practices are employed to prevent water quality impacts or other environmental degradation.
 - 4. Dredging for the purpose of obtaining fill material is prohibited.
- C. **Conditional Use Permit.** A conditional use permit shall be required for any project involving the disposal of dredge material in the stream of channel migration zone.
- D. **Maintain ecological functions and processes.** The physical alignment and ecological functions and processes of shoreline waterbodies shall be maintained, except to improve hydraulic function, water quality, fish or wildlife habitat, or fish passage.

- E. **Conditions may be applied.** Limitations on dredge or disposal operation may be imposed to reduce proximity impacts, protect the public safety and assure compatibility with the interests of other shoreline users. Conditions may include limits on periods and hours of operation, type of machinery, and may require provision of landscaped buffer strips and/or fencing to address noise and visual impacts at land disposal or transfer sites.
- F. **Circumstances when disposal is allowed.** Dredge material disposal within shoreline jurisdiction is permitted under the following conditions:
1. Shoreline ecological functions and processes will be preserved, restored or enhanced, including protection of surface and groundwater.
 2. Erosion, sedimentation, floodwaters or runoff will not increase adverse impacts to shoreline ecological functions and processes or property.
- G. **Submittal requirements.** The following information shall be required for all dredging applications:
1. A description of the purpose of the proposed dredging and an analysis of compliance with the policies and regulations of this SMP.
 2. A detailed description of the existing physical character, shoreline geomorphology and biological resources provided by the area proposed to be dredged, including:
 - a. A site plan map outlining the perimeter of the proposed dredge area. The map must also include the existing bathymetry and have data points at a minimum of 2-foot depth increments.
 - b. A habitat survey, critical areas study, fish and wildlife management plan during dredging operations, and/or mitigation plans.
 - c. Information on stability of bedlands adjacent to proposed dredging and spoils disposal areas.
 3. If disposal of dredge materials is proposed below the ordinary high water mark, a detailed description of the physical, chemical and biological characteristics of the dredge materials to be removed.
 - a. Physical analysis of material to be dredged: material composition and amount, grain size, organic materials present, source of material, etc.

- b. Chemical analysis of material to be dredged: volatile solids, chemical oxygen demand (COD), grease and oil content, mercury, lead and zinc content, etc.
 - c. Biological analysis of material to be dredged.
- 4. A description of the method of materials removal, including facilities for settlement and movement.
- 5. Dredging procedure: length of time it will take to complete dredging, method of dredging, and amount of materials removed.
- 6. Frequency (including an estimate of the effective life expectancy of the dredging) and quantity of project maintenance dredging.
- 7. Detailed plans for dredge spoil disposal, including specific land disposal sites and relevant information on the disposal site, including, but not limited to:
 - a. Dredge material disposal area;
 - b. Physical characteristics including location, topography, existing drainage patterns, surface and ground water;
 - c. Size and capacity of disposal site;
 - d. Means of transportation to the disposal site;
 - e. Proposed dewatering and stabilization of dredged material;
 - f. Methods of controlling erosion and sedimentation; and
 - g. Future use of the site and conformance with land use policies and regulations.
- 8. Total initial dredge volume.
- 9. Plan for disposal of maintenance spoils for at least a fifty (50)-year period, if applicable.
- 10. Hydraulic modeling studies sufficient to identify existing geo-hydraulic patterns and probable effects of dredging.

5.5 Fill and Excavation

Fill regulations in this section apply to fills in aquatic and upland environments. "Fill" is the addition of soil, sand, rock, gravel, sediment, earth retaining structure, or other material to an area waterward of the OHWM, in wetlands, or on shorelands in a manner

that raises the elevation or creates dry land. Excavation shall refer to the excavation or displacement of land landward of the OHWM.

5.5.1 Policies

- A. Fill and excavation should only be permitted to the minimum extent necessary to accommodate an approved shoreline use or development and with assurance of no net loss of shoreline ecological functions and processes. Enhancement and voluntary restoration of landforms and habitat are encouraged.
- B. Fills and excavation should be located and developed so that water quality, hydrologic and runoff patterns are not altered.
- C. Fill should not be allowed where shoreline stabilization works would be required to maintain the materials placed.
- D. Excavation and grading may be permitted landward of the OHWM for uses and development allowed by this SMP.
- E. Fill in waterbodies, floodways, channel migration zones, and/or wetlands should not be permitted for creation of new uplands, unless it is part of an approved ecological restoration activity.
- F. Fill should not be placed over existing forest duff or native plant herb layer if not in the direct footprint of the approved project.
- G. Fill should be permitted in the following circumstances only: water-dependent uses, public access, clean-up and disposal of contaminated sediments, expansion of existing transportation facilities of statewide significance, mitigation actions, environmental restoration, or a beach nourishment and enhancement project.

5.5.2 Regulations

- A. All fills shall be located, designed and constructed to protect shoreline ecological functions and ecosystem-wide processes, including channel migration. Fill shall be minimized to the maximum extent practicable and necessary to accommodate approved shoreline uses and development activities that are consistent with this SMP.
- B. Fill within floodways, channel migration zones, or waterward of the OHWM shall only be permitted for ecological restoration.
- C. Excavation that occurs either waterward of the OHWM or within wetlands shall be considered dredging for purposes of this SMP (see Section 5.7).

- D. Fills or excavation shall not be located where shoreline stabilization will be necessary to protect materials placed or removed. Disturbed areas shall be immediately protected from erosion using weed-free straw, mulches, hydroseed, or similar methods and revegetated, as applicable.
- E. Fills and excavation shall be designed to blend physically and visually with existing topography whenever possible, so as not to interfere with long term appropriate use including lawful access and enjoyment of scenery.
- F. Cut and fill slopes shall generally be sloped no steeper than one foot vertical for every three feet horizontal (1:3) unless a specific engineering analysis has been provided, demonstrating that the fill will be stable without further structural methods and it can be determined that the fill blends physically and visually with existing topography.
- G. A temporary erosion and sediment control (TESC) plan, including BMPs, consistent with the stormwater management manual shall be provided for all proposed fill and excavation activities, and approved by the Shoreline Administrator prior to commencement of activity.
- H. Fill below the OWHM shall require a Shoreline Conditional Use Permit.

5.6 In-Stream Structures

In-water structures include those placed by humans within streams, rivers and lakes for hydroelectric generation, irrigation, water supply, flood control, transportation, utilities, fish habitat enhancement, recreation, or other purpose. Structures placed waterward of the OWHM have the potential to cause water impoundment or the diversion, obstruction, or modification of water flow.

5.6.1 Policies

- A. In-water structures should be planned and designed to be compatible with appropriate multiple uses of resources over the long-term. Appropriate multiple uses include, but are not limited to, public access, recreation, and fish migration.
- B. The location, design, construction and maintenance of in-water structures should give due consideration to the full range of public interests; watershed processes, including prevention of damage to other properties and other shoreline resources from alterations to geologic and hydrologic processes; and ecological functions, with special emphasis on protecting and restoring priority habitats and species.
- C. In-water structures shall be sited and designed consistent with appropriate engineering principles, including, but not limited to, guidelines of the Washington Department of Fish and Wildlife, and the U.S. Army Corps of Engineers.

- D. Non-structural and non-regulatory methods to protect, enhance, and restore shoreline ecological functions and processes and other shoreline resources should be encouraged as an alternative to in-water structures. Non-regulatory and non-structural methods may include public facility and resource planning, land or easement acquisition, education, voluntary protection and enhancement projects, or incentive programs.
- E. Planning and design of in-water structures should be consistent with and incorporate elements from applicable watershed management and restoration plans and/or surface water management plans.
- F. New or expanding development or uses in the shoreline, including subdivision of land, that would likely require structural flood control works within a stream, channel migration zone, or floodway should not be allowed.
- G. In-water structure proposals should incorporate native vegetation to enhance ecological functions, create a more natural appearance, improve ecological processes, and provide more flexibility for long-term shoreline management. Such features include vegetated berms; vegetative stabilization including brush matting and buffer strips; and retention of existing trees and shrubs on stream banks, if possible.

5.6.2 Regulations

- A. Channelization projects that damage fish and wildlife resources, degrade recreation and aesthetic resources, result in a net loss of ecological functions or result in high flood stages and velocities are prohibited.
- B. Upland cut-and-fill slopes and back-filled areas resulting from installation of in-water structures shall be stabilized with brush matting and buffer strips and revegetated with native grasses, shrubs, or trees to prevent loss of shoreline ecological functions and processes.
- C. In-water structures shall be designed by a qualified professional and be constructed and maintained in a manner that does not degrade the quality of affected waters or create a safety hazard. The Town shall require reasonable conditions to achieve this objective.
- D. No motor vehicles, appliances, other similar structures or parts thereof; or structure demolition debris; or any other solid waste shall be used as in-water structures.
- E. In-water structures shall allow for natural groundwater movement and surface runoff.
- F. In-water structures shall preserve valuable recreation resources and aesthetic values such as point and channel bars, islands, and braided channels.

- G. Design of in-water structures shall include access to public shorelines whenever possible, unless it is demonstrated that public access would cause unavoidable public health and safety hazards, security problems, unmitigatable ecological impacts, unavoidable conflicts with proposed uses, or unreasonable cost. At a minimum, in-water structures should not decrease public access or use potential of shorelines.

5.7 Recreational Development

5.7.1 Policies

- A. **Promote Recreation and Public Access.** Developments and uses should be designed and operated to provide the public with recreational areas, facilities, and access to the shorelines.
- B. **Design.** Recreational uses and facilities should be designed to be primarily related to access, enjoyment and use of the water and shorelines of the state. Water-dependent and water-related recreational uses should be given priority over non-water-oriented recreational uses.
- C. **Pedestrian-Oriented.** Direct access to the water should be via paths, walkways, or other pedestrian-oriented features. Parking should be located upland from the shoreline recognizing the limited supply of shoreline areas.
- D. **Prevent Impacts to Private Property.** The location, design, construction and operation of recreational facilities should prevent undue adverse impacts on adjacent or nearby private properties.
- E. **Scenic Views and Vistas.** Preserve views for the public when siting park and recreation facilities.

5.7.2 Regulations

- A. New non-water oriented recreational uses shall be located outside of shoreline jurisdiction.
- B. **Accessory Uses.** Accessory and support facilities such as maintenance facilities and parking lots shall be consolidated and located in upland areas outside shoreline, wetland and riparian buffers.
- C. **Fertilizer and Chemical Management.** For recreation developments such as playfields that require the use of fertilizers, pesticides, or other chemicals, the applicant shall submit plans demonstrating the best management practices and methods to be used to prevent these fertilizer and chemical applications and resultant leachate from entering adjacent waterbodies. Non-chemical management methods are preferred over chemical management where feasible and practical.

- D. **Compatibility with Adjacent Private Properties.** Recreational facilities shall make adequate provisions, such as screening, buffer strips, fences, and signs, to prevent overflow onto adjacent private properties.
- E. **Adequate Utilities and Services.** Proposals for recreational development shall include facilities for water supply, wastewater, stormwater, and garbage disposal in conformance with Town standards.

5.8 Residential Development

5.8.1 Policies

- A. **Compatibility with Shoreline.** All subdivisions and residential development should be designed at a level of site coverage and density compatible with the physical capabilities of the shoreline and water. Single-family residences are identified as a priority use only when developed in a manner consistent with control of pollution and prevention of damage to the natural environment.
- B. **Encourage Restoration and Environmental Design.** Ecological restoration and measures to minimize environmental impacts, such as low impact development and vegetation conservation and enhancement, should be encouraged.
- C. **Aesthetics and Views.** All subdivisions and residential development should be designed to adequately protect and/or improve the water and shoreline aesthetic qualities and to avoid impacts to scenic views and vistas.
- D. **Provide Public Access.** Residential developments should be encouraged to provide public access to shorelines within the development and to minimize impacts of vehicular use and parking upon shoreline aesthetics.

5.8.2 Regulations

- A. **Subdivisions and Plats.** Subdivisions and plats shall:
 - 1. Comply with all applicable subdivision and zoning regulations.
 - 2. Shoreline frontage for newly created lots shall be a minimum of 50 feet.
 - 3. Include facilities for water supply, wastewater, stormwater, solid waste, access, utilities and other support facilities in conformance with Town standards and which do not result in harmful effects on the shoreline or waters. See Section 4.6.2.D for specific wastewater requirements.
 - 4. Be designed to prevent the need for new shoreline stabilization or flood hazard reduction measures per Section 4.3.

5. Be designed, configured and developed in a manner that assures that no net loss of ecological functions results from division of land at full build-out of all lots and throughout all phases of development.
6. Be required to cluster residential units and structures where necessary and when allowed by the Town to avoid critical areas and to preserve natural features and minimize physical impacts.
7. Identify locations for community access, or conservation and utility easements, where proposed.

B. Environmental Protection. Residential development including accessory uses and appurtenant structures shall:

1. Meet all applicable critical area, vegetation conservation, and water quality standards of Chapter 4, Appendix B, and other Vegetation Conservation sections of this SMP.
2. Be sufficiently set back from steep slopes and shorelines vulnerable to erosion so that structural improvements, including stabilization structures, are not required to protect such structures and uses. To accomplish this, the Town shall require compliance with requirements established in Appendix B or may authorize development that is built consistent with the recommendations of a licensed geotechnical engineer. The Vegetation Conservation buffers in Section 4.5 shall also be applied.

C. Public Access. See SMP Section 4.4.

D. Appurtenant Structures. Single-family residential appurtenance structures shall not be located in required shoreline buffers unless specifically authorized in Vegetation Conservation standards and Appendix B. Appurtenant structures/developments shall be prohibited over the water. Appurtenant structures/developments for multi-family uses are prohibited.

E. Overwater Structures. New overwater residences are prohibited.

F. Underground Utilities. See Section 5.13.

G. Parking/Driveways. Parking accessory to a residential use shall be sufficiently set back from the shoreline to the greatest extent feasible. Driveways shall be located perpendicularly to the shoreline whenever feasible.

5.9 Shoreline Habitat and Natural Systems Enhancement Projects

Shoreline habitat and natural systems enhancement and restoration projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in shorelines. This does not include mitigation activities conducted as a means of compensating for ecological impacts.

5.9.1 Policies

- A. Restoration and enhancement of shorelines should be designed using principles of landscape and conservation ecology and should restore or enhance chemical, physical, and biological watershed processes that create and sustain shoreline habitat structures and functions.
- B. Restoration and enhancement actions should improve shoreline ecological functions and processes and should target meeting the needs of sensitive plant, fish and wildlife species as identified by Washington Department of Fish and Wildlife, Washington Department of Natural Resources, National Marine Fisheries Service and/or U.S. Fish and Wildlife Service.
- C. The Town should, and private entities are encouraged to, seek funding from state, federal, private and other sources to implement restoration, enhancement, and acquisition projects, particularly those that are identified in the Restoration Plan of this SMP or the local watershed plan.
- D. The Town should develop processing guidelines that will streamline the review of restoration-only projects.
- E. Restoration and enhancement projects should be coordinated with local Tribes, volunteer groups and conservation districts.
- F. Allow for the use of tax incentive programs, mitigation banking, grants, land swaps, or other programs, as they are developed, to encourage restoration and enhancement of shoreline ecological functions and to protect habitat for fish, wildlife, and plants.

5.9.2 Regulations

- A. Restoration and enhancement shall be carried out in accordance with an approved shoreline restoration plan.
- B. All shoreline restoration and enhancement projects shall protect the integrity of adjacent natural resources, including aquatic habitats and water quality.
- C. Long-term maintenance and monitoring shall be included in restoration or enhancement proposals.

- D. Shoreline restoration and enhancement may be allowed if the project applicant demonstrates that no undesired change to sediment transport or river current will result and that the enhancement will not adversely affect ecological processes, properties, or habitat.
- E. Shoreline restoration and enhancement projects shall be designed using the best available scientific and technical information, and implemented using best management practices.
- F. Shoreline restoration and enhancement shall not significantly interfere with the normal public use of waters of the state without appropriate mitigation.
- G. Shoreline restoration and ecological enhancement projects may be permitted in all shoreline environments provided the project's purpose is the restoration of the natural character and ecological functions of the shoreline.
- H. Applicant's seeking to perform restoration projects are advised to work with the Town to assess whether and how the proposed project allows relief under RCW 90.58.580, in the event that the project shifts the OHWM landward.

5.10 Shoreline Stabilization

Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes, such as flooding. These actions include structural and nonstructural methods. Nonstructural methods include shoreline buffers or setbacks, relocation of the structure to be protected, groundwater management, planning and regulatory measures to avoid the need for structural stabilization. Structural measures include the use bulkheads, riprap, concrete, or other rigid means to address erosion impacts.

5.10.1 Policies

- A. Shoreline stabilization should be located, designed, and maintained to protect, restore and maintain shoreline ecological functions, ongoing shoreline processes, and the integrity of shoreline features. Ongoing stream processes and the probable effects of proposed shoreline stabilization on other properties and shoreline features should be considered.
- B. Shoreline stabilization should not be developed for the purpose of filling shorelines.
- C. When stabilization is necessary, mitigation for the loss of ecological function will be required.
- D. Alternative methods (such as "log jams") that can provide stabilization as well as fish habitat should be included in project alternatives.

- E. Structural shoreline stabilization measures should only be used when more natural, flexible, non-structural methods such as placing the development farther from the OHWM, planting vegetation, or installing on-site drainage improvements have been determined infeasible. Alternatives for shoreline stabilization should be based on the following hierarchy of preference:
 - 1. No action (allow the shoreline to retreat naturally), increase buffers, and relocate structures.
 - 2. Flexible defense works constructed of natural materials including soft shore protection, bioengineering, including protective berms, flood fencing or vegetative stabilization.
 - 3. Rigid works constructed of artificial materials such as riprap or concrete.
- F. Structures should be located and designed to avoid the need for future shoreline stabilization where feasible. Land subdivisions should be designed to assure that future development of the created lots will not require shore stabilization for reasonable development to occur.
- G. New or expanded structural shoreline stabilization should only be permitted where demonstrated to be necessary to protect an existing primary structure, including residences, that is in danger of loss or substantial damage, and where mitigation of impacts would not cause a net loss of shoreline ecological functions and processes.
- H. New or expanded structural shoreline stabilization for enhancement, restoration, or hazardous substance remediation projects should only be allowed when non-structural measures, vegetation planting, or on-site drainage improvements would be insufficient to achieve enhancement, restoration or remediation objectives.
- I. Shoreline stabilization should be located and designed to fit the physical character and hydraulic energy potential of a specific shoreline reach, which may differ substantially from adjacent reaches.
- J. Shoreline stabilization should not be permitted when it interferes with public access to shorelines of the state, nor with other appropriate shoreline uses including, but not limited to, private recreation.
- K. In addition to conformance with the regulations in this section, non-regulatory methods to protect, enhance, and restore shoreline ecological functions and other shoreline resources should be encouraged for shore stabilization. Non-regulatory methods may include public facility and resource planning, technical assistance, education, voluntary enhancement and restoration projects, or other incentive programs.

- L. Shoreline stabilization should be developed in a coordinated manner among affected property owners and public agencies, particularly those that cross jurisdictional boundaries, to address ecological and geo-hydraulic processes and sediment conveyance issues. Where erosion threatens existing development, a comprehensive program for shoreline management should be established by the multiple affected property owners.
- M. Provisions for multiple use, restoration, and/or public shore access should be incorporated into the location, design and maintenance of shore stabilization for public or quasi-public developments whenever safely compatible with the primary purpose. Shore stabilization on publicly owned shorelines should not be allowed to decrease long-term public use of the shoreline.
- N. Materials used for construction of shoreline stabilization should be selected for long-term durability, ease of maintenance, compatibility with local shoreline features including aesthetic values, ability to provide fish and wildlife habitat, and flexibility for future uses.
- O. New development that would require shoreline stabilization which causes significant impacts to adjacent or down-current properties and shoreline areas should not be allowed.

5.10.2 Regulations

- A. **General.** The purpose of this section is to provide standards and guidelines for the location and design of structural and non-structural shoreline stabilization measures that have the potential to adversely impact the shoreline natural environment. New development, however, shall be located and designed to avoid the need for future shoreline stabilization to the extent feasible. In all cases, the feasibility of non-structural measures shall be evaluated first, and then soft structural shoreline stabilization shall be evaluated prior to hard structural stabilization. Shoreline stabilization shall be designed so that net loss of ecological functions does not occur.
- B. **Sequencing.** Structural shoreline stabilization measures shall only be used when more natural, flexible, non-structural methods such as placing the development farther from the OHWM, planting vegetation, or installing on-site drainage improvements have been determined infeasible. Alternatives for shoreline stabilization shall be based on the following hierarchy of preference:
 - 1. No action (allow the shoreline to retreat naturally), increase buffers, and relocate structures.
 - 2. Flexible defense works constructed of natural materials including soft shore protection, bioengineering, including protective berms, flood fencing or vegetative stabilization.

3. Rigid works constructed of artificial materials such as riprap or concrete.

Applicants shall submit demonstration of stabilization sequencing in a form acceptable to the Shoreline Administrator.

C. **New or enlarged structural shoreline stabilization.** New structural shoreline stabilization measures, including both hard and soft structural shoreline stabilization measures, shall include measures installed to address erosion impacts. Enlargement of an existing structural shoreline stabilization shall include additions to or increases in size (such as height, width, length, or depth) to existing shoreline stabilization measures and these enlargements shall be considered new structures. New or enlarged structural stabilization measures shall not be allowed, except as follows:

1. To protect an existing primary structure, including residences, when conclusive evidence, documented by a geotechnical analysis, is provided that the structure is in danger from shoreline erosion. Normal sloughing or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering hard or soft structural shoreline stabilization.
2. In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:
 - a. The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.
 - b. Nonstructural measures, such as placing the development farther from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient to adequately address erosion impacts.
 - c. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. Erosion must be caused by natural processes. OR
3. In support of water-dependent development when all of the conditions below apply:
 - a. The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.

- b. Nonstructural measures, such as planting vegetation, or installing on-site drainage improvements, are not feasible over time or not sufficient to adequately address erosion causes or impacts.
 - c. The need to protect primary structures, including residences, from damage due to erosion is demonstrated through a geotechnical report.
- OR

- 4. To protect projects for the restoration of ecological functions or for hazardous substance remediation projects pursuant to Chapter 70.105D RCW when nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient to adequately address erosion causes or impacts.

D. Repair of existing shoreline stabilization measures. This section allows repair and maintenance of existing shoreline stabilization measures, subject to all of the following standards. [Note: repair and replacement of shoreline stabilization structures may meet the criteria for exemption from a Shoreline Substantial Development Permit, but they are not exempt from the policies and regulations of this Section or the SMP.]

- 1. Maintenance and repair shall include modifications or improvements to an existing shoreline stabilization measure that are designed to ensure the continued function of the stabilization measure by preventing failure of any part of the stabilization measure.
- 2. Modifications or improvements that include additions to or increases in size of existing shoreline stabilization measures shall be considered new structures, and are not a repair.
- 3. Replacement of greater than 50 percent or 35 feet, whichever is smaller, of linear length of existing shoreline stabilization on a waterfront parcel is not considered a repair for purposes of these regulations, and must be designed and reviewed as a replacement subject to the provisions contained in Subsection 5.13.2.E.2 below. For shoreline stabilization projects, “replacement” occurs when the existing structure, including its footing or bottom course of rock, is removed prior to placement of new shoreline stabilization materials. Repairs that involve only removal of material above the footing or bottom course of rock are not considered replacements. Replacement of existing shoreline stabilization may still qualify for an exemption from a Shoreline Substantial Development Permit as listed in Section 7.6.3 of this SMP.
- 4. Areas of temporary disturbance within the shoreline buffer shall be expeditiously restored to their pre-project condition or better.

5. The placement of a new shoreline stabilization structure landward of a failing shoreline stabilization structure shall be considered a new structure, and is not maintenance or repair.

E. **Replacement.** The following standards apply to replacement of existing hard and soft structural shoreline stabilization measures:

1. For purposes of this section, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure that can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall also be considered new structures.
2. Replacement shall be treated as a new shoreline stabilization measure subject to the restrictions of Subsection 5.13.2.C. above, as well as the submittal requirements of Subsection 5.13.2.F. below, except for the requirement to prepare a geotechnical analysis. A geotechnical analysis is not required for replacements of existing hard or soft structural shoreline stabilization with a similar or softer measure if the applicant demonstrates a need to protect principal uses or structures from erosion caused by natural processes operating at or waterward of the OHWM.
3. Replacement of hard structural shoreline stabilization measures shall not encroach waterward of the OHWM or waterward of the existing shoreline stabilization measure unless the residence was occupied prior to January 1, 1992, and there is overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure. All other replacement hard structural shoreline stabilization measures shall be located at or landward of the existing shoreline stabilization structure.
4. Hard shoreline stabilization measures may allow some accessory fill (cobble, gravel, or small material only) waterward of the OHWM to provide enhancement of shoreline ecological functions. In such cases, a study is required to ensure the flood storage and conveyance capacity shall not decrease.
5. Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the OHWM.

F. **General Design Standards.** When a hard or soft structural shoreline stabilization measure is demonstrated to be necessary, the following design standards shall be incorporated into the stabilization design:

1. Soft structural shoreline stabilization measures shall be used to the maximum extent practicable for new, enlarged, or replacement shoreline stabilization measures, limiting hard structural shoreline stabilization measures to the portion or portions of the site where necessary to protect or support existing shoreline structures or trees, or where necessary to connect to existing shoreline stabilization measures on adjacent properties. Hard structural shoreline stabilization transition areas between the applicant's otherwise soft shoreline measure and the adjacent hardened shoreline, when needed on the subject property to prevent destabilization of adjacent hardened shorelines, should be minimized and extend into the subject property from the property line no more than 10 feet.
2. For enlarged or replacement soft and hard structural shoreline stabilization measures, the following location and design standards are preferred in descending order:
 - a. Conduct excavation and fill activities associated with the soft or hard structural shoreline stabilization landward of the existing OHWM to the maximum extent practicable.
 - b. Where a, above, is not practicable because of overriding safety or environmental concerns, conduct necessary excavation and fill activities waterward of the existing OHWM as needed to implement a soft structural shoreline stabilization technique or to mitigate the impacts of hard structural shoreline stabilization.
3. All approved new, enlarged, repair, or replacement shoreline stabilization measures must minimize and mitigate any adverse impacts to ecological functions resulting from short-term construction activities, consistent with Section 4.2, Ecological Protection and Critical Areas and Appendix B, Critical Areas Regulations. Impact minimization techniques may include compliance with appropriate timing restrictions, use of best management practices to prevent water quality impacts related to upland or in-water work, and stabilization of exposed soils following construction.
4. All new, enlarged, or replacement hard structural shoreline stabilization measures should minimize any long-term adverse impacts to ecological functions by incorporating the following measures into the design:
 - a. Limiting the size of hard structural shoreline stabilization measures to the minimum necessary, including height, depth, and mass.
 - b. Shifting the hard structural shoreline stabilization landward and/or sloping the hard structural shoreline stabilization landward to

provide some dissipation of wave energy and increase the quality or quantity of nearshore shallow-water habitat.

c. Fish habitat components.

5. Approved new and enlarged shoreline stabilization measures shall mitigate any adverse impacts to ecological functions by incorporating the following measures at a minimum into the design if appropriate for local conditions:
 - a. Restoration of appropriate substrate conditions waterward of the OHWM, to include substrate composition and gradient. The material should be sized and placed to remain stable during a 2-year flood event.
 - b. Plant native riparian vegetation, a minimum 10 feet in width, along the shoreline frontage affected by the new or enlarged stabilization, along the water's edge. The vegetated portion of the shoreline buffer shall approved by the Shoreline Administrator.
 - c. Additional mitigation measures may be required by the Town, depending on the level of impact.
6. The shoreline stabilization measure shall be designed to not significantly interfere with normal surface and/or subsurface drainage into the adjacent waterbody.
7. The shoreline stabilization measure shall be designed to ensure that it does not restrict appropriate public access to the shoreline. Access measures should not extend farther waterward than the face of the shoreline stabilization measure and the OHWM.
8. Shoreline stabilization measures shall not extend waterward more than the minimum amount necessary to achieve effective stabilization, except for those elements that enhance shoreline ecological functions and minimize impacts.
9. If repair or replacement of shoreline stabilization measures intended to improve ecological functions shift the OHWM landward of the pre-modification location and result in expansion of the shoreline jurisdiction on any property other than the subject property, the plan shall not be approved until the applicant submits a copy of a statement signed by the property owners of all affected properties, in a form approved by the Town and

recorded with Pierce County, consenting to the shoreline jurisdiction creation and/or increase on such property.

G. Specific Hard Structural Shoreline Stabilization Design Standards. In those limited instances when hard structural shoreline stabilization measures, such as concrete or riprap, are demonstrated to be necessary as outlined in H.1 below, the following standards shall be incorporated into the design:

1. In those limited cases when hard structural shoreline stabilization is approved on a site where hard structural shoreline stabilization is not located on adjacent properties, the construction of hard structural shoreline stabilization shall tie in with the existing contours of the adjoining properties, as feasible, such that the proposed stabilization would not cause erosion of the adjoining properties.
2. When hard structural shoreline stabilization measures are proved to be necessary, the stabilization structure shall:
 - a. Tie into existing contours of the adjacent parcel; or
 - b. Tie into the existing adjacent stabilization structures.

At no time shall the above options permit the placement of fill below the ordinary high water mark, or create new uplands.

3. Fill behind hard structural shoreline stabilization shall be limited to the minimum amount necessary and should not exceed one (1) cubic yard per running foot of stabilization.
4. All structures should include fish habitat elements.

H. Specific Soft Structural Shoreline Stabilization Design Standards. In addition to applicable general design standards and hard structural shoreline stabilization standards above, the following standards shall be incorporated into the design:

1. The soft shoreline stabilization design shall provide sufficient protection of adjacent properties by:
 - a. Tying into the existing contours of the adjacent parcel; or
 - b. Tying into the existing adjacent stabilization structures.

At no time shall the above options permit the placement of fill below the ordinary high water mark, or create new uplands. A maximum of 10 feet of hard structural measures may be utilized to tie into adjacent structures. .

2. The soft shoreline stabilization design shall size and arrange any gravels, cobbles, logs, and boulders so that the project remains stable during a 2-year flood event.

I. **Submittal Requirements.** In addition to submitting an application for the appropriate shoreline permit, the applicant shall submit the following as part of a request to construct a new, enlarged, or replacement shoreline stabilization measure:

1. For a new or enlarged hard or soft structural shoreline stabilization measure, a geotechnical report prepared by a qualified professional with an engineering degree (see subsection 2 below for replacement structures). The report shall include the following:
 - a. An assessment of the necessity for structural shoreline stabilization by estimating time frames and rates of erosion and reporting on the urgency associated with the specific situation. New hard structural shoreline stabilization measures shall not be authorized, except when a report confirms that there is a significant possibility that an existing structure will be damaged within three (3) years as a result of shoreline erosion in the absence of such hard structural shoreline stabilization measures, or where waiting until the need is immediate results in the loss of opportunity to use measures that would avoid impacts on ecological functions. Where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.
 - b. An assessment of the cause of erosion, looking at processes occurring both waterward and landward of the OHWM.
 - c. An assessment of alternative measures to shoreline stabilization, including:
 - (1) Placing the development farther from the OHWM
 - (2) Correcting any on-site groundwater or drainage issues that may be causing shoreline erosion.
 - (3) Planting vegetation.
 - d. Where structural shoreline stabilization is determined to be necessary, the assessment must evaluate the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization

measures. Soft shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.

- e. Design recommendations for minimum sizing of hard structural or soft structural shoreline stabilization materials, including gravel and cobble beach substrates necessary to dissipate wave energy, eliminate scour, and provide long-term shoreline stability.
2. For replacements of existing hard structural shoreline stabilization measures with a similar measure, the applicant shall submit a written narrative providing a demonstration of need. The narrative must be prepared by a qualified professional. The demonstration of need shall consist of the following:
- a. An assessment of the necessity for continued structural shoreline stabilization, considering site-specific conditions such as water depth, orientation of the shoreline, wave fetch or flow velocities, and location of the nearest primary structure.
 - b. An assessment of erosion potential resulting from the action of waves or other natural processes operating at or waterward of the OHWM in the absence of the hard structural shoreline stabilization.
 - c. An assessment of alternative measures to shoreline stabilization, including:
 - (1) Relocating the development farther from the OHWM.
 - (2) Correcting any on-site groundwater or drainage issues that may be causing shoreline erosion.
 - d. An assessment of the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization measures. Soft structural shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.
 - e. Design recommendations for minimizing impacts of any necessary hard structural shoreline stabilization.
3. A demonstration of need may be waived when an existing hard structural shoreline stabilization measure is proposed to be repaired or replaced using soft structural shoreline stabilization measures, resulting in significant restoration of shoreline ecological functions or processes.

4. For all structural shoreline stabilization measures, including soft structural shoreline stabilization, detailed construction plans, including, but not limited to, the following:
 - a. Plan and cross-section views of the existing and proposed shoreline configuration, showing accurate existing and proposed topography and OHWMs.
 - b. Detailed construction sequence and specifications for all materials, including gravels, cobbles, boulders, logs, and vegetation. The sizing and placement of all materials shall be selected to accomplish the following objectives:
 - (1) Protect the primary structures from erosion and other damage over the long term, and accommodate the normal amount of alteration from erosion;
 - (2) Allow safe passage and migration of fish and wildlife; and
 - (3) Minimize or eliminate juvenile salmon predator habitat.

5.11 Signage

5.11.1 Policies

- A. Signs should be designed and placed so that they are compatible with the aesthetic quality of the existing shoreline and adjacent land and water uses.
- B. Signs should not block or otherwise interfere with visual access to the water or shorelands.

5.11.2 Regulations

- A. Sign Size, Location, and Lighting Standards:
 1. Prohibited Signs: The following types of signs are prohibited:
 - a. Off-premises detached outdoor advertising signs.
 - b. Commercial signs for products, services, or facilities located off-site.
 - c. Any signs or other devices which flash, blink, flutter, rotate, oscillate, or otherwise purposely fluctuate in lighting or position, in order to attract attention through their distractive character. Highway and

railroad signs are exceptions, as are pennants, banners, and other devices of seasonal, holiday, or special event character which may be utilized on a temporary basis based on Town standards.

- d. Signs placed on trees or other natural features, unless the Town's Shoreline Administrator finds that these signs are necessary for public safety reasons.
 - e. Over-water signs, or signs oriented at the water are prohibited.
2. Allowable Signs: The following types of signs may be allowed in all shoreline environments:
- a. Water navigational signs, and highway and railroad signs necessary for operation, safety and direction.
 - b. Public information signs directly relating to a shoreline use or activity. Public information signs shall include public park signs, public access identification signs, critical area buffer signs, and warning signs.
 - c. Off-premise, free-standing signs for community identification, information, or directional purposes.
 - d. National, site, and institutional flags or temporary decorations customary for special holidays and similar events of a public nature.
 - e. Temporary directional signs to public or quasi-public events if removed within 10 days following the event.
3. All signs shall be located and designed to avoid interference with vistas, viewpoints, and visual access to the shoreline. No signs shall be placed in a required view corridor.
4. Lighted signs shall be hooded, shaded, or aimed so that direct light will not result in glare when viewed from surrounding properties or watercourses.
5. Signs shall meet the applicable size standards adopted by the Town.
6. Temporary or obsolete signs shall be removed within 10 days of elections, closures of business, or termination of any other function. Examples of temporary signs include: real estate signs, directions to events, political advertisements, event or holiday signs, construction signs, and signs advertising a sale or promotional event.

7. Existing signs that do not meet the policies and regulations of this section shall be removed or shall conform within two years of the adoption of this SMP.
8. The maximum area of individual sign faces shall be consistent with Town standards.
9. Signs required by law shall not be subject to limitations with respect to the number, location, and/or size, provided that they are the minimum necessary to achieve the intended purpose. Signs required by law include, but are not limited to, official or legal notices issued and posted by any public agency or court, or traffic directional or warning signs.
10. Freestanding signs authorized by this SMP are subject to the shoreline and critical area buffers and vegetation conservation standards in Section 4.5 and Appendix B. Building mounted signs are subject to shoreline buffers and other setbacks applicable to buildings. Height of wall signs shall be measured in accordance with applicable Town standards.

5.12 Transportation and Parking

5.12.1 Policies

- A. **Circulation.** Public agencies and developments should provide circulation facilities including roads, streets, alleys, pedestrian, bicycle, and public transportation facilities, consistent with federal, state, or local standards and sufficient to meet adopted levels of service.
- B. **Essential Public Facilities.** Comprehensive plans, which include SMPs, may not preclude the siting of essential public facilities, which include state or regional transportation facilities as defined in RCW 47.06.140.
- C. **Minimize Land Consumption.** When transportation facilities must be located along shorelines, efforts should be made to minimize the amount of land consumed.
 1. Where feasible, such transportation facilities should be sufficiently set back so that a usable shoreline area remains.
 2. Where feasible, roads and trails should not run parallel to shorelines.
- D. **Erosion and Groundwater.** Roads in shoreline areas should be designed and maintained to prevent erosion and to permit a natural movement of groundwater.
- E. **Protect Shorelands.** All construction should be designed to protect the adjacent shorelands from erosion, uncontrolled drainage, slides, pollution, and other factors

detrimental to the environment. Transportation facilities and parking facilities should be planned, located, and designed where routes will have the least possible adverse effect on unique or fragile shoreline features, will not result in a net loss of shoreline ecological functions or adversely impact existing or planned water-dependent uses.

- F. **General Maintenance and Reconstruction.** Road maintenance and reconstruction should be allowed in accordance with best management practices adopted by the Town and the State of Washington Department of Transportation.
- G. **Trails.** Multi-purpose trails should be encouraged in shoreline jurisdiction consistent with public access policies and regulations in Section 4.4.
- H. **Appropriate Bridges and Culverts.** Road design for stream crossings should consider appropriate bridge and culvert designs based on federal, state, or local standards, for example, Washington Department of Fish and Wildlife's 2003 Design of Road Culverts for Fish Passage.
- I. **Coordinate Land Use and Transportation.** Because land use and transportation facilities are so highly interrelated, the plans for each should be closely coordinated and consider shoreline goals, objectives, policies, and standards.
- J. **Parking.** Parking facilities in shorelines are not a preferred use and should be allowed only as necessary to support an authorized use. Parking facilities should be located as far inland as possible from the OHWM.

5.12.2 Regulations

- A. **Roads and Railroads Limited in Shoreline Jurisdiction.** Where other options are available and feasible, new roads, road expansions or railroads shall not be built within shoreline jurisdiction.
- B. **Criteria if Roads or Railroads are Unavoidable.** When roads or road expansions are unavoidable in the shoreline jurisdiction, proposed transportation facilities shall be planned, located, and designed to achieve the following:
 - 1. minimize possible adverse effects on unique or fragile shoreline features;
 - *2. maintain no-net-loss of shoreline ecological functions and implement mitigation standards of Section 4.2, Ecological Protection and Critical Areas and Section 4.5, Vegetation Conservation and Shoreline Buffers;
 - 3. avoid adverse impacts on existing or planned water-dependent uses; and
 - 4. set back from the OHWM to the maximum feasible to allow for a usable shoreline area for vegetation conservation and planned shoreline uses unless

infeasible, standards for ADA accessibility and functionality cannot be met, or the cost is disproportionate to the cost of the proposal. For the purposes of this Section, disproportionate means the shoreline buffer requirement would add more than 20% to the total project cost.

- C. **Shoreline Crossings.** Shoreline crossings and culverts shall be designed to minimize impact to riparian and aquatic habitat and shall allow for fish passage. Crossings shall occur as near to perpendicular with the waterbody as possible, unless an alternate path would minimize disturbance of native vegetation or result in avoidance of other critical areas such as wetlands.
- D. **Construction Standards.** Construction standards of the appropriate governmental agency, together with SMP standards, shall be conditions for granting shoreline permits. Seasonal work windows may be required based on federal or state requirements, or if the proposal involves crossing shorelines or altering the waterbody.
- E. **Parking Facilities.** Parking facilities in shorelines are not a preferred use and shall be allowed only as necessary to support an authorized use. Parking that does not require a shoreline location in order to carry out its functions shall:
 - 1. be sited outside of shoreline jurisdiction unless no feasible alternative location exists outside of the shoreline;
 - 2. be planted or landscaped with native vegetation to provide a visual and noise buffer for adjoining dissimilar uses or scenic areas and to provide some level of habitat function desired in shoreline areas;
 - 3. observe critical area and shoreline buffers; and
 - 4. be designed to incorporate low-impact development practices, such as pervious surfaces and rain gardens, to the extent feasible.

5.13 Utilities

5.13.1 Policies

- A. Avoid placing utilities within shoreline jurisdiction unless absolutely necessary.

5.13.2 Regulations

- A. **Design Considerations.** Utility systems are permitted provided such systems:
 - 1. avoid paralleling the shoreline or follow a down-valley course near the channel, except where located in an existing road or easement footprint; and

2. do not alter processes affecting the rate of channel migration, river hydrology or shoreline erosion.
- B. **Preference to Existing Footprints.** Preference shall be given to utility systems contained within the footprint of an existing right-of-way or utility easement over new locations for utility systems.
- C. **Underwater Utilities.** If an underwater location is necessary, the design, installation and operation shall minimize impacts to the waterway or the resident aquatic ecosystems. Seasonal work windows may be made a condition of approval. Standards of Section 5.4.2, Dredging and Dredge Material Disposal; Section 4.2, Ecological Protection and Critical Areas; Section 4.5, Vegetation Conservation and Shoreline Buffers (for any aquatic vegetation impacts); and Section 5.2, General Aquatic Shoreline Modification and Use Regulations must be met.
- D. **Nonwater-Oriented Processing and Production Facilities.** Nonwater oriented utility production and processing facilities, such as power plants and sewage treatment plants, or parts of those facilities that are nonwater-oriented, shall not be allowed in shoreline areas unless it can be demonstrated that no other feasible option is available.

6 NONCONFORMING USES AND DEVELOPMENT STANDARDS

For the purposes of this chapter, a nonconforming use, structure, or lot is defined as a non-residential shoreline use or development which was lawfully constructed or established prior to the effective date of the Act (June 1, 1971; RCW 90.58.920) or this SMP August 14, 2013, or amendments thereto, but which does not conform to present regulations or standards of the SMP.

Residential structures and appurtenant structures that were legally established prior to the effective date of the Act or this SMP and that are used for a conforming use shall be considered legally conforming and are not subject to the provisions of this chapter. For the purposes of this chapter, 'appurtenant structures' shall mean garages, sheds, and other legally established structures. 'Appurtenant structures' shall not include bulkheads and other shoreline modifications or over-water structures.

6.1 Nonconforming Structures, Uses, Lots: Policies

The following policies on nonconforming structures, uses, and lots are intended to guide the application of Town standards:

- A. Nonconforming existing legal uses and structures may continue according to Town standards.
- B. Transitions from nonconforming uses to conforming uses should be encouraged.
- C. Owners of nonconforming structures that wish to expand the structure may be able to do so if they do not increase the nonconformity according to Town standards.
- D. The SMP no-net-loss of ecological function objective should guide review of proposed expansions or other changes to nonconforming uses and new development on nonconforming vacant lots. This objective may be addressed in an area wide manner consistent with the SMP cumulative impacts analysis.
- E. The Town should consider balancing historic character of the community with conformity to SMP rules when considering changes to nonconforming uses, structures, and lots.

6.2 Nonconforming Structures, Uses, Lots: Standards

6.2.1 Nonconforming Structures, Uses, and Lots: General Provisions

- A. Section 6.2 is not intended to encourage the continuance of nonconforming structures, uses, and lots.
- B. Structures, uses, and lots rendered nonconforming by the adoption of the SMP may be continued and maintained in reasonable repair, subject to the conditions of Section 6.2.
- C. For the purpose of Section 6.2, remodeling, alterations, or repairs to a nonconforming structure means work that does not exceed eighty percent (80%) of the latest County assessed or appraised value by a state certified/licensed real estate appraiser of the building or structure before the improvements are started.

6.2.2 Nonconforming Lots of Record

- A. In any shoreline use environment, any stated permitted use or structure and accessory use may be erected on pre-existing legal lot of record which does not meet the minimum lot size or width requirements of the use environment or zoning district in which it is located.
- B. Setback dimensions and all other applicable Town and state requirements not involving lot size or width shall conform to the regulations for the use environment and zoning district in which the lot is situated.

6.2.3 Discontinuance of Nonconforming Use

- A. If a nonconforming use has been discontinued or vacated for a period of twelve consecutive months or greater, the legal nonconforming status is terminated, and any future use of the land or structures shall be in conformity with the provisions of the use environment and zoning district in which it is located.

6.2.4 Destruction and Restoration

- A. If a nonconforming structure/use is damaged or destroyed by accident, act of nature, or public enemy, it may be permitted to be rebuilt equal to the square footage, and within the same footprint of the damaged or destroyed structures(s), and for the same use, provided that the proposal is in accordance with all other applicable Town standards.
- B. The structure may be rebuilt in the same location or at a different location on the site if the new structure meets the current minimum shoreline buffer distance at that different location.
- C. A building permit application must be submitted to the Town of Wilkeson within one year after the structure(s) has been destroyed. If a building permit application is

not submitted within one year, all future structures shall be required to be in conformity with this SMP and all current Town standards.

6.2.5 Maintenance

- A. A nonconforming structure may be physically maintained and repaired as needed to ensure public safety. All maintenance shall conform to all current development standards and building codes.

6.2.6 Expansion

- A. Any expansion shall not increase the existing nonconformity. No expansion shall encroach on shoreline buffers or critical areas, unless allowed by the SMP. All expansion shall conform to current Town development standards and building codes.

6.2.7 Completion of a Building/Structure/Activity

- A. Nothing contained in Section 6.2 shall require any change in plans, construction, alterations, or designated uses of a building/structure specified in a complete application for a development permit submitted prior to the adoption of the SMP or its amendment. Improvements and uses authorized by a recorded motion or resolution of the Town, or any permit issued by the Town prior to the effective date of the SMP may be developed as set forth in the permit. If the permit becomes invalid prior to development of improvements or uses, the provisions of this SMP shall be in effect on the subject property.

7 SHORELINE PERMITS, PROCEDURES AND ADMINISTRATION

7.1 Roles and Responsibilities

The Town of Wilkeson (Town) shall administer this Shoreline Master Program (SMP) according to the following roles and responsibilities.

7.1.1 Shoreline Administrator

The Shoreline Administrator has overall administrative responsibility of this SMP. The Shoreline Administrator, or his or her designee, shall make administrative decisions and interpretations of the policies and regulations of this SMP and the Shoreline Management Act (Act).

The Shoreline Administrator is hereby vested with the authority to:

- A. Administrate this SMP.
- B. Grant or deny exemptions from Shoreline Substantial Development Permit requirements of this SMP per Section 7.6.3.
- C. Authorize, approve, or deny Shoreline Substantial Development Permits, except for those for which the hearing examiner or local government legislative authority is the designated decision maker. The Shoreline Administrator shall also have the authority to grant or deny Shoreline Substantial Development Permits, time extensions to shoreline permits, revisions, Shoreline Variances, and Shoreline Conditional Use Permits under this SMP.
- D. Make field inspections as needed, and prepare or require reports on shoreline permit applications.
- E. Make written recommendations to the Wilkeson Planning Commission and/or Town Council.
- F. Advise interested persons and prospective applicants as to the administrative procedures and related components of this SMP.
- G. Collect fees for all necessary permits as provided in Town ordinances or resolutions. The determination of which fees are required shall be made by the Town.
- H. Make administrative decisions and interpretations of the policies and regulations of this SMP and the Shoreline Management Act (Act).

7.1.2 State Environmental Policy Act (SEPA) Responsible Official

The SEPA Responsible Official or his or her designee is authorized to conduct environmental review of all use and development activities subject to this SMP, pursuant to WAC 197-11 and RCW 43.21C.

7.1.3 Wilkeson Planning Commission

A. The Wilkeson Planning Commission (Planning Commission) is vested with the responsibility to review the SMP as part of regular SMP updates required by RCW 90.58.080 as a major element of the Town's planning and regulatory program, and make recommendations for amendments thereof to the Wilkeson Town Council.

7.1.4 Wilkeson Town Council

The Wilkeson Town Council (Town Council) is vested with authority to:

- A. Initiate an amendment to this SMP according to the procedures prescribed in WAC 173-26-100.
- B. Adopt all amendments to this SMP, after consideration of the recommendation of the Planning Commission. Substantive amendments are subject to approval by Ecology; Effective 14 days from the date of final approval.

7.2 Interpretation

The Shoreline Administrator shall provide administrative interpretations in accordance with the Act, the Shoreline Master Program Guidelines, and with the Wilkeson Unified Development Ordinance.

The Town shall consult with the Washington State Department of Ecology (Ecology) as needed to ensure that any formal written interpretations are consistent with the purpose and intent of chapter 90.58 RCW and 173-26 WAC.

7.3 Statutory Noticing Requirements

The Town shall provide notice in accordance with WAC 173-27-110, and may provide for additional noticing requirements. Per WAC 173-27-120 the Town shall comply with special procedures (public notice timelines, appeal periods, etc.) for limited utility extensions and bulkheads.

7.4 Application Requirements

- A. A complete application for a Shoreline Substantial Development, Shoreline Conditional Use, or Shoreline Variance Permit shall contain, at a minimum, the information listed in WAC 173-27-180. In addition, the applicant shall provide any materials required by relevant sections of this SMP and the following materials:

1. Each applicant shall provide an assessment of the existing ecological functions and/or processes provided by topographic, physical and vegetation characteristics of the site, to accompany development proposals, provided that proposals for single-family residences may be exempt from this requirement.
 2. Each site plan or division of land shall depict to scale the location of buildable areas, existing and proposed impervious surfaces, and allowed landscaping and yards. Plans shall show area calculations of each feature.
 3. The location of any mapped channel migration zone (see Section 4.3.2), floodplain, and/or floodway boundary on and in the vicinity of the project site. Local watershed plans shall be reviewed to identify if the parcel has been identified as a priority.
 4. Where a view analysis is required per WAC 173-27-180 due to location of nearby residential or public properties or designated scenic highways, it shall address the following:
 - a. The analysis shall include vacant existing parcels of record as well as existing structures. Vacant parcels of record shall be assumed to be developed with structures complying with the applicable regulations of the jurisdiction and the maximum height limitation allowed under the SMP.
 - b. The view corridor analysis shall include residential buildings or public properties located outside of the shoreline jurisdiction if it can be clearly demonstrated that the subject property has significant water views.
- B. With the exception of the information required by WAC 173-27-180, the Shoreline Administrator may vary or waive these requirements according to administrative application requirements on a case by case basis. The Shoreline Administrator may require additional specific information depending on the nature of the proposal and the presence of sensitive ecological features or issues related to compliance with other Town requirements, and the provisions of this SMP.

7.5 Shoreline Substantial Development Permits

7.5.1 Permit Required

A Shoreline Substantial Development Permit shall be required for all development of shorelines, unless the proposal is specifically exempt per Section 7.6.

7.5.2 Permit Review Criteria

In order for the permit to be approved, the decision maker must find that the proposal is consistent with the following criteria.

- A. Is the proposal consistent with the policies and procedures of the Act (RCW 90.58)?
- B. Is the proposal consistent with the provisions of Chapter 173-27 WAC, Shoreline Management Permit and Enforcement Procedures?
- C. Is the proposal consistent with this SMP?

7.5.3 Conditions of Approval

The Town may attach conditions to the approval of permits as necessary to assure consistency of the project with the Act and this SMP. Additionally, nothing shall interfere with the Town's ability to require compliance with all other applicable laws and plans.

7.6 Exemptions from Shoreline Substantial Development Permits

7.6.1 Compliance with Applicable Regulations Required

An exemption from the Shoreline Substantial Development Permit process is not an exemption from compliance with the Act or this SMP, or from any other regulatory requirements. To be authorized, all uses and development must be consistent with the policies, requirements and procedures of this SMP and the Act.

7.6.2 Interpretation of Exemptions

- A. Exemptions shall be construed narrowly. Only those developments that meet the precise terms of one or more of the listed exemptions may be granted exemption from the Shoreline Substantial Development Permit process.
- B. An exemption from the Shoreline Substantial Development Permit process is not an exemption from compliance with the Act or this SMP, nor from any other regulatory requirements. To be authorized, all uses and developments must be consistent with the policies and provisions of this SMP and the Act. A development or use that is listed as a conditional use pursuant to this SMP or is an unlisted use, must obtain a Shoreline Conditional Use Permit even though the development or use does not require a Shoreline Substantial Development Permit. When a development or use is proposed that does not comply with the bulk, dimensional and performance standards of this SMP, such development or use can only be authorized by approval of a Shoreline Variance.

- C. The burden of proof that a development or use is exempt from the permit process is on the applicant.
- D. If any part of a proposed development is not eligible for exemption, then a Shoreline Substantial Development Permit is required for the entire proposed development project.
- E. The Town may attach conditions to the approval of exempted developments and/or uses as necessary to assure consistency of the project with the Act and this SMP. Additionally, nothing shall interfere with the Town's ability to require compliance with all other applicable laws and plans.

7.6.3 Exemptions

Certain developments are exempt from the requirement to obtain a substantial development permit. Such developments still may require a variance or Conditional Use permit, and all development within the shoreline is subject to the requirements of this SMP, regardless of whether a substantial development permit is required.

Developments which are exempt from requirement for a substantial development permit are identified in WAC 173-27-040 or as subsequently amended and listed below.

- A. Any development of which the total cost or fair market value, whichever is higher, does not exceed \$6,416.00, if such development does not materially interfere with the normal public use of the water or shorelines of the state. The dollar threshold must be adjusted for inflation by the office of financial management every five years, beginning July 1, 2007, based upon changes in the consumer price index during that time period. "Consumer price index" means, for any calendar year, that year's annual average consumer price index, Seattle, Washington area, for urban wage earners and clerical workers, all items, compiled by the Bureau of Labor and Statistics, United States Department of Labor. The office of financial management must calculate the new dollar threshold and transmit it to the office of the code reviser for publication in the *Washington State Register* at least one month before the new dollar threshold is to take effect. For purposes of determining whether or not a permit is required, the total cost or fair market value shall be based on the value of development that is occurring on shorelines of the state as defined in RCW [90.58.030](#) (2)(c). The total cost or fair market value of the development shall include the fair market value of any donated, contributed or found labor, equipment or materials;
- B. Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition, including but not limited to its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or

environment. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including but not limited to its size, shape, configuration, location and external appearance and the replacement does not cause substantial adverse effects to shoreline resources or environment;

- C. Construction of the normal protective bulkhead common to single-family residences. A "normal protective" bulkhead includes those structural and nonstructural developments installed at or near, and parallel to, the ordinary high water mark for the sole purpose of protecting an existing single-family residence and appurtenant structures from loss or damage by erosion. A normal protective bulkhead is not exempt if constructed for the purpose of creating dry land. When a vertical or near vertical wall is being constructed or reconstructed, not more than one cubic yard of fill per one foot of wall may be used as backfill. When an existing bulkhead is being repaired by construction of a vertical wall fronting the existing wall, it shall be constructed no further waterward of the existing bulkhead than is necessary for construction of new footings. When a bulkhead has deteriorated such that an ordinary high water mark has been established by the presence and action of water landward of the bulkhead then the replacement bulkhead must be located at or near the actual ordinary high water mark. Beach nourishment and bioengineered erosion control projects may be considered a normal protective bulkhead when any structural elements are consistent with the above requirements and when the project has been approved by the department of fish and wildlife.
- D. Emergency construction necessary to protect property from damage by the elements. An "emergency" is an unanticipated and imminent threat to public health, safety, or the environment which requires immediate action within a time too short to allow full compliance with this chapter. Emergency construction does not include development of new permanent protective structures where none previously existed. Where new protective structures are deemed by the administrator to be the appropriate means to address the emergency situation, upon abatement of the emergency situation the new structure shall be removed or any permit which would have been required, absent an emergency, pursuant to chapter [90.58](#) RCW, these regulations, or the local master program, obtained. All emergency construction shall be consistent with the policies of chapter [90.58](#) RCW and the local master program. As a general matter, flooding or other seasonal events that can be anticipated and may occur but that are not imminent are not an emergency;
- E. Construction and practices normal or necessary for farming, irrigation, and ranching activities, including agricultural service roads and utilities on shorelands, construction of a barn or similar agricultural structure, and the construction and maintenance of irrigation structures including but not limited to head gates,

pumping facilities, and irrigation channels: Provided, That a feedlot of any size, all processing plants, other activities of a commercial nature, alteration of the contour of the shorelands by leveling or filling other than that which results from normal cultivation, shall not be considered normal or necessary farming or ranching activities. A feedlot shall be an enclosure or facility used or capable of being used for feeding livestock hay, grain, silage, or other livestock feed, but shall not include land for growing crops or vegetation for livestock feeding and/or grazing, nor shall it include normal livestock wintering operations;

- F. Construction on shorelands by an owner, lessee or contract purchaser of a single-family residence for their own use or for the use of their family, which residence does not exceed a height of thirty-five feet above average grade level and which meets all requirements of the state agency or local government having jurisdiction thereof, other than requirements imposed pursuant to chapter [90.58](#) RCW. "Single-family residence" means a detached dwelling designed for and occupied by one family including those structures and developments within a contiguous ownership which are a normal appurtenance. An "appurtenance" is necessarily connected to the use and enjoyment of a single-family residence and is located landward of the ordinary high water mark and the perimeter of a wetland. On a statewide basis, normal appurtenances include a garage; deck; driveway; utilities; fences; installation of a septic tank and drainfield and grading which does not exceed two hundred fifty cubic yards and which does not involve placement of fill in any wetland or waterward of the ordinary high water mark. Local circumstances may dictate additional interpretations of normal appurtenances which shall be set forth and regulated within the applicable master program. Construction authorized under this exemption shall be located landward of the ordinary high water mark;
- G. Operation, maintenance, or construction of canals, waterways, drains, reservoirs, or other facilities that now exist or are hereafter created or developed as a part of an irrigation system for the primary purpose of making use of system waters, including return flow and artificially stored groundwater from the irrigation of lands;
- H. The marking of property lines or corners on state-owned lands, when such marking does not significantly interfere with normal public use of the surface of the water;
- I. Operation and maintenance of any system of dikes, ditches, drains, or other facilities existing on September 8, 1975, which were created, developed or utilized primarily as a part of an agricultural drainage or diking system;
- J. Any project with a certification from the governor pursuant to chapter [80.50](#) RCW;
- K. Site exploration and investigation activities that are prerequisite to preparation of an application for development authorization under this chapter.

7.6.4 Letters of Exemption – Required

Letters of exemption shall be issued by the Town when an exemption per Section 7.6.2 applies or is required by the provisions of WAC 173-27-050.

7.7 Shoreline Conditional Use Permits

7.7.1 Determinations of Conditional Use Permits

- A. Uses specifically classified or set forth in this Shoreline Master Program as conditional uses shall be subject to review and condition by the Planning Commission and/or Town Council and by Department of Ecology.
- B. Other uses which are not classified or listed or set forth in this SMP may be authorized as conditional uses provided the applicant can demonstrate consistency with the requirements of this Section and the requirements for conditional uses contained in this SMP.
- C. Uses which are specifically prohibited by this SMP may not be authorized as a conditional use.

7.7.2 Review Criteria

- A. An applicant proposing a conditional use shall demonstrate compliance with review criteria below or as thereafter amended in WAC 173-27-160.
 - 1. Is the proposed use consistent with the policies of RCW 90.58.020 and this SMP?
 - 2. Will the proposed use interfere with the normal public use of public shorelines?
 - 3. Will the proposed use of the site and design of the project be compatible with other authorized uses within the area and with uses planned for the area under the comprehensive plan and this SMP?
 - 4. Will the proposed use cause no significant adverse effects to the shoreline environment in which it is to be located?
 - 5. Will the public interest suffer no substantial detrimental effect?
- B. Applicants proposing to exceed maximum height limits shall also comply with the following criteria:
 - 1. Does the building or structure impact a substantial number of residences? Are the residences involved on or in an area adjoining the project area? Does

the building or structure exceed 35 feet in height? Is there an obstruction of view?

2. Has the applicant demonstrated through photographs, videos, photo-based simulations, or computer-generated simulations that the proposed development will obstruct less than 30% of the view of the shoreline enjoyed by a substantial number of residences or from public properties on areas adjoining such shorelines?
 3. Has the applicant located and oriented structures on the subject property in a manner that diminishes the potential view impact? For example, side yard setbacks may need to be increased. No side yard setbacks shall be reduced to accommodate the proposed structure.
 4. Has the applicant demonstrated extraordinary circumstances?
 5. To address “overriding considerations of the public”, has the applicant prepared a cumulative impacts analysis that documents the public benefits served by issuance of a Conditional Use Permit?
- C. In the granting of all Conditional Use Permits, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example, if Conditional Use Permits were granted for other developments in the area where similar circumstances exist, the total of the conditional uses shall also remain consistent with the policies of RCW 90.58.020 and shall not produce substantial adverse effects to the shoreline environment.
- D. The applicant shall prepare a cumulative impact analysis documenting other properties or uses on the same waterbody that are similarly situated and could request a similar conditional use permit. The Town shall determine whether the additional potential for conditional use permits will produce substantial adverse effects to the shoreline environment considering the characteristics of the proposed use, the ability to achieve no-net-loss of ecological function principles, and capability of accommodating preferred shoreline uses in the future if the conditional use and cumulative potential requests occur.
- E. For requests to exceed maximum heights, the analysis shall address such considerations as cumulative view obstruction results of height adjustments (within a 1,000-foot radius) of the proposed development combined with those of other developments that exceed the 35-foot height limitation, environmental benefits (enhancement or restoration), public access/open space benefits, and economic benefits. The cumulative impact analysis shall address overall views that are lost, compromised, and/or retained; available view corridors; and surface water views lost, compromised, and/or retained.

7.7.3 Conditions of Approval

In authorizing a conditional use, special conditions may be attached to the permit by the Town or Ecology to prevent undesirable effects of the proposed use and/or to assure consistency of the project with the Act and this SMP. Additionally, nothing shall interfere with each local government's ability to require compliance with all other applicable laws and plans. Mitigation for impacts to ecological function resulting from a variance will be required.

7.8 Shoreline Variance Permits

7.8.1 Purpose

The purpose of a variance is to grant relief to specific bulk or dimensional requirements set forth in this Shoreline Master Program where there are extraordinary or unique circumstances relating to the property such that the strict implementation of this Shoreline Master Program would impose unnecessary hardships on the applicant or thwart the policies set forth in RCW 90.58.020. Variances from the use regulations of the SMP are prohibited.

7.8.2 Review Criteria

Shoreline Variances may be authorized, provided the applicant can demonstrate compliance with the following criteria or as thereafter amended in WAC 173-27-170.

- A. Shoreline Variance permits should be granted in circumstances where denial of the permit would result in a thwarting of the policy enumerated in RCW 90.58.020. In all instances the applicant must demonstrate that extraordinary circumstances exist and the public interest shall suffer no substantial detrimental effect.
- B. Shoreline Variance permits for development and/or uses that will be located landward of the OHWM, as defined in RCW 90.58.030 (2)(b), and/or landward of any wetland as defined in RCW 90.58.030 (2)(h), may be authorized provided the applicant demonstrates all of the following:
 - 1. Would the strict application of the bulk, dimensional or performance standards set forth in this SMP preclude or significantly interfere with reasonable use of the property?
 - 2. Is the hardship described in B.1 of this subsection specifically related to the property, and is the hardship the result of unique conditions such as irregular lot shape, size, or natural features and the application of this SMP, and not, for example, from deed restrictions or the applicant's own actions?
 - 3. Is the design of the project compatible with other authorized uses within the area and with uses planned for the area under the comprehensive plan and

shoreline master program and will the project design not cause adverse impacts to the shoreline environment?

4. Will the variance constitute a grant of special privilege not enjoyed by the other properties in the area?
5. Is the variance requested the minimum necessary to afford relief?
6. Will the public interest suffer no substantial detrimental effect?

C. Shoreline Variance permits for development and/or uses that will be located waterward of the OHWM, as defined in RCW 90.58.030 (2)(b), or within any wetland as defined in RCW 90.58.030 (2)(h), may be authorized provided the applicant demonstrates all of the following:

1. Would the strict application of the bulk, dimensional or performance standards set forth in this SMP preclude all reasonable use of the property?
2. Is the proposal consistent with the criteria established under subsection 7.8.2.B.2 through B.6 of this section?
3. Will the public rights of navigation and use of the shorelines not be adversely affected?

D. In the granting of all Shoreline Variance permits, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example if variances were granted to other developments and/or uses in the area where similar circumstances exist, the total of the variances shall also remain consistent with the policies of RCW 90.58.020 and shall not cause substantial adverse effects to the shoreline environment. The applicant shall prepare a cumulative impact analysis documenting other properties or uses on the same waterbody that are similarly situated and could request a similar variance. The Town shall determine whether the additional potential for variances will produce substantial adverse effects to the shoreline environment considering the characteristics of the proposed variance request, the ability to achieve no-net-loss of ecological function principles, and capability of accommodating preferred shoreline uses in the future if the variance and cumulative potential requests occur.

E. Variances from the use regulations of this SMP are prohibited.

7.8.3 Conditions of Approval

In authorizing a variance, special conditions may be attached to the Variance permit by Town or Ecology to prevent undesirable effects of the proposed use and/or to assure consistency of the project with the Act and this SMP. Additionally, nothing shall

interfere with the Town's ability to require compliance with all other applicable laws and plans.

7.9 Permit Conditions

In granting, revising, or extending a shoreline permit, the Town may attach such conditions, modifications, or restrictions thereto regarding the location, character, and other elements of the proposed development deemed necessary to assure that the development will be consistent with the policy and provisions of the Act and this SMP, as well as the supplemental authority provided in RCW 43.21C, as applicable. In cases involving unusual circumstances or uncertain effects, a condition may be imposed to require monitoring with future review or re-evaluation to assure conformance with the Act and this SMP. If the monitoring plan is not implemented, the permittee may be found to be noncompliant and the permit may be rescinded.

7.10 Duration of Permits

Time duration requirements for Shoreline Substantial Development, Shoreline Variance, and Shoreline Conditional Use Permits shall be consistent with the following provisions.

- A. The time requirements of this section shall apply to all Shoreline Substantial Development Permits and to any development authorized pursuant to a Shoreline Variance or Shoreline Conditional Use Permit authorized by this Chapter. Upon a finding of good cause, based on the requirements and circumstances of the project proposed and consistent with the policy and provisions of this SMP and this chapter, the Town may adopt different time limits from those set forth in Subsections 7.10.B and C of this section as a part of action on a Shoreline Substantial Development Permit.
- B. Construction activities shall be commenced or, where no construction activities are involved, the use or activity shall be commenced within two years of the effective date of a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance. However, local government may authorize a single extension for a period not to exceed one year based on reasonable factors, if a written request for extension has been filed with a complete extension application submittal before the expiration date and notice of the proposed extension is given to parties of record on the Shoreline Substantial Development Permit and to Ecology.
- C. Authorization to conduct development activities shall terminate five years after the effective date of a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance. However, local government may authorize a single extension for a period not to exceed one year based on reasonable factors, if a written request for extension has been filed before the expiration date and notice of the proposed extension is given to parties of record on the Shoreline Substantial

Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance, and to Ecology.

- D. The effective date of a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance shall be the date of filing with Ecology as provided in RCW 90.58.140(6). The permit time periods in subsections B and C of this section do not include the time during which a use or activity was not actually pursued due to the pendency of administrative appeals or legal actions or due to the need to obtain any other government permits and approvals for the development that authorize the development to proceed, including all reasonably related administrative or legal actions on any such permits or approvals. The applicant shall be responsible for informing the Town of the pendency of other permit applications filed with agencies other than the Town and of any related administrative and legal actions on any permit or approval. If no notice of the pendency of other permits or approvals is given by the applicant to the Town prior to the date of the last action by the Town to grant permits and approvals necessary to authorize the development to proceed, including administrative and legal actions of the Town, and actions under other Town development regulations, the date of the last action by the Town shall be the effective date.
- E. Revisions to permits under Section 7.14 may be authorized after original permit authorization has expired, provided that this procedure shall not be used to extend the original permit time requirements or to authorize substantial development after the time limits of the original permit.
- F. The Town shall notify Ecology in writing of any change to the effective date of a permit, as authorized by this section, with an explanation of the basis for approval of the change. Any change to the time limits of a permit other than those authorized by RCW 90.58.143 as amended shall require a new permit application.

7.11 Initiation of Development

- A. Each permit for a Substantial Development, Shoreline Conditional Use or Shoreline Variance, issued by local government shall contain a provision that construction pursuant to the permit shall not begin and is not authorized until twenty-one (21) days from the date of filing with Ecology as defined in RCW 90.58.140(6) and WAC 173-27-130, or until all review proceedings initiated within twenty-one (21) from the date of receipt of the decision, except as provided in RCW 90.58.140 (5)(a) and (b). The date of receipt for a Substantial Development Permit means that date the applicant receives written notice from Ecology that it has received the decision. With regard to a permit for a Shoreline Variance or a Shoreline Conditional Use, date of receipt means the date a Town or applicant receives the written decision of Ecology.

- B. Permits for Substantial Development, Shoreline Conditional use, or Shoreline Variance may be in any form prescribed and used by the Town including a combined permit application form. Such forms will be supplied by the Town.
- C. A permit data sheet shall be submitted to Ecology with each shoreline permit. The permit data sheet form shall be consistent with WAC 173-27-990.

7.12 Review Process

- A. The application shall be reviewed by the Town.
- B. After a Shoreline Conditional Use or Shoreline Variance application has been approved by the Town, Ecology shall review the permit and make its final decision, in accordance with WAC 173-27-200.

7.13 Appeals to Shorelines Hearings Board

Appeals to the Shoreline Hearings Board of a decision on a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, Shoreline Variance, or a decision on an appeal of an administrative action, may be filed by the applicant or any aggrieved party pursuant to RCW 90.58.180 within twenty-one (21) days of filing the final decision by the Town with Ecology.

7.14 Amendments to Permits

7.14.1 Revision – When Required

A permit revision is required whenever the applicant proposes substantive changes to the design, terms or conditions of a project from that which is approved in the permit. Changes are substantive if they materially alter the project in a manner that relates to its conformance to the terms and conditions of the permit, this SMP, and/or the policies and provisions of chapter 90.58 RCW. Changes which are not substantive in effect do not require approval of a revision.

When an applicant seeks to revise a permit, local government shall request from the applicant detailed plans and text describing the proposed changes. Proposed changes must be within the scope and intent of the original permit, otherwise a new permit may be required, pursuant to Section 7.14.2.

7.14.2 Determination of Scope and Intent

- A. If the Town determines that the proposed changes are within the scope and intent of the original permit, and are consistent with this SMP and the Act, the Town may approve a revision. "Within the scope and intent of the original permit" means all of the following:

1. Ground area coverage and height may be increased a maximum of ten percent (10%) from the provisions of the original permit;
 2. The revised permit does not authorize development to exceed height, lot coverage, setback, or any other requirements of this SMP except as authorized under a Shoreline Variance granted as the original permit or a part thereof;
 3. Additional or revised landscaping is consistent with any conditions attached to the original permit and with this SMP;
 4. The use authorized pursuant to the original permit is not changed; and
 5. No adverse environmental impact, including disturbance of existing vegetation or natural drainages, will be caused by the project revision.
- B. If the sum of the revision and any previously approved revisions are not within the scope and intent of the original permit, the Town shall require that the applicant apply for a new permit.

7.14.3 Timing of Revision Authorization

Revisions to permits may be authorized after original permit authorization has expired under RCW 90.58.143. The purpose of such revisions shall be limited to authorization of changes which are consistent with WAC 173-27-100 and which would not require a permit for the development or change proposed under the terms of chapter 90.58 RCW and this SMP. If the proposed change constitutes substantial development then a new permit is required. Provided, this subsection shall not be used to extend the time requirements or to authorize substantial development beyond the time limits of the original permit.

7.14.4 Filing of Revision

- A. The revision approval, including the revised site plans and text consistent with the provisions of Section 7.4 and 7.14 as necessary to clearly indicate the authorized changes, and the final ruling on consistency with this section shall be filed with Ecology. In addition, the Town shall notify parties of record of their action.
- B. If the revision to the original permit involves a Shoreline Conditional Use Permit or Shoreline Variance, local government shall submit the revision to Ecology for Ecology's approval, approval with conditions, or denial, and shall indicate that the revision is being submitted under the requirements of this subsection. Ecology shall render and transmit to the Town and the applicant its final decision within fifteen (15) days of the date of Ecology's receipt of the submittal from local government. The Town shall notify parties of record of Ecology's final decision.

7.14.5 Effective Date of Revised Permit

- A. The revised permit is effective immediately upon final decision by local government or, when appropriate under Subsection 7.14.4 of this section, upon final action by Ecology.

7.14.6 Appeal of Revised Permit

- A. Appeals of revised permit shall be in accordance with RCW 90.58.180 and shall be filed within twenty-one (21) days from the date of receipt of the Town's action by Ecology or, when appropriate under Subsection 6.7.3.B, the date Ecology's final decision is transmitted to the Town and the applicant.
- B. Appeals shall be based only upon contentions of noncompliance with the provisions of Subsection 7.14.1.
- C. Construction undertaken pursuant to that portion of a revised permit not authorized under the original permit is at the applicant's own risk until the expiration of the appeals deadline.
- D. If an appeal is successful in proving that a revision is not within the scope and intent of the original permit, the decision shall have no bearing on the original permit.

8 DEFINITIONS

A

ACCESSORY. Any use or development incidental to and subordinate to a primary use of a shoreline use or development. The terms accessory and appurtenant are synonymous. See also APPURTENANCE, RESIDENTIAL.

ACT. The Washington State Shoreline Management Act, chapter 90.58 RCW. ((WAC 173-26-020(1))

ADEQUATE. Sufficient to satisfy an adopted requirement. If the Town does not have an adopted requirement, adequate means to meet a need or demand generated by the proposed shoreline development or use as determined by the authority responsible to determine compliance with the Shoreline Master Program per Chapter 7.

ADVERSE IMPACT. An impact that can be measured or is tangible and has a reasonable likelihood of causing moderate or greater harm to ecological functions or processes or other elements of the shoreline environment.

AGRICULTURAL ACTIVITIES. Agricultural uses and practices including, but not limited to: producing, breeding, or increasing agricultural products; rotating and changing agricultural crops; allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded; allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions; allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities; and maintaining agricultural lands under production or cultivation.

ALTERATION. Any human induced change in an existing condition of a shoreline, critical area and/or its buffer. Alterations include, but are not limited to grading, filling, channelizing, dredging, clearing (vegetation), draining, construction, compaction, excavation, or any other activity that changes the character of the area.

AMENDMENT. A revision, update, addition, deletion, and/or reenactment to an existing shoreline master program.

ANADROMOUS FISH. Fish species that spend most of their lifecycle in saltwater, but return to freshwater to reproduce.

APPLICABLE. The shoreline goal, objective, policy, or standard is relevant or appropriate, or the shoreline development meets the threshold upon which a requirement is based as determined by the authority responsible to determine compliance with the Shoreline Master Program per Chapter 7.

APPROVAL. An official action by a local government legislative body agreeing to submit a proposed shoreline master program or amendments to the department for review and official action pursuant to this chapter; or an official action by the department to make a local government shoreline master program effective, thereby incorporating the approved shoreline master program or amendment into the state master program.

APPURTENANCE, RESIDENTIAL. Improvement necessarily connected to the use and enjoyment of a single-family residence when located landward of the OHWM, the perimeter of a wetland and outside their corresponding required buffers. Appurtenances may include, but are not limited to, a garage and/or shop; driveway; utilities; water craft storage (upland); swimming pools; hot tubs; sport courts; shoreline stabilization (consistent with WAC 173-27-030(c)); retaining walls; fences; yards; saunas; cabanas; antennas; decks; walkways; and installation of a septic tank and drainfield and grading which does not exceed two hundred fifty cubic yards and which does not involve placement of fill in any wetland or waterward of the OHWM.

AQUATIC. Pertaining to those areas waterward of the OHWM.

AQUACULTURE. The cultivation of fish, shellfish, and/or other aquatic animals or plants, including the incidental preparation of these products for human use.

ARCHAEOLOGICAL OBJECT means an object that comprises the physical evidence of an indigenous and subsequent culture including material remains of past human life including monuments, symbols, tools, facilities, graves, skeletal remains and technological by-products.

ARCHAEOLOGICAL RESOURCE/SITE means a geographic locality in Washington, including, but not limited to, submerged and submersible lands and the bed of the sea within the state's jurisdiction, that contains archaeological objects.

ARCHAEOLOGICAL. Having to do with the scientific study of material remains of past human life and activities.

ARCHAEOLOGIST, PROFESSIONAL. A person who meet qualification standards promulgated by DAHP and the National Park Service and published in 36 CFR Part 61 and which define minimum education and experience required to perform identification, evaluation, registration and treatment activities for archaeological sites.

In some cases, additional areas or levels of expertise may be needed, depending on the complexity of the task and the nature of the properties involved.

ASSOCIATED WETLANDS. Wetlands that are in proximity to tidal waters, lakes, rivers or streams that are subject to the Act and either influence or are influenced by such waters. Factors used to determine proximity and influence include, but are not limited to: location contiguous to a shoreline waterbody, formation by tidally influenced geo-hydraulic processes, presence of a surface connection including through a culvert or tide gate, location in part or whole within the floodplain of a shoreline, periodic inundation, and/or hydraulic continuity.

AUTHORIZED USE. Any use allowed in shoreline jurisdiction either by appropriate shoreline permit or exemption.

AVERAGE GRADE LEVEL. The average of the natural or existing topography of the portion of the lot, parcel, or tract of real property which will be directly under the proposed building or structure: In the case of structures to be built over water, average grade level shall be the elevation of the ordinary high water mark. Calculation of the average grade level shall be made by averaging the ground elevations at the midpoint of all exterior walls of the proposed building or structure.”

B

BERM. A linear mound or series of mounds of sand and/or gravel generally paralleling the water at or landward of the OHWM. Also, a linear mound used to screen an adjacent activity, such as a parking lot, from transmitting excess noise and glare. Also a raised planting area in wetland or stream buffers.

BEST MANAGEMENT PRACTICES. Conservation practices or systems of practices and management measures, often promulgated by state and federal agencies or the Town, that:

- A. Control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxins, stormwater, and sediment;
- B. Minimize adverse impacts to surface water and ground water flow, circulation patterns, and to the chemical, physical, and biological characteristics of waters, wetlands, and other fish and wildlife habitats;
- C. Control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw material.

BIOENGINEERING. The use of biological elements, such as the planting of vegetation, often in conjunction with engineered systems, to provide a structural shoreline stabilization measure with minimal negative impact to the shoreline ecology.

BIOFILTRATION SYSTEM. A stormwater or other drainage treatment system that utilizes as a primary feature the ability of plant life to screen out and metabolize sediment and pollutants. Typically, biofiltration systems are designed to include grassy swales, retention ponds and other vegetative features.

BOATING FACILITIES. Developments and uses that support access to shoreline waters for purposes of boating, including marinas, community piers, residential piers, public and private boat launches, and mooring buoys and piles.

BOG. A wet, spongy, poorly drained area which is usually rich in very specialized plants, contains a high percentage of organic remnants and residues, and frequently is associated with a spring, seepage area, or other subsurface water source. A bog sometimes represents the final stage of the natural process of eutrophication by which lakes and other bodies of water are very slowly transformed into land areas.

BUFFER OR SHORELINE BUFFER. The area adjacent to a shoreline that separates and protects the waterbody from adverse impacts associated with adjacent land uses. It is designed and designated to remain vegetated in an undisturbed and natural condition to protect an adjacent aquatic or wetland site from upland impacts, to provide habitat for wildlife, to afford limited public access, and to accommodate certain other specified uses that benefit from a shoreline location. The dimensions of the shoreline buffer are established in the Vegetation Conservation sections of this SMP.

BUILDING. Any combination of materials constructed, placed or erected permanently on the ground or attached to something having a permanent location on the ground, for the purpose of shelter, support or enclosure of persons, animals or property, or when supporting any use, occupancy or function. Excluded from this definition are structures waterward of the OHWM, all forms of vehicles even though immobilized, residential fences, retaining walls less than three feet in height, rockeries and similar improvements of a minor nature. The terms building and structure are synonymous.

BULKHEAD. A solid wall erected generally parallel to and at or near the OHWM for the purpose of protecting adjacent uplands from waves or current action.

C

CHANNEL MIGRATION ZONE (CMZ). The area along a river or stream within which the channel(s) can reasonably be expected to migrate over time as a result of natural and normally occurring hydrological and related processes when considered with the characteristics of the river and its surroundings. It encompasses that area of current and historic lateral stream channel movement that is subject to erosion, bank destabilization, rapid stream incision, and/or channel shifting, as well as adjacent areas that are susceptible to channel erosion. The definition utilized by FEMA references

where the river has migrated over the past 100-years, and may be expected to migrate over the next 100-years.

CHANNELIZATION. The straightening, relocation, deepening or lining of stream channels, including construction of continuous revetments or levees for the purpose of preventing gradual, natural meander progression.

CLEARING. The destruction or removal of vegetation ground cover, shrubs and trees including, but not limited to, root material removal, duff and/or topsoil removal.

COMMERCIAL DEVELOPMENT. Those developments whose primary use is for retail, service or other commercial business activities. Included in this definition are developments such as hotels, motels, bed and breakfast establishments, or other commercial accommodations, shops, restaurants, banks, professional offices, grocery stores, laundromats, recreational vehicle parks, and indoor or intensive outdoor commercial recreation facilities..

COMMERCIAL USES. Commercial uses are those activities engaged in commerce and trade and involving the exchange of money, including but not limited to, retail, services, wholesale, or business trade activities. Examples include, but are not limited to, hotels, river guide services, motels, or other commercial accommodations, grocery stores, restaurants, shops, commercial recreation facilities, and offices.

COMMUNITY ACCESS. The right of all property owners or members of a residential development to reach and use the waters of the State, the water/land interface, and associated shoreline area. It includes physical access that is either lateral (areas paralleling the shore) or perpendicular (an easement or community corridor to the shore), and/or visual access facilitated by scenic roads and overlooks, viewing platforms, and other community sites or facilities. Community access is not intended for the general public.

CONDITIONAL USE, SHORELINE. A use, development, or substantial development which is classified as a Conditional Use or is not classified within this SMP. Those activities identified as conditional uses or not classified in this SMP must be treated according to the review criteria established in WAC 173-27-160.

CONSERVATION. The prudent management of rivers, streams, wetlands, wildlife and other environmental resources in order to preserve and protect them. This includes the sustainable use of natural resources to prevent depletion or harm to the environment.

CONSERVATION EASEMENT. A legal agreement that the property owner enters into to restrict uses of the land for purposes of natural resources conservation. The easement is recorded on a property deed, runs with the land, and is legally binding on all present and future owners of the property.

CONTAMINANT. Any chemical, physical, biological, or radiological substance that does not occur naturally in ground water, air, or soil or that occurs at concentrations greater than those in the natural levels.

COUNTY. Pierce County, Washington.

CRITICAL AQUIFER RECHARGE AREA. Areas designated by WAC 365-190-080(2) that are determined to have a critical recharging effect on aquifers (i.e., maintain the quality and quantity of water) used for potable water as defined by WAC 365-190-030(2).

CRITICAL HABITAT. Habitat areas with which endangered, threatened, sensitive or monitored plant, fish, or wildlife species have a primary association (e.g., feeding, breeding, rearing of young, migrating). Such areas are identified in AMC 20.88.400, with reference to lists, categories, and definitions promulgated by the Washington Department of Fish and Wildlife as identified in WAC 232-12-011 or 232-12-014; in the Priority Habitat and Species (PHS) program of the Department of Fish and Wildlife; or by rules and regulations adopted by the U.S. Fish and Wildlife Service, National Marine Fisheries Service, or other agency with jurisdiction for such designations. Local watershed plans also provide critical habitat information.

D

DAHP. The State of Washington Department of Archaeology and Historic Preservation.

DEPARTMENT OF ECOLOGY OR ECOLOGY. The Washington State Department of Ecology.

DEVELOPMENT. A use consisting of the construction or exterior alteration of structures; dredging; drilling; dumping; filling; removal of any sand, gravel, or minerals; bulkheading; driving of piling; placing of obstructions; or any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters of the state subject to Chapter 90.58 RCW at any stage of water level.

DEVELOPMENT REGULATIONS. The controls placed on development or land uses by local government, including, but not limited to, zoning ordinances, critical areas ordinances, all portions of a shoreline master program other than goals and policies approved or adopted under Chapter 90.58 RCW, planned unit development ordinances, subdivision ordinances, and binding site plan ordinances together with any amendments thereto.

DIKE. An artificial embankment or revetment normally set back from the bank or channel in the floodplain for the purpose of keeping floodwaters from inundating adjacent land.

DOCUMENT OF RECORD. The most current shoreline master program officially approved or adopted by rule by the Department of Ecology for a given local government jurisdiction, including any changes resulting from appeals filed pursuant to RCW 90.58.190.

DREDGING. Excavation or displacement of the bottom or shoreline of a waterbody.

E

ECOLOGICAL FUNCTIONS (or SHORELINE FUNCTIONS). The work performed or role played by the physical, chemical, and biological processes that contribute to the maintenance of the aquatic and terrestrial environments that constitute the shoreline's natural ecosystem.

ECOSYSTEM-WIDE PROCESSES. The suite of naturally occurring physical and geologic processes of erosion, transport, and deposition and specific chemical processes that shape landforms within a specific shoreline ecosystem and determine both the types of habitat and the associated ecological functions.

EMERGENCY. An unanticipated and imminent threat to public health, safety, or the environment which requires immediate action within a time too short to allow full compliance with the master program. Emergency construction is construed narrowly as that which is necessary to protect property and facilities from the elements. Emergency construction does not include development of new permanent protective structures where none previously existed. Where new protective structures are deemed by the administrator to be the appropriate means to address the emergency situation, upon abatement of the emergency situation the new structure shall be removed or any permit which would have been required, absent an emergency, pursuant to Chapter 90.58 RCW, these regulations, or this SMP, shall be obtained. All emergency construction shall be consistent with the policies of Chapter 90.58 RCW and this SMP. As a general matter, flooding or seasonal events that can be anticipated and may occur but that are not imminent are not an emergency.

ENHANCEMENT. Alteration of an existing resource to improve or increase its characteristics, functions, or processes without degrading other existing ecological functions. Enhancements are to be distinguished from resource creation or restoration projects. See also BEACH ENHANCEMENT/RESTORATION.

EROSION. The wearing away of land by the action of natural forces.

EXCAVATION. The disturbance, displacement and/or disposal of unconsolidated earth material such as silt, sand, gravel, soil, rock or other material from all areas landward of OHWM.

EXEMPTION. Certain specific developments as listed in WAC 173-27-040 are exempt from the definition of substantial developments and are therefore exempt from the Shoreline Substantial Development Permit process of the SMA. An activity that is exempt from the substantial development provisions of the SMA must still be carried out in compliance with policies and standards of the Act and this SMP. Conditional use and/or variance permits may also still be required even though the activity does not need a Shoreline Substantial Development Permit.

EXISTING AND ONGOING AGRICULTURAL ACTIVITIES. Those activities conducted on lands defined in RCW 36.70A.030 and those activities involved in the production of crops and livestock, including, but not limited to, operation and maintenance of existing farm and stock ponds or drainage ditches, irrigation systems, changes between agricultural activities, and maintenance or repair of existing serviceable structures and facilities. Activities that result in the filling of an area or bring an area into agricultural use are not part of an ongoing activity. An operation ceases to be ongoing when the area on which it was conducted has been converted to a non-agricultural use, or has lain idle for more than five (5) years unless that idle land is registered in a federal or state soils conservation program. Forest practices are not included in this definition.

F

FAIR MARKET VALUE. The open market bid price for conducting the work, using the equipment and facilities, and purchase of the goods, services, and materials necessary to accomplish the development. This would normally equate to the cost of hiring a contractor to undertake the development from start to finish, including the cost of labor, materials, equipment and facility usage, transportation, and contractor overhead and profit. The fair market value of the development shall include the fair market value of any donated, contributed, or found labor, equipment, or materials.

FEASIBLE. For the purpose of this master program, that an action, such as a development project, mitigation, or preservation requirement, meets all of the following conditions:

- A. The action can be accomplished with technologies and methods that have been used in the past, or studies or tests have demonstrated that such approaches are currently available and likely to achieve the intended results.
- B. The action provides a reasonable likelihood of achieving its intended purpose. Reasonable means acceptable and according to common sense or normal practice.
- C. The action does not physically preclude achieving the project's primary intended use.

In cases where these guidelines require certain actions unless they are infeasible, the burden of proving infeasibility is on the applicant.

In determining an action's infeasibility, the Town may weigh the action's relative public costs and public benefits, considered in the short- and long-term time frames. See INFEASIBLE

FILL. The addition of soil, sand, rock, gravel, sediment, earth retaining structure, or other material to an area waterward of the OHWM, in wetlands, or on shorelands in a manner that raises the elevation or creates dry land.

FLOATS. A detached, anchored platform that is free to rise and fall with water levels, used for boat mooring, swimming or similar recreational activities that is not anchored or accessed directly from the shoreline.

FLOOD CONTROL WORKS. Flood control works means methods or facilities designed to reduce flooding of adjacent lands, to control or divert stream flow, to retard bank erosion, or to create a reservoir.

- A. Nonstructural measures include, but are not limited to, shoreline buffers, land use controls, wetland restoration, dike removal, use relocation, biotechnical measures, storm water management programs, land or easement acquisition, voluntary protection and enhancement projects, or incentive programs.
- B. Structural measures include, but are not limited to, dikes, levees, revetments, floodwalls, channel realignment.

FLOODPLAIN. Synonymous with one hundred-year floodplain and means that land area susceptible to inundation with a one percent chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood ordinance regulation maps or a reasonable method which meets the objectives of the Act.

FLOODWAY. The area, as identified in a master program, that has been established in federal emergency management agency flood insurance rate maps, updated flood modeling, or floodway maps. The floodway shall not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

FREQUENTLY FLOODED AREA. Means an area subject to flooding, as defined by FIRM, once every one hundred years.

G

GEOTECHNICAL ANALYSIS. A scientific study or evaluation conducted by a qualified expert that includes a description of the ground and surface hydrology and geology, the affected land form and its susceptibility to mass wasting, erosion, and other geologic hazards or processes, conclusions and recommendations regarding the effect of the proposed development on geologic conditions, the adequacy of the site to be developed, the impacts of the proposed development, alternative approaches to the proposed development, and measures to mitigate potential site-specific and cumulative impacts of the proposed development, including the potential adverse impacts to adjacent and down-current properties. Geotechnical reports shall conform to accepted technical standards and must be prepared by qualified engineers or geologists who are knowledgeable about the regional and local shoreline geology and processes.

GEOTECHNICAL REPORT. See GEOTECHNICAL ANALYSIS.

GRADE. See average grade level.

GRADING. The movement or redistribution of the soil, sand, rock, gravel, sediment, or other material on a site in a manner that alters the natural contour of the land.

GRASSY SWALE. A vegetated drainage channel that is designed to remove various pollutants from storm water runoff through biofiltration.

GROINS. A barrier type of structure extending from the backshore or stream bank into a waterbody for the purpose of the protection of a shoreline and adjacent uplands by influencing the movement of water or deposition of materials.

GROUNDWATER. All water that exists beneath the land surface or beneath the bed of any stream, lake or reservoir, or other body of surface water within the boundaries of the state, whatever may be the geological formation or structure in which such water stands or flows, percolates or otherwise moves (Chapter 90.44 RCW).

GROWTH MANAGEMENT ACT. RCW 36.70A and 36.70B, as amended.

GUIDELINES. Those standards adopted by the Department of Ecology into the Washington Administrative Code (WAC) to implement the policy of Chapter 90.58 RCW for regulation of use of the shorelines of the state prior to adoption of master programs. Such standards shall also provide criteria for local governments and the Department of Ecology in developing and amending master programs.

H

HABITAT. The place, including physical and biotic conditions, where a plant or animal usually occurs or could occur and is fundamentally linked to the actual or potential distribution and abundance of species. A species may use a habitat or a structural

component of the habitat for all or part of its lifecycle, and may adapt to use various habitats. Habitat is scale-dependent and refers to a large geographic area, a species' home range, a local setting, or a site-specific feature. Habitat may perform a specific function for a species or multiple species, and may include those elements necessary for one or more species to escape extreme conditions, feed, migrate, breed, or travel.

HARD STRUCTURAL SHORELINE STABILIZATION. Shoreline erosion control practices using hardened structures that armor and stabilize the shoreline from further erosion. Hard structural shoreline stabilization typically uses concrete, boulders, dimensional lumber or other materials to construct linear, vertical or near-vertical faces. These include bulkheads, rip-rap, groins, and similar structures.

HEIGHT. The vertical dimension measured from average grade to the highest point of a structure; provided that, antennas, chimneys, and similar appurtenances shall not be used in calculating height, unless such appurtenance obstructs the view of a substantial number of adjacent residences. Temporary construction equipment is excluded in this calculation.

HISTORIC PRESERVATION PROFESSIONAL. Individuals who meet standards promulgated by the DAHP as well as the National Park Service and published in 36 CFR Part 61. These standards address minimum education and experience required to perform identification, evaluation, registration and treatment activities for historic properties. In some cases, additional areas or levels of expertise may be needed, depending on the complexity of the task and the nature of the properties involved. (Based on <http://www.dahp.wa.gov/pages/EnvironmentalReview/Consultants.htm>)

HISTORIC SITE. Sites that are eligible or listed on the Washington Heritage Register, National Register of Historic Places or any locally developed historic registry formally adopted by the Town.

HYDROLOGICAL. Referring to the science related to the waters of the earth including surface and ground water movement, evaporation and precipitation. Hydrological functions in shoreline include, water movement, storage, flow variability, channel movement and reconfiguration, recruitment and transport of sediment and large wood, and nutrient and pollutant transport, removal and deposition.

I

IMPERVIOUS SURFACE. Those hard surfaces that prevent or retard the entry of water into the soil. Such surfaces include, but are not limited to, rooftops, asphalt or concrete paving, gravel driveways, parking lots, walkways, patio areas or storage areas, which similarly affect the natural infiltration.

INFEASIBLE. To determine that an action, such as a development project, mitigation, or preservation requirement, is infeasible, the following conditions are found:

- A. The action cannot be accomplished with technologies and methods that have been used in the past, or studies or tests have demonstrated that such approaches are currently not available or unlikely to achieve the intended results.
- B. The action provides is not likely to achieve its intended purpose.
- C. The action precludes achieving the project's primary intended use.
- D. The action's relative public costs and public benefits, considered in the short- and long-term time frames, show the costs far outweigh the benefits.

In cases where these guidelines require certain actions unless they are infeasible, the burden of proving infeasibility is on the applicant. In determining an action's infeasibility, the Town may weigh the action's relative public costs and public benefits, considered in the short- and long-term time frames. Also see "Feasible."

INDUSTRIAL DEVELOPMENT. Facilities for processing, manufacturing, and storage of finished or semi-finished goods, including but not limited to oil, metal or mineral product refining, power generating facilities, including hydropower, ship building and major repair, storage and repair of large trucks and other large vehicles or heavy equipment, related storage of fuels, commercial storage and repair of fishing gear, warehousing construction contractors' offices and material/equipment storage yards, wholesale trade or storage, and log storage on land or water, together with necessary accessory uses such as parking, loading, and waste storage and treatment. Excluded from this definition are mining including onsite processing of raw materials, and off site utility, solid waste, road or railway development, and methane digesters that are accessory to an agricultural use.

INDUSTRIAL USES. The production, processing, manufacturing, or fabrication of goods or materials, including warehousing and storage of materials or production.

INFILTRATION. The passage or movement of water into the soil surface.

INSTITUTIONAL. Those public and/or private facilities including, but not limited to, police and fire stations, libraries, activity centers, schools, educational centers, water-oriented research facilities, and similar uses. These may also be called public facilities.

IN-STREAM STRUCTURE. Structure placed by humans within a stream or river waterward of the OHWM that either causes or has the potential to cause water impoundment or the diversion, obstruction, or modification of water flow. In-stream structures may include those for hydroelectric generation, irrigation, water supply, flood control, transportation, utility service transmission, fish habitat enhancement, or other purpose.

INVASIVE SPECIES. A species that is 1) non-native (or alien) to the Town of Wilkeson and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

J

JURISDICTION. The shoreline jurisdiction as established in Chapter 1 of this SMP.

L

LANDSLIDE. A general term covering a wide variety of mass movement landforms and processes involving the down slope transport, under gravitational influence of soil and rock material en masse; included are debris flows, debris avalanches, earthflows, mudflows, slumps, mudslides, rock slides, and rock falls.

LARGE WOODY DEBRIS. Logs, limbs, or root wads 4 inches or larger in diameter, delivered to waterbodies from adjacent riparian or upslope areas or from upstream areas.

LAUNCH RAMP. An inclined slab, set of pads, planks, or graded slope which extends waterward of the OHWM, and is used for transferring watercraft between uplands and the water with trailers or occasionally by hand.

LEGALLY ESTABLISHED. A use or structure in compliance with the laws and rules in effect at the time of creation of the use or structure.

LEVEE. A natural or artificial embankment on the bank of a stream for the purpose of keeping floodwaters from inundating adjacent land. Some levees have revetments on their sides.

LOCAL GOVERNMENT. Any county, incorporated city or town which contains within its boundaries shorelines of the state subject to chapter 90.58 RCW.

M

MAINTENANCE, NORMAL. Those usual acts to prevent a decline, lapse, or cessation from a legally established condition.

MAY. Refers to actions that are acceptable, provided they conform to the provisions of this master program and the Act.

MINERAL EXTRACTION. The removal of topsoil, gravel, rock, clay, sand or other earth material, including accessory activities such as washing, sorting, screening,

crushing and stockpiling. Not included is the leveling, grading, filling, or removal of materials during the course of normal site preparation for an approved use (e.g., residential subdivision, commercial development, etc.) subject to the provisions of this SMP.

MITIGATION (or MITIGATION SEQUENCING). The process of avoiding, reducing, or compensating for the environmental impact(s) of a proposal.

MIXED USE. A combination of uses within the same building or site as a part of an integrated development project with functional interrelationships and coherent physical design.

MIXED USE COMMERCIAL. Developments that include water-dependent commercial uses combined with water-related, water-enjoyment uses and/or non-water-oriented commercial uses. Mixed-use developments can be a tool for water-dependent activities, civic revitalization, and public access to the shoreline.

MIXED USE RESIDENTIAL. Mixed use developments that include water-dependent and water-oriented commercial uses together with single-family or multi-family uses while promoting public access for significant numbers of the public or providing an ecological restoration resulting in a public benefit. This mix of uses is intended to reduce transportation trips, use land efficiently, and provide for waterfront commerce and housing options.

MODIFICATION. A change or alteration in existing materials, including structures and plans.

MODIFICATION, SHORELINE. Those actions that modify the physical configuration or qualities of the shoreline area, usually through the construction of a physical element such as a dike, breakwater, dock, weir, dredged basin, fill, bulkhead, or other shoreline structures. They can include other actions, such as clearing, grading, or application of chemicals.

MULTI-FAMILY DWELLING (or RESIDENCE). A building containing two or more dwelling units, including, but not limited to, duplexes, apartments and condominiums.

MUST. A mandate; the action is required.

N

NAVIGABLE WATERS. Navigable waters of the United States are those waters that are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies

laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity.

NECESSARY. A word describing an element that is essential, indispensable or needed to achieve a certain result or effect.

NO NET LOSS. A public policy goal and requirement to maintain the aggregate total of the Town's shoreline ecological functions at its current level of environmental resource productivity. For purposes of reviewing and approving this SMP, "current" is equivalent to the date of the Final Shoreline Inventory and Analysis Report August 14, 2013. As a development and/or mitigation standard, no net loss requires that the impacts of a particular shoreline development and/or use, whether permitted or exempt, be identified and prevented or mitigated, such that it has no resulting adverse impacts on shoreline ecological functions or processes relative to the legal condition just prior to the proposed development and/or use.

NONCONFORMING USE OR DEVELOPMENT. A non-residential shoreline use, structure, or lot which was lawfully constructed or established prior to the effective date of the Act (June 1, 1971; RCW 90.58.920) or this SMP August 14, 2013 or amendments thereto, but which does not conform to present regulations or standards of the SMP.

NONPOINT POLLUTION. Pollution that enters any waters of the state from any dispersed land-based or water-based activities, including, but not limited to, atmospheric deposition, surface water runoff from agricultural lands, urban areas, or forest lands, subsurface or underground sources, or discharges from boats or marine vessels not otherwise regulated under the National Pollutant Discharge Elimination System program.

NONSTRUCTURAL SHORELINE STABILIZATION. Actions taken to address erosion, including but not limited to, building setbacks, relocation of structures, ground water management, and planning and regulatory measures.

NONWATER-ORIENTED USES. Those uses that are not water-dependent, water-related, or water-enjoyment.

NORMAL MAINTENANCE. See MAINTENANCE, NORMAL and REPAIR, NORMAL"

NORMAL PROTECTIVE BULKHEAD. Those structural and nonstructural developments installed at or near, and parallel to, the OHWM for the sole purpose of protecting an existing single-family residence and appurtenant structures from loss or damage by erosion.

NORMAL REPAIR. See REPAIR, NORMAL and MAINTENANCE, NORMAL

NOXIOUS WEEDS. A special sub-class of invasive plant species listed as Class A or B by the Washington State Noxious Weed Control Board.

O

OFF-SITE REPLACEMENT. To replace wetlands or other shoreline environmental resources away from the site on which a resource has been impacted by a regulated activity.

ORDINARY HIGH WATER MARK (OHWM). That mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the Department of Ecology.

OVERWATER STRUCTURES. Any structure located waterward of the OHWM. Common examples include, but are not limited to, residential docks, marinas, and bridges over waterways.

P

PARKING. A place where vehicles are temporarily stored while an activity is being conducted. Local parking is located onsite intended to serve and support a primary use(s) of a property. Regional parking is a parking area intended to support a district with multiple uses.

PARTY OF RECORD. All persons, agencies, or organizations who have submitted written or verbal comments in response to a notice of application, made oral comments in a formal public hearing conducted on the application, or notified local government of their desire to receive a copy of the final decision on a permit and who have provided an address for delivery of such notice by mail.

PERIODIC. Occurring at regular intervals.

PERSON. An individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated.

PRIORITY HABITAT. A habitat type with unique or significant value to one or more species. An area classified and mapped as priority habitat must have one or more of the following attributes: comparatively high fish or wildlife density; comparatively high fish or wildlife species diversity; fish spawning habitat; important wildlife habitat; important

fish or wildlife seasonal range; important fish or wildlife movement corridor; rearing and foraging habitat; refuge; limited availability; high vulnerability to habitat alteration; unique or dependent species; or shellfish bed. A priority habitat may be described by a unique vegetation type or by a dominant plant species that is of primary importance to fish and wildlife. A priority habitat may also be described by a successional stage. Alternatively, a priority habitat may consist of a specific habitat element (such as talus slopes, caves, snags) of key value to fish and wildlife. A priority habitat may contain priority and/or non-priority fish and wildlife. Priority habitats also include specific areas that have been identified in local watershed plans.

PRIORITY SPECIES. Species requiring protective measures and/or management guidelines to ensure their persistence at genetically viable population levels. Priority species are those that meet any of the criteria listed below.

- A. State-listed or state proposed species. State-listed species are those native fish and wildlife species legally designated as endangered (WAC 232-12-014), threatened (WAC 232-12-011), or sensitive (WAC 232-12-011). State proposed species are those fish and wildlife species that will be reviewed by the Department of Fish and Wildlife (POL-M- 6001) for possible listing as endangered, threatened, or sensitive according to the process and criteria defined in WAC 232-12-297.
- B. Vulnerable aggregations. Vulnerable aggregations include those species or groups of animals susceptible to significant population declines, within a specific area or statewide, by virtue of their inclination to congregate. Examples include heron colonies, seabird concentrations, and marine mammal congregations.
- C. Species of recreational, commercial, and/or tribal importance. Native and nonnative fish, shellfish, and wildlife species of recreational or commercial importance and recognized species used for tribal ceremonial and subsistence purposes that are vulnerable to habitat loss or degradation.
- D. Species listed under the federal Endangered Species Act as either proposed, threatened, or endangered.

PROVISIONS. Policies, regulations, standards, guideline criteria or designations.

PUBLIC ACCESS. The public's right to reach and use the State's public waters, the water/land interface, and associated shoreline area. It includes physical access that is either lateral (areas paralleling the shore) or perpendicular (an easement or public corridor to the shore), and visual access facilitated by means such as scenic roads and overlooks, viewing platform, and other public sites or facilities. See also COMMUNITY ACCESS.

PUBLIC INTEREST. The interest shared by the citizens of the state or community at large in the affairs of government, or some interest by which their rights or liabilities are

affected such as an effect on public property or on health, safety, or general welfare resulting from a use or development.

Q

QUALIFIED PROFESSIONAL. A person with expertise and training appropriate for the relevant subject. A qualified professional must have obtained a B.S. or B.A. or equivalent degree in biology, soil science, engineering, environmental studies, fisheries, geology, hydrology, geomorphology or related field, and at least five years of related work experience. Specific qualified professionals must also meet the following criteria, or any other criteria included in Appendix B, Critical Areas Regulations:

- A. A qualified professional providing a geotechnical analysis as required under Section 5.10 of this Master Program must be a licensed engineer in the State of Washington, with specific training in geology, hydrology and/or geomorphology.
- B. A qualified professional providing a demonstration of need as required under Section 5.10 of this Master Program must have a M.S. or equivalent degree in geology, hydrology, or geomorphology.
- C. A qualified professional for wetlands means a biologist who has a degree in biology, ecology, botany, or a closely related field and a minimum of five (5) years of professional experience in wetland identification and assessment in Western Washington.
- D. A qualified professional for habitat conservation areas means a biologist who has a degree in wildlife biology, ecology, fisheries, or closely related field and a minimum of five (5) years professional experience related to the subject species/habitat type.
- E. A qualified professional for geologically hazardous areas must be an engineer or geologist licensed in the state of Washington. An engineer must be licensed as a civil engineer pursuant to Chapter 18.43 RCW, to qualify. A geologist must be a practicing geologist licensed as a professional geologist pursuant to Chapter 18.22, RCW.
- F. A qualified professional for critical aquifer recharge areas means a Washington State licensed hydro-geologist, geologist, or engineer.

R

RCW. Revised Code of Washington.

RECREATION. An experience or activity in which an individual engages for personal enjoyment and satisfaction. Most shore-based outdoor recreation such as: fishing, beach

combing, and rock climbing; various forms of boating, swimming, hiking, bicycling, horseback riding, camping, picnicking, watching or recording activities such as photography, painting, bird watching or viewing of water or shorelines, nature study and related activities.

RECREATIONAL USES. Uses which offer activities, pastimes, and experiences that allow for the refreshment of mind and body. Examples include, but are not limited to, parks, launch ramps, golf courses, viewpoints, trails, public access facilities, public parks and athletic fields, and other low-intensity use outdoor recreation areas. Recreational Uses that do not require a shoreline location, nor are related to the water, nor provide significant public access, are considered nonwater-oriented. For example, a recreation use solely offering indoor activities would be considered nonwater-oriented.

REPAIR, NORMAL. To restore a development or structure to a state comparable to its original, legally established condition, including but not limited to its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or environment.

RESIDENTIAL USES. Buildings, structures or portions thereof that are designed and used as a place for human habitation. Included are single, duplex or multi-family dwellings, apartment/condominium buildings, manufactured homes, modular homes, and other structures that serve to house people. This definition includes accessory uses common to normal residential use, including but not limited to, residential appurtenances, accessory dwelling units, home occupations, and family day care homes.

RESTORE (RESTORATION or ECOLOGICAL RESTORATION). Reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to: the installation of vegetation or re-vegetation; removal of intrusive shoreline structures; the removal or treatment of toxic materials; the installation of large woody debris; and wetland projects. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.

REVTMENT. Facing of stone, concrete, etc., built to protect a steep slope, cliff, embankment, or shore structure against erosion by waves or currents.

RIPRAP. A layer, facing, or protective mound of stones placed to prevent erosion, scour, or sloughing of a structure or embankment; also, the stone so used.

RIPARIAN VEGETATION. Vegetation that tolerates and/or requires moist conditions and periodic free flowing water thus creating a transitional zone between aquatic and terrestrial habitats which provides cover, shade and food sources for aquatic and terrestrial insects for fish, avian and mammalian species. Riparian vegetation and their root systems stabilizes stream banks, attenuates high water flows, provides wildlife

habitat and travel corridors, and provides a source of limbs and other woody debris to terrestrial and aquatic ecosystems, which, in turn, stabilize stream beds.

RUNOFF. Water that is not absorbed into the soil but rather flows along the ground surface following the topography.

S

SANITARY SEWER. A system designed to accept sewage to be deposited into and carried off by a system of lateral sewers, drains, and pipes to a common point, or points, for transfer to treatment or disposal.

SEDIMENT. The fine grained material deposited by water or wind.

SEPA (STATE ENVIRONMENTAL POLICY ACT). SEPA requires state agencies, local governments and other lead agencies to consider environmental factors when making most types of permit decisions, especially for development proposals of a significant scale. As part of the SEPA process, environmental impact statements (EISs) may be required to be prepared and public comments solicited.

SETBACK. The distance between property line and the foundation wall of the primary structure or easement.

SETBACK, SIDE. The distance between side lot line and the foundation wall of the primary structure.

SEWAGE: Any urine, feces, and the water carrying human wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments or other places.

SHALL. A mandate; the action must be done. See also MUST.

SHORELINE ADMINISTRATOR. THE SHORELINE ADMINISTRATOR FOR THE TOWN OF WILKESON IS THE MAYOR OR DESIGNEE.

SHORELANDS or SHORELAND AREAS. Those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the Department of Ecology.

SHORELINE AREAS. All "shorelines of the state" and "shorelands" as defined in RCW 90.58.030.

SHORELINE ENVIRONMENT DESIGNATIONS. The categories of shorelines established by local shoreline master programs in order to provide a uniform basis for applying policies and use regulations within distinctively different shoreline areas.

SHORELINE FUNCTIONS. See “ECOLOGICAL FUNCTIONS.”

SHORELINE JURISDICTION. The term describing all of the geographic areas covered by the SMA, related rules and this SMP. Also, such areas within a specified local government's authority under the SMA. See SHORELINES, SHORELINES OF THE STATE, SHORELINES OF STATEWIDE SIGNIFICANCE and WETLANDS. See also Section 3.1 of this SMP.

SHORELINE MASTER PROGRAM, MASTER PROGRAM, or SMP. A comprehensive use plan for a described area, and the use regulations together with maps, diagrams, charts, or other descriptive material and text, a statement of desired goals, and standards developed in accordance with the policies enunciated in RCW 90.58.020. As provided in RCW 36.70A.480, the goals and policies of a shoreline master program for a county, city, town approved under chapter 90.58 RCW shall be considered an element of the county, city, or town's comprehensive plan. All other portions of the shoreline master program for a county, city, or town adopted under chapter 90.58 RCW, including use regulations, shall be considered a part of the county, city, or town's development regulations.

SHORELINE PERMIT. A shoreline substantial development, shoreline exemption, Conditional Use, revision, or variance permit or any combination thereof.

SHORELINE PROPERTY. An individual property wholly or partially within shoreline jurisdiction.

SHORELINE STABILIZATION. Structural or non-structural modifications to the existing shoreline intended to reduce or prevent erosion of uplands or beaches. They are generally located parallel to the shoreline at or near the OHWM. Other construction classified as shore defense works include groins, jetties, log jams and breakwaters, which are intended to influence wave action, currents and/or the natural transport of sediments along the shoreline.

SHORELINES HEARINGS BOARD (SHB). A six member quasi-judicial body, created by the SMA, which hears appeals by any aggrieved party on the issuance of a shoreline permit, enforcement penalty and appeals by local government on Department of Ecology approval of master programs, rules, regulations, guidelines or designations under the SMA.

SHORELINES OF STATEWIDE SIGNIFICANCE. A select category of shorelines of the state, defined in RCW 90.58.030(2)(e), where special policies apply.

SHORELINES OF THE STATE. The total of all “shorelines” and “shorelines of state-wide significance” within the state.

SHORELINES. All of the water areas of the state, including reservoirs, and their associated shorelands, together with the lands underlying them; except (i) shorelines of state-wide significance; (ii) shorelines on areas of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream areas; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such small lakes.

SHOULD. The particular action is required unless there is a demonstrated, compelling reason, based on policy of the Act and this SMP, against taking the action.

SIGN. A board or other display containing words and/or symbols used to identify or advertise a place of business or to convey information. Excluded from this definition are signs required by law and the flags of national and state governments.

SIGNIFICANT ECOLOGICAL IMPACT. An effect or consequence of an action if any of the following apply:

- A. The action measurably or noticeably prevents, reduces or harms an ecological function or ecosystem-wide process.
- B. Scientific evidence or objective analysis indicates the action could cause reduction or harm to those ecological functions or ecosystem-wide processes described in (a) of this subsection under foreseeable conditions.
- C. Scientific evidence indicates the action could contribute to a measurable or noticeable reduction or harm to ecological functions or ecosystem-wide processes described in (a) of this subsection as part of cumulative impacts, due to similar actions that are occurring or are likely to occur.

SIGNIFICANT VEGETATION REMOVAL. The removal or alteration of trees, shrubs, and/or groundcover by clearing, grading, cutting, burning, chemical means, or other activity that causes significant ecological impacts to functions provided by such vegetation. The removal of invasive or noxious weeds does not constitute significant vegetation removal. Tree pruning, not including tree topping, where it does not affect ecological functions, does not constitute significant vegetation removal.

SINGLE-FAMILY RESIDENCE (SFR). A single dwelling designed for and occupied by one family including those structures and developments within a contiguous ownership which are a normal appurtenance.

SMA. The Shoreline Management Act of 1971, Chapter 90.58 RCW, as amended.

SOFT STRUCTURAL SHORELINE STABILIZATION. Shoreline erosion control and restoration practices that contribute to restoration, protection or enhancement of shoreline ecological functions. Soft structural shoreline stabilization typically includes a mix of gravels, cobbles, boulders, logs and native vegetation placed to provide shore stability in a non-linear, generally sloping arrangement.

STATE MASTER PROGRAM. The cumulative total of all shoreline master programs and amendments thereto approved or adopted by rule by Ecology.

STORMWATER. That portion of precipitation that does not normally percolate into the ground or evaporate but flows via overland flow, interflow, channels, ponds, or pipes into a defined surface water channel or constructed infiltration facility.

STORMWATER FACILITY. A constructed component of a stormwater drainage system designed or constructed to perform a particular function or multiple functions. Stormwater facilities include, but are not limited to: pipes, swales, ditches, culverts, street gutters, detention ponds, retention ponds, constructed wetlands, infiltration devices, catch basins, oil/water separators, and biofiltration swales.

STREAM. Any portion of a channel, bed, bank, or bottom waterward of the ordinary high water line of waters of the state, including areas in which fish may spawn, reside, or pass, and tributary waters with defined bed or banks, which influence the quality of fish habitat downstream. This includes watercourses which flow on an intermittent basis or which fluctuate in level during the year and applies to the entire bed of such watercourse whether or not the water is at peak level. This definition does not include irrigation ditches, canals, storm water run-off devices, or other entirely artificial watercourses, except where they exist in a natural watercourse that has been altered by humans. A shoreline stream is a naturally occurring body of periodic or continuously flowing water where: a) the mean annual flow is greater than twenty cubic feet per second and b) the water is contained within a channel. A channel is an open conduit either naturally or artificially created. This definition does not include artificially created irrigation, return flow, or stockwatering channels

STRUCTURE. A permanent or temporary edifice or building, or any piece of work artificially built or composed of parts joined together in some definite manner, whether installed on, above or below the surface of the ground or water, except for vessels.

STRUCTURAL SHORELINE STABILIZATION. Refers to those measures, both 'hard' and 'soft', that are taken to address shoreline erosion. Measures include, but are not limited to (in order from soft to hard), vegetation enhancement, upland drainage control, biotechnical measures, beach enhancement, anchor trees, gravel placement, rock revetments, gabions, concrete groins, retaining walls, and bulkheads.

SUBDIVISION. The division or redivision of land, including short subdivision, for the purpose of sale, lease or conveyance.

SUBSTANTIAL DEVELOPMENT, SHORELINE. Any development which meets the criteria of RCW 90.58.030(3)(e). See also definition of "DEVELOPMENT" and "EXEMPTION".

SUBSTANTIALLY DEGRADE. To cause significant ecological impact. An action is considered to substantially degrade the environment if:

- A. The damaged ecological function or functions significantly affect other related functions or the viability of the larger ecosystem; or
- B. The degrading action may cause damage or harm to shoreline ecological functions under foreseeable conditions; or
- C. Scientific evidence indicates the action may contribute to damage or harm to ecological functions as part of cumulative impacts.

SURFACE WATER. All water that exists on the land surface, including streams, lakes or reservoirs, or other bodies of surface water within the boundaries of the state.

SWAMP. A depressed area flooded most of the year to a depth greater than that of a marsh and characterized by areas of open water amid soft, wetland masses vegetated with trees and shrubs. Extensive grass vegetation is not characteristic.

T

TERRESTRIAL. Of or relating to land as distinct from air or water.

TRANSPORTATION FACILITIES. Roads and railways, related bridges and culverts, trails, fills, embankments, causeways, truck terminals and rail switchyards, sidings, spurs, water trail landings, and air fields. Not included are highway rest areas. Local transportation refers to facilities provide direct access to abutting land and to higher order roads. Regional transportation refers to facilities serving more than one city or community or major destinations.

U

UNAVOIDABLE. Adverse impacts that remain after all appropriate avoidance and minimization measures have been implemented.

UPLAND. Generally described as the dry land area above and landward of the OHWM.

UTILITIES. Lines and facilities related to the provision, distribution, collection, transmission or disposal of water, stormwater, sanitary sewage, oil, gas, power, and telephone cable, and includes facilities for the generation of electricity.

- A. "Large facilities" serve more than one community or major attractions; examples include, but are not limited to, two hundred thirty (230) kv power transmission lines, natural gas transmission lines, and regional water storage tanks and reservoirs, regional water transmission lines or regional sewer collectors and interceptors. Large facilities may also include facilities serving an entire community, such as subregional switching stations (one hundred fifteen (115) kv and smaller), and municipal sewer, water, and storm water facilities.
- B. "Small facilities" serve adjacent properties and include, but are not limited to, underground power lines, water, sanitary sewer, and storm water facilities, fiber optic cable, pump stations and hydrants, switching boxes, and other structures normally found in a street right-of-way. On-site utility features serving primary use such as a water, sewer, or gas line to a residence are accessory utilities and shall be considered part of the primary use.

V

VARIANCE, SHORELINE. A means to grant relief from the specific bulk, dimensional, or performance standards set forth in this master program and not a means to vary a use of a shoreline. Variance permits must be specifically approved, approved with conditions, or denied by the Administrator and the Department of Ecology.

VESSEL. A floating structure that is designed primarily for navigation, is normally capable of self propulsion and use as a means of transportation, and meets all applicable laws and regulations pertaining to navigation and safety equipment on vessels, including, but not limited to, registration as a vessel by an appropriate government agency.

W

WAC. Washington Administrative Code.

WASTE STORAGE AND TREATMENT. Facilities for collecting and treating, as an accessory use only, garbage, solid waste or sewage generated by the development and its users.

WATERBODY. A body of still or flowing water, fresh or marine, bounded by the OHWM.

WATER-DEPENDENT USE. A use or portion of a use which cannot exist in a location that is not adjacent to the water and which is dependent on the water by reason of the

intrinsic nature of its operations. Examples of water-dependent uses may include sewer outfalls and water diversion facilities, such as agricultural pumphouses.

WATER-ENJOYMENT USE. A recreational use or other use that facilitates public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must be open to the general public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that fosters shoreline enjoyment. Primary water-enjoyment uses may include, but are not limited to: parks and other improvements facilitating public access to the shorelines of the State, including public viewing or fishing platforms; and general water-enjoyment uses may include, but are not limited to restaurants, museums, aquariums, scientific/ecological reserves, resorts/hotels (as part of mixed use development or with significant public access or restoration components), and mixed-use commercial/office.

WATERFRONT. A parcel of property with upland characteristics which includes within its boundary a physical interface with the existing shoreline of a body of water.

WATER-ORIENTED USE. A use that is water-dependent, water-related, or water-enjoyment, or a combination of such uses.

WATER QUALITY. The physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics. Where used in this chapter, the term "water quantity" refers only to development and uses regulated under this chapter and affecting water quantity, such as impervious surfaces and storm water handling practices. Water quantity, for purposes of this master program, does not mean the withdrawal of ground water or diversion of surface water pursuant to RCW 90.03.250 through 90.03.340.

WATER-RELATED USE. A use or portion of a use which is not intrinsically dependent on a waterfront location but whose economic viability is dependent upon a waterfront location because:

- A. The use has a functional requirement for a waterfront location such as the arrival or shipment of materials by water or the need for large quantities of water; or
- B. The use provides a necessary service supportive of the water-dependent uses and the proximity of the use to its customers makes its services less expensive and/or more convenient.

Examples of water-related uses may include warehousing of goods transported by water, hydroelectric generating plants, gravel storage when transported by barge, log storage, and agriculturally or people-related water transportation systems.

WATERSHED. A geographic region within which water drains into a particular river, stream or body of water.

WATERSHED RESTORATION PLAN. A plan, developed or sponsored by the Department of Fish and Wildlife, the Department of Ecology, the Department of Natural Resources, the Department of Transportation, a federally recognized Indian tribe acting within and pursuant to its authority, a city, a county, or a conservation district that provides a general program and implementation measures or actions for the preservation, restoration, re-creation, or enhancement of the natural resources, character, and ecology of a stream, stream segment, drainage area, or watershed for which agency and public review has been conducted pursuant to chapter 43.21C RCW, the State Environmental Policy Act. Watershed restoration plans also include local sub-basin plans with actions that do not meet the level triggering SEPA requirements.

WATERSHED RESTORATION PROJECT. A public or private project authorized by the sponsor of a watershed restoration plan that implements the plan or a part of the plan and consists of one or more of the following activities:

- A. A project that involves less than ten miles of streamreach, in which less than twenty-five cubic yards of sand, gravel, or soil is removed, imported, disturbed or discharged, and in which no existing vegetation is removed except as minimally necessary to facilitate additional plantings;
- B. A project for the restoration of an eroded or unstable stream bank that employs the principles of bioengineering, including limited use of rock as a stabilization only at the toe of the bank, and with primary emphasis on using native vegetation to control the erosive forces of flowing water; or
- C. A project primarily designed to improve fish and wildlife habitat, remove or reduce impediments to migration of fish, or enhance the fishery resource available for use by all of the citizens of the state, provided that any structure, other than a bridge or culvert or instream habitat enhancement structure associated with the project, is less than two hundred square feet in floor area and is located above the ordinary high water mark of the stream.

WEIR. A structure generally built perpendicular to the shoreline for the purpose of diverting water or trapping sediment or other moving objects transported by water.

WETLAND or WETLANDS. Areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support—and that under normal circumstances do support—a prevalence of vegetation typically adapted for life in

marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands.

Z

ZONING. The system of land use and development regulations and related provisions of the Town of Wilkeson.

In addition, the definitions and concepts set forth in RCW 90.58.030, as amended, and implementing rules shall also apply as used herein.

APPENDIX A

**Shoreline Jurisdiction Boundaries and
Environment Designation Map**

APPENDIX B

Critical Areas Regulations

B.1 General

B.1.1 Finding

The Town finds that critical areas' biological and physical functions benefit the Town by protecting water quality, providing fish and wildlife habitat, supporting the food chain, storing and conveying flood waters, recharging ground water, controlling erosion, and providing aesthetic values and recreation.

B.1.2 Purpose

The purpose of this critical areas code is to:

- A. Protect the functions and values of ecologically sensitive areas while allowing for reasonable use of private property, through the application of the best available science.
- B. Implement the Growth Management Act and the goals of the comprehensive plan, and
- C. Protect the public from injury and loss due to slope failures, erosion, seismic events, volcanic eruptions, or flooding.

B.1.3 Definitions

"Alter" means to change a critical area or its buffer, including grading, filling, dredging, clearing, construction, compaction, excavation, and pollution.

"Anadromous" refers to fish that spawn and rear in freshwater and mature in saltwater.

"Applicant" means a person who applies for a development permit from the Town.

"Aquifer" means a geological formation capable of yielding water to a well or spring.

"Best Available Science" means scientific information applicable to the critical area prepared by local, state, or federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC 365-195-900 through WAC 365-195-925.

"Best Management Practices" means actions known to protect soil, water quality, vegetation, and critical areas.

"Buffer" means an area contiguous to and required for protection of a critical area.

"Channel Migration Zone" means the lateral extent of likely movement of a stream or river during the next 100 years as evidenced by movement over the past 100 years.

"Conservation Easement" means a legal agreement that the property owner enters into to restrict uses of the land in a manner that conserves natural functions.

"Critical Area" means wetlands, aquifer recharge areas, floodplains, geologically hazardous areas, and habitat conservation areas.

"Development" means any land use or action that alters a critical area or its buffer, including Town approvals that establish patterns of use such as subdivisions, short subdivisions, rezones, and conditional use permits.

"Fish Habitat" means habitat used by fish at any life stage at any time of the year.

"Functions and Values" means the benefits conferred by critical areas, including water quality protection, fish and wildlife habitat, flood storage and conveyance, ground water recharge, erosion control, and protection from hazards.

“Hazardous Substance” means a liquid, solid, or gas that exhibits any of the properties described in WAC 173-303-090 or 173-303-100.

“Historic” means existing before the area was altered by human activity.

“Impact” means to adversely affect a natural system or increase the hazard, which a natural system poses to human life and property.

“Impervious” refers to a hard surface area that retards the entry of water into the soil.

“Monitoring” means assessing the performance of mitigation measures by collection and analysis of data on changes in natural systems.

“Ordinary High Water Mark” means that mark on the bed or bank below which inundation is so common in ordinary years that the soil and/or vegetation are distinct from that of the abutting upland.

“Person” means any person, organization, or other group.

“Primary Association” means a relationship between a species and a habitat area whereby the species regularly uses or otherwise needs the habitat area to thrive.

“Rill” means a small, steep-sided channel caused by erosion.

“Riparian Habitat” means streamside areas that influence the aquatic ecosystem by providing shade, debris, or insects and provide habitat for riparian wildlife.

“Species” means a group of animals commonly classified by the scientific community as a species or subspecies.

“Substantial Improvement” means any repair, reconstruction, or improvement of a structure, the cost of which exceeds fifty percent of the structure’s market value before the improvement, or, if the structure was damaged, before the damage occurred.

“Watercourse” means flowing waters of the state, perennial or intermittent, excluding artificial waterways such as ditches or canals not created by human alteration of a natural watercourse.

“Wetland Mitigation Bank” means a site where wetlands are restored, created, or enhanced to mitigate in advance authorized impacts to similar resources.

B.1.4 Critical Area Reports

Unless waived by the Shoreline Administrator, critical area reports shall be prepared for proposed developments located within critical areas or their buffers. Said critical area reports shall:

- A. Be prepared by qualified professionals as defined in WAC 365-195-905(4). The following list shows the type of critical area report and the related professional discipline.
 1. Wetlands: wetland biologist.
 2. Floodplains: hydrologist or engineer.
 3. Geologically hazardous areas: engineer or geologist.
 4. Fish and wildlife habitats: biologist.
- B. Incorporate best available science.
- C. Cover a study area large enough to understand relationships with important off-site factors and identify any nearby critical area whose buffer extends onto the project site.
- D. Contain the following unless waived by the Shoreline Administrator:
 1. Name and contact information of the applicant, description of the proposed development, and identification of required permits;

2. Site plan drawn to scale showing critical areas, buffers, existing structures, and proposed structures, clearing, grading, and stormwater management;
3. Characterization of critical areas and buffers;
4. Assessment of the probable impact to critical areas;
5. Analysis of site development alternatives;
6. Description of efforts to avoid, minimize, and mitigate impacts to critical areas pursuant to Section B.1.8 ("sequencing");
7. Mitigation plans as needed, in accordance with Section B.1.6;
8. Evaluation of compliance with this critical areas code's substantive requirements applicable to the proposed development;
9. Financial guarantees to ensure compliance, such as a performance bond or deposit, if necessary;
10. Additional information as required in the section corresponding to the type of critical area;
11. Documentation of who prepared the report and when, with fieldwork and data sheets;
12. Statement specifying the accuracy of the report and assumptions relied upon, and
13. Additional information as required by the Shoreline Administrator.

B.1.5 Previous Studies

Critical area reports may rely upon, without duplication of effort, valid previous studies prepared for the site, taking into account any change in the site, the proposed development, or the surrounding area.

B.1.6 Mitigation Plan Requirements

If the Town allows conformance with these requirements to be achieved by mitigation, the critical area report shall include a mitigation plan consisting of:

- A. An analysis of the anticipated impacts on functions and values;
- B. A strategy for mitigating the impacts, including site selection factors;
- C. An analysis of the existing and anticipated functions and values at the mitigation site, including an assessment of risks;
- D. A review of the best available science relative to the proposed mitigation;
- E. Specific standards for evaluating whether the mitigation is successful;
- F. Detailed construction plans, including:
 1. Construction timing;
 2. Grading and excavation details;
 3. Erosion and sediment control features;
 4. Planting plan including species and spacing; and
 5. Measures to protect plants until established and control invasive species.
- G. A program for monitoring the mitigation over at least five years; and

- H. Potential corrective measures should the monitoring indicate the standards set per subsection E are not being met.

B.1.7 Independent Review of Critical Areas Report

The Shoreline Administrator may have the critical area report evaluated by an independent qualified professional and/or request consultation from an agency with expertise. If the report and evaluations disagree, the Shoreline Administrator shall determine which to utilize.

B.1.8 Substantive Requirements

- A. All treatment of critical areas shall be in accordance with the best available science as defined in WAC 365-195-900 through 195-925, which is hereby adopted by reference, along with the Washington State Department of Community Development's *Citations of Recommended Sources of Best Available Science for Designating and Protecting Critical Areas*.
- B. Critical areas and their buffers shall be left undisturbed except the following may be permitted if best management practices are used:
 - 1. Authorized functional restoration;
 - 2. In buffers: utility poles and utility lines, which do not require excavation;
 - 3. In the outer 75 percent of buffers: permeable-surfaced walkways, trails, and minimal wildlife viewing structures;
 - 4. Developments for which mitigation is allowed per subsection E; and
 - 5. Other uses specifically authorized by this critical areas code.
- C. No development shall occur which results in a net loss of the functions or values of any critical area. The pre- and post-development functional comparison shall be on a per function basis unless otherwise authorized by this critical areas code.
- D. No development shall occur in critical area and their buffers, which results in an unreasonable hazard to the public health and safety.
- E. These substantive requirements shall be met via one or more of the following methods, listed in preferential sequence (commonly known as "sequencing"). The methods used shall be those, which are highest on the list yet consistent with the objectives of the proposed development.
 - 1. Avoid the impact altogether by not taking the proposed action;
 - 2. Minimize the impact by limiting the action's magnitude or changing the project design, location, or timing;
 - 3. Mitigate (compensate for) the impact on natural system functions and values by enhancing or replacing other natural systems and ensuring that the mitigation serves its purpose over time. Mitigation should provide equivalent or greater functions and values than those of the critical area it replaces. The mitigation shall be near the impact site unless it is more ecologically effective to mitigate lost functions at a larger scale, such as at a wetland mitigation bank within the impacted wetland's drainage basin. The Town reserves the right to disallow mitigation that would be located outside the UGA.
- F. As a condition of any permit approval, the Town may require that:

1. The outer edge of the critical area or buffer be marked, signed, or fenced to protect the resource. Such protection may be temporary, during construction, or permanent such as to protect the resource from livestock or people. The Shoreline Administrator shall specify the design and sign message if applicable, of such markers, signs, and fencing.
 2. The applicant file a notice with the county records and elections division stating the presence of the critical area or buffer and the application of this critical areas code to the property, to inform subsequent purchasers of the property;
 3. The critical area and/or buffer are placed in a critical area tract or conservation easement, the purpose of which is to set aside and protect the critical area. The critical area tract or conservation easement shall be:
 - a. Held by the Town, a homeowner's association, a land trust or similar conservation organization, or by each lot owner within the development in an undivided interest,
 - b. Recorded on all documents of title of record for the affected parcels,
 - c. Noted on the face of any plat or recorded drawing; and
 - d. Delineated on the ground with permanent markers and/or signs in accordance with local survey standards.
- G. The Town may allow averaging of standard wetland and stream buffer widths if a qualified professional demonstrates that:
1. Functions and values are not adversely affected,
 2. The total buffer area is not reduced; and
 3. At no location is the buffer width reduced more than 25 percent.
- H. Unless otherwise provided, buildings and other structures shall be set back a distance of ten feet from the edges of all critical areas and critical area buffers. The same protrusions into this setback area shall be allowed as the zoning code allows into property line setback areas.
- I. Lots created through subdivisions or short plats may contain critical areas and buffers provided they contain adequate buildable area to build upon. Subdivision and short plats shall show, on their face, any applicable critical area limitations.
- J. When any existing regulation, easement, covenant, or deed restriction conflicts with this critical areas code, that which provides more protection to the critical areas shall apply.
- K. When critical areas of two or more types coincide, the more restrictive buffer and requirements shall apply.
- L. The substantive requirements peculiar to the type of critical area shall also be complied with. See following sections.

B.1.9 Enforcement and Inspections

- A. In enforcing these requirements, the Shoreline Administrator may require a restoration plan prepared by a qualified professional. Historic functions and values, soil configurations, and native vegetation shall be used as a guide for restoration. Flood and geological hazards shall be reduced to the pre-development level.

- B. Reasonable access to the development shall be provided to agents of the Town for critical area inspections, monitoring, restoration, or emergency action.

B.2 Wetlands

B.2.1 Designation

Wetlands are those areas, designated in accordance with the *Washington State Wetlands Identification and Delineation Manual* (Washington Department of Ecology 1997) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (US Army Corps of Engineers May 2010) that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. All areas within the Town of Wilkeson meeting the wetland designation criteria, regardless of any formal identification, are hereby designated critical areas and are subject to the provisions of this chapter. The Town of Wilkeson has a map, showing the approximate location and extent of wetlands. However, the map is only a guide, and will be updated, as wetlands become better known. The exact location of a wetland's boundary shall be determined in accordance with the above-stated manual as required by RCW 36.70A.175 (Ecology Publication #96-94, 1997).

B.2.2 Rating

Wetlands shall be rated Category I, II, III, or IV according to the Department of Ecology's 2004 *Washington State Wetland Rating System for Western Washington* (Version 2 - Publication #04-06-025). (See WAC 365-190-080(1)(a).) Wetland categories shall apply to the wetland, as it exists on the date the Town adopts the rating system, as the wetland naturally changes thereafter, or as the wetland changes in accordance with permitted activities. Wetland rating categories shall not change due to illegal modifications.

B.2.3 Contents of critical area reports

In addition to the requirements of Section B.1.4, critical area reports for wetlands shall include:

- A. Wetland delineation map as surveyed in the field. Buffer boundaries shall be marked in the field by a licensed surveyor using wood or steel posts, four to five feet tall above the ground surface, permanently affixed, carrying identification signs approved by the Town, to be obtained from the Town Hall. The charge for these signs shall be \$1.00 per sign.
- B. Assessment of wetlands, including acreage, category, required buffers, evidence of past illegal alterations, soil, topography, hydrology, ecology, and functional evaluation using a recognized method such as the Western Washington Wetland Rating System.
- C. Discussion of measures to preserve wetland functions and values, including the "sequencing" set forth in Section B.1.8.
- D. If mitigation is proposed, a mitigation plan including the existing and proposed status of:
 - 1. Wetland acreage;
 - 2. Vegetation and fauna;

3. Surface and subsurface hydrology;
 4. Soils, substrate, and topography;
 5. Required wetland buffers; and
 6. Property ownership; and
- E. Proposed wetland management and monitoring.

B.2.4 Substantive requirements

In addition to the substantive requirements in Section B.1.8, the following requirements shall apply to developments (see definitions) in wetlands.

- A. The higher the wetland category (Category I is highest), the greater shall be the emphasis on higher-priority “sequencing” methods per Section B.1.8.
- B. The following table establishes the standard buffer width that shall apply to each wetland category, depending on the intensity of the potential land use on the upland side of the buffer as determined by the Shoreline Administrator. Buffers shall be measured from the wetland boundary as surveyed in the field. These buffer widths presume that healthy native plant communities dominate the buffer. If wetland enhancement is proposed, the category of the wetland after enhancement shall pertain.

Wetland Buffer Widths			
	Intensity of the potential land use on the upland side of the buffer		
	High (including commercial areas, industrial areas, residential areas at more than four units per net acre, and areas of high-intensity agriculture or recreation.	Moderate (including residential areas at less than four units per net acre, parks, trails)	Low (including passive recreation and open space)
Category I	300 feet	250 feet	200 feet
Category II	200 feet	150 feet	100 feet
Category III	100 feet	75 feet	50 feet
Category IV	50 feet	35 feet	35 feet

- C. Buffers shall be measured from the wetland boundary as surveyed in the field. If wetland enhancement is proposed, the category of the wetland after enhancement shall pertain.
- D. The Shoreline Administrator may increase the required buffer width and/or require buffer enhancement if a wetland professional determines that the wetland provides habitat for wildlife species that require greater protection than the standard buffer, or the buffer lacks healthy native vegetation or is otherwise handicapped in its ability to protect the wetland. Said determination shall take into account the score derived from

the Wetland Rating System and such factors as topography, land use, and past disturbance.

- E. The Shoreline Administrator may reduce the standard buffer width if the function(s) served by the particular wetland need less buffer width, as indicated by a wetland functional analysis.
- F. Except as provided elsewhere in these requirements, all existing native vegetation in wetland buffers shall be retained without disturbance, mowing, or hard surfacing, nor shall any action be taken to inhibit volunteer regrowth of native vegetation. Invasive weeds shall be removed for the duration of any mitigation bond. Stormwater management facilities and bioswales are permitted in the outer 50 percent of the buffer of Category III or IV wetlands provided wetland functions and values are not significantly lost through fluctuations in wetland hydrology and construction integrates Best Management Practices.

B.2.5 Mitigation

- A. Mitigation for alterations to wetlands may be by restoring former wetlands, creating wetlands, or enhancing degraded wetlands, consistent with the *Mitigation in Washington State – Part 1: Agency Policies and Guidance*, publication #06-06-011a, March 2006 and *Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans*, publication #06-06-011b, March 2006.
- B. Mitigation shall generally replace wetland functions lost from the altered wetland except that the Town may permit out-of-kind replacement when the lost functions are minimal or less important to the drainage basin than the functions that the mitigation action seeks to augment.
- C. Mitigation shall be in the same drainage basin as the altered wetland. Wetland mitigation shall be in the same sub-basin unless a higher level of ecological functioning would result from an alternate approach.
- D. Mitigation projects shall be completed as quickly as possible consistent with such factors as rainfall and seasonal sensitivity of fish, wildlife, and flora.
- E. Mitigation projects shall be designed with reference to *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance*, publication #06-06-011a, March 2006; and similar science. Mitigation projects shall score the impact site and the mitigation site using the Wetland Rating Data Form of the *Revised Washington State Wetland Rating System for Western Washington*. The aggregate total of wetland functions and values after mitigation, altered and mitigation sites combined, shall be at least 50 percent greater than the aggregate total before mitigation, provided that this replacement ratio (1.5-to-1, non-acreage-based) shall be increased as necessary to compensate for mitigation that:
 - 1. Has a greater than usual risk of failure;
 - 2. Is out-of-kind,
 - 3. Is outside the sub-basin,
 - 4. Is unlikely to produce the intended functions and values within ten years after the alteration; or
 - 5. Remedies unauthorized alterations.

- F. Because the above replacement ratio is based on a before-and-after count of functions and values, not acreage, it accounts, without need for further adjustment, for mitigation that would result in a lower category wetland than the wetland being impacted, and mitigation that would enhance as opposed to create or restore a wetland. In the case of enhancement, wetland acreage may decline though wetland functions and values would increase. Enhancement proposals shall be based on a sound understanding of the mitigation site's pre- and post-mitigation functions and values.
- G. Credits granted from a certified wetland mitigation bank shall be consistent with the bank's certification and service area.
- H. The applicant shall provide an as-built plan of the mitigation site and monitor the site in accordance with Section B.1.6.

B.3 Geologically Hazardous Areas

B.3.1 Designation

Areas susceptible to one or more of the following types of hazards are hereby designated geologically hazardous areas, in accordance with WAC 365-190-080(4)(a).

- A. Erosion hazard areas are areas identified by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a moderate-to-severe, severe, or very severe rill and inter-rill (sheet wash) erosion hazard.
- B. Landslide hazard areas are areas subject to landslides based on geology, soils, topography, and hydrology, including:
 - 1. Areas delineated by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a severe limitation for building site development;
 - 2. Areas mapped by the Washington Department of Ecology (*Coastal Zone Atlas*) or the Washington State Department of Natural Resources (slope stability mapping) as unstable (U or class 3), unstable old slides (UOS or class 4), or unstable recent slides (URS or class 5);
 - 3. Areas designated as quaternary slumps, earthflows, mudflows, lahars, or landslides on maps published by the U.S. Geological Survey or Washington State Department of Natural Resources;
 - 4. Areas where the following coincide: slopes steeper than fifteen percent, a relatively permeable sediment overlying a relatively impermeable sediment or bedrock, and ground water seepage;
 - 5. Areas that have shown movement in the past ten thousand years or that are underlain or covered by mass wastage debris of that time frame;
 - 6. Slopes that are parallel or subparallel to planes of weakness (such as bedding planes, joint systems, and fault planes) in subsurface materials;
 - 7. Slopes steeper than eighty percent subject to rock fall during seismic shaking;

8. Areas potentially unstable because of rapid stream incision, stream bank erosion, and undercutting by wave action;
 9. Areas at risk from snow avalanches;
 10. Canyons or active alluvial fans subject to debris flows or catastrophic flooding; and
 11. Slopes of thirty percent or steeper with a vertical relief of ten or more feet except areas composed of consolidated rock.
- C. Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction, lateral spreading, or surface faulting. One indicator of potential earthquake damage is a record of past earthquake damage. Settlement and soil liquefaction occur in areas underlain by cohesionless, loose, or soft-saturated soils of low density, typically in association with a shallow ground water table.
- D. Mine hazard, volcanic, and tsunami hazard areas (none known to be present: see WAC 365-190-080)
- E. Other hazard areas include areas susceptible to mass wasting, debris flows, rock falls, and differential settlement.

B.3.2 Mapping

The following maps, which may be continuously updated, may be used as a guide for locating geologically hazardous areas.

- A. U.S. Geological Survey landslide hazard, seismic hazard, and volcano hazard maps;
- B. Washington State Department of Natural Resources seismic hazard maps for Western Washington;
- C. Washington State Department of Natural Resources slope stability maps;
- D. Locally adopted maps.

B.3.3 Contents of critical area reports

In addition to the requirements of Section B.1.4, critical area reports for geologically hazardous areas shall include, where applicable:

- A. Site history regarding landslides, erosion, and prior grading;
- B. Topography in suitable contour intervals;
- C. Height of slope, slope gradient, slope stability, and slope retreat rate recognizing potential catastrophic events;
- D. Description of the geology (including faults), hydrology (including springs, seeps, and surface runoff features), soils (including, in seismic hazard areas, thickness of unconsolidated deposits and liquefaction potential), and vegetation;
- E. Type, extent, and severity of geologic hazard(s);
- F. Analysis of the proposal's risk from geologic hazard and the proposal's potential for exacerbating off-site hazards;
- G. Recommended buffers and other conditions of approval. In areas of erosion or landslide hazard, the recommended conditions may include:

1. Clearing, fill, and hard-surfacing limits, slope stabilization measures, and vegetation management plan;
 2. Limitation on clearing during the rainy season, generally from October 1 to May 1;
 3. Design parameters of foundations and retaining structures; and
 4. Drainage plan and erosion and sediment control plan in compliance with Town stormwater management regulations; and
- H. Overview of field investigations, measurements, references, and past assessments of the site.

B.3.4 Substantive requirements

In addition to the substantive requirements of Section B.1.8, the following requirements shall apply to geologic hazard areas.

- A. Proposed developments shall not increase the long-term risk of or exposure to geological hazard on-site or off-site.
- B. Hazard mitigation shall not rely on actions that require extensive maintenance.
- C. Development near an erosion or landslide hazard area shall:
 1. Observe a buffer from the edges thereof, of adequate width to comply with the substantive requirements;
 2. Not decrease the factor of safety for landslides below the limits of 1.5 for static conditions and 1.2 for dynamic conditions. Analysis of dynamic conditions may be based on a minimum horizontal acceleration as established by the International Building Code;
 3. Cluster structures and improvements as necessary to avoid hazard areas;
 4. Use retaining walls that allow the retention of existing natural slopes when possible rather than graded artificial slopes;
 5. Place utility lines and pipes in erosion and landslide hazard areas only when no other alternative is available and when the line or pipe can be installed above ground in such a manner as to remain intact without leaks in the event of a slide;
 6. Discharge water from surface water facilities and roof drains onto or upstream from an erosion or landslide hazard area only if:
 - a. discharged at flow durations matching predeveloped conditions, with adequate energy dissipation, into existing channels; or
 - b. dispersed upslope of the steep slope onto a low-gradient undisturbed buffer of adequate infiltrate capacity without increasing saturation of the slope; and
 7. Locate any on-site sewage drain fields outside the hazard area and related buffers.

B.4 Habitat Conservation Areas

B.4.1 Designation

Habitat conservation areas include:

- A. Areas having a primary association with fish and wildlife species identified by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service as being in danger of extinction or threatened to become endangered;
- B. Areas having a primary association with fish and wildlife species identified by the Washington Department of Fish and Wildlife as being in danger of extinction, threatened to become endangered, vulnerable, or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats. See WAC 232-12-014 (state endangered species) and WAC 232-12-011 (state threatened and sensitive species).
- C. State priority habitats as identified by the state Department of Fish and Wildlife;
- D. Habitats and species of local importance as identified by the Town in accordance with Section B.4.2;
- E. Waters of the state, including lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington, as classified in WAC 222-16-031;
- F. Ponds under twenty acres that provide fish or wildlife habitat except artificial ponds created for a non-wildlife purpose such as stormwater detention facilities, wastewater treatment facilities, farm ponds, and temporary construction ponds.
- G. Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity;
- H. Natural area preserves and natural resource conservation areas as defined by the Washington State Department of Natural Resources;
- I. Areas of rare plant species and high quality ecosystems as identified by the Washington State Department of Natural Resources through the Natural Heritage Program (see Chapter 79.70 RCW); and
- J. Land useful or essential for preserving connections between habitat blocks and open spaces.

B.4.2 Designation of habitats and species of local importance

- A. Nominations for habitats and species of local importance shall include:
 - 1. Precise identification of the nominated habitat;
 - 2. A scientifically sound management plan; and
 - 3. A study, paid for by the nominator, containing sufficient information to verify compliance with the following criteria.
- B. The designation criteria shall be as follows.
 - 1. The species shall be local, native populations that are vulnerable, declining, or have special recreation, commercial, game, or other value.
 - 2. The habitat shall be important for the long-term persistence of the local population.
 - 3. The habitat shall be of high quality, or be capable of restoration to high quality, or connect otherwise isolated habitats.
 - 4. Protection by other agencies, laws, or non-regulatory tools shall be inadequate to protect the species.

- C. Designations of habitats and species of local importance shall form a part of these development regulations.

B.4.3 Mapping

The following maps, which may be continuously updated, may be used as a guide for locating habitat conservation areas.

- A. Washington Department of Fish and Wildlife Priority Habitat and Species maps;
- B. Washington State Department of Natural Resources, Official Water Type Reference maps;
- C. Washington State Department of Natural Resources Shorezone Inventory;
- D. Washington State Department of Natural Resources Natural Heritage Program mapping data;
- E. Anadromous and resident salmonid distribution maps contained in the Habitat Limiting Factors reports published by the Washington Conservation Commission; and
- F. Washington State Department of Natural Resources State Natural Area Preserves and Natural Resource Conservation Area maps.

B.4.4 Content of critical area reports

In addition to the general critical area report requirements of Section B.1.4, critical area reports for habitat conservation areas shall include, where applicable:

- A. Vegetation assessment; and
- B. Discussion of any federal, state, or local special management recommendations for species or habitats on near the site.

B.4.5 Substantive requirements

In addition to the substantive requirements of Section B.1.8, the following shall apply to habitat conservation areas.

- A. No plant, wildlife, or fish species not indigenous to the region shall be introduced into a habitat conservation area except with approval of a state or federal agency with expertise.
- B. Preference in mitigation shall be given to contiguous wildlife habitat corridors.
- C. In reviewing development proposals, the Town shall seek opportunities to restore degraded riparian fish and wildlife functions such as breeding, rearing, migration, and feeding.
- D. The Town shall require buffers of undisturbed native vegetation adjacent to habitat conservation areas as necessary. Buffer widths shall reflect the sensitivity of the habitat and may reflect the intensity of nearby human activity.
- E. When a species is more sensitive to human activity during a specific season of the year, the Town may establish an extra outer buffer from which human activity is excluded during said season.

- F. No development shall be allowed within a habitat conservation area or buffer with which state or federal endangered, threatened, or sensitive species have a primary association, except in exchange for restoration as approved by the Shoreline Administrator or as provided in a management plan approved by a state or federal agency with appropriate expertise.
- G. When a development permit is applied for on land containing or adjacent to a bald eagle nest or communal roost, the Town shall notify the Washington Department of Fish and Wildlife and otherwise comply with WAC 232-12-292.
- H. No development shall be permitted which degrades the functions or values of anadromous fish habitat, including structures or fills which impact migration or spawning.
- I. Construction and other activities shall be seasonally restricted as necessary to protect the resource. Activities shall be timed to occur during work windows designated by the Washington Department of Fish and Wildlife for applicable fish species.
- J. Shoreline erosion control shall use bioengineering methods or soft armoring in accordance with an approved critical area report.
- K. The following table establishes the standard width of non-shoreline stream buffers (also known as riparian habitat areas) that shall apply to each stream type. The Town of Wilkeson has maps showing streams of each type. Widths shall be measured outward in each direction, on the horizontal plane, from the ordinary high water mark, or from the top of bank if the ordinary high water mark cannot be identified, or from the outer edge of the channel migration zone when present.

Stream Buffers in Riparian Habitat Areas

Stream type	Standard buffer width
Type F	100 feet
Type Np	50 feet
Type Ns	25 feet

- L. The Shoreline Administrator may increase the standard buffer width as necessary to fully protect riparian functions. For example, the buffer may be extended to the outer edge of the floodplain or windward into an area of high tree blow-down potential.
- M. The Shoreline Administrator may reduce the standard buffer width in exchange for restoration of degraded areas in accordance with an approved plan, or for buffer averaging in accordance with Section B.1.8. The Shoreline Administrator may also reduce the standard buffer width wherever the proposed adjoining upland land use is of low intensity and low impact, such as passive-use parks.

- N. If the stream enters an underground culvert or pipe, and is unlikely to ever be restored aboveground, the Shoreline Administrator may waive the buffer along the undergrounded stream, provided that where the stream enters and emerges from the pipe the opposite outer edges of the buffer shall be joined by a radius equal to the buffer width, with said radius projecting over the piped stream.
- O. To the extent facilities are allowed in habitat conservation areas, the following regulations shall apply.
1. Trails shall be on the outer edge of the stream buffer except for limited viewing platforms and crossings. Trails and platforms shall be of pervious materials as far as possible.
 2. Road bridges and culverts shall be designed according to the Washington Department of Fish and Wildlife *Fish Passage Design at Road Culverts*, 1999, and the National Marine Fisheries Service *Guidelines for Salmonid Passage at Stream Crossings*, 2000.
 3. Utility lines shall be accomplished by boring beneath the scour depth and hyporheic zone (the saturated zone beneath and adjacent to streams that filters nutrients and maintains water quality). Utilities shall avoid paralleling streams or changing the natural rate of shore or channel migration.
 4. New and expanded public flood protection measures shall require a biological assessment approved by the agency responsible for protecting federally listed species.
 5. In-stream structures such as high-flow bypasses, sediment ponds, instream ponds, retention and detention facilities, tide gates, dams, and weirs shall be allowed only as part of an approved restoration project.
 6. Stormwater conveyance structures shall incorporate fish habitat features and the sides of open channels and ponds shall be vegetated to retard erosion, filter sediments, and shade the water.
 7. Watercourse alterations: see Chapter 153 Wilkeson Critical Areas Code.

APPENDIX C

Restoration Plan

APPENDIX D

**Jurisdiction Exhibits (Excerpts from the
Shoreline Master Program Handbook)**

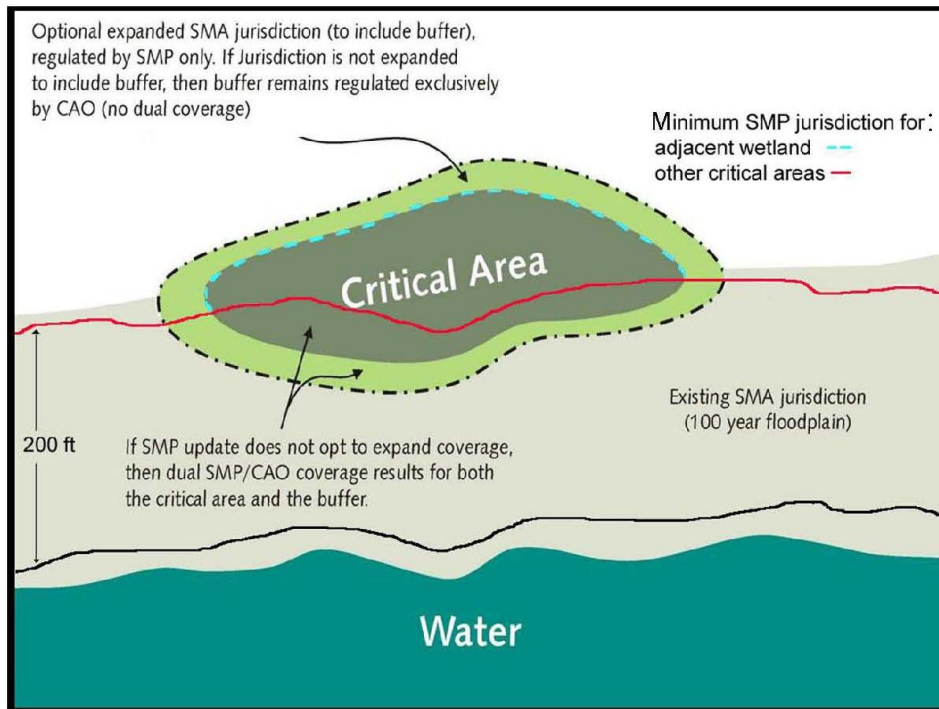


Figure 5-8: Local governments have the option to expand SMA jurisdiction to include lands necessary for buffers for critical areas.

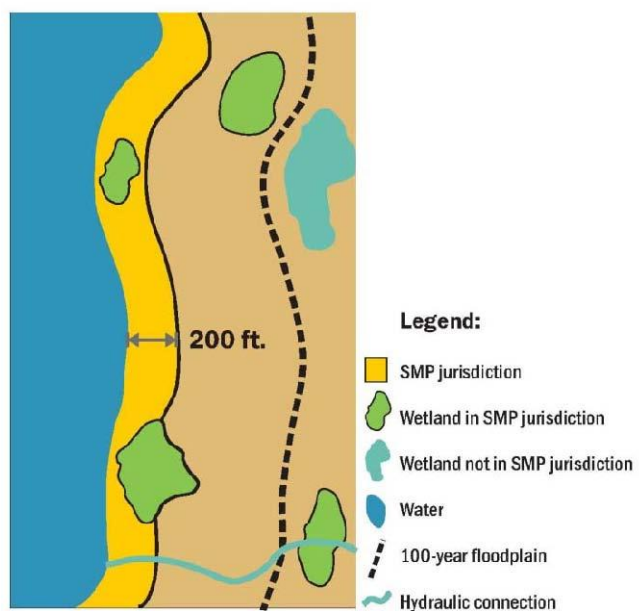
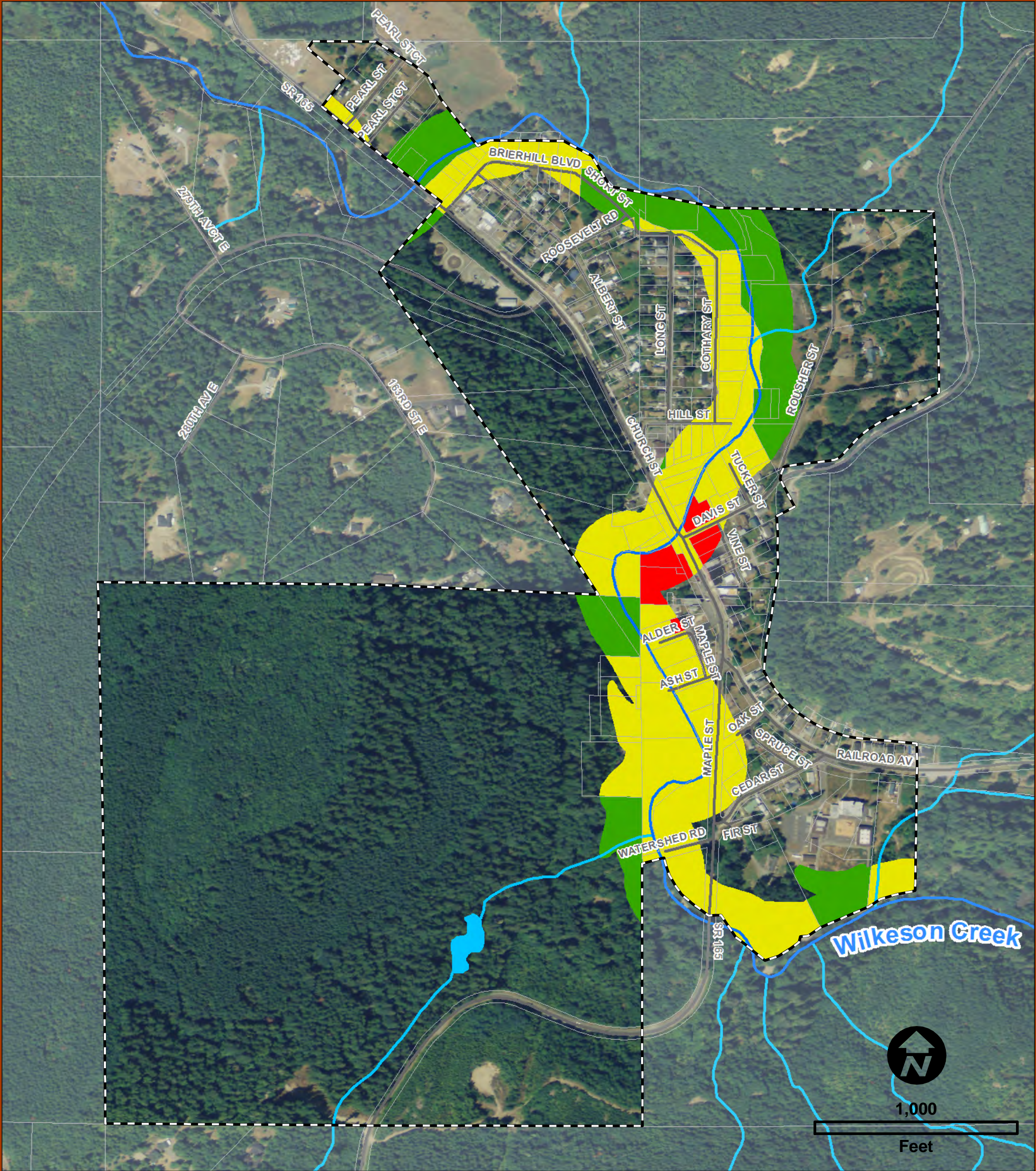


Figure 5-9: Wetlands in shoreline jurisdiction are either fully or partially within 200 feet of the OHWM, within the floodplain, or associated through hydraulic continuity.

APPENDIX E

**Dept. of Ecology - Channel Migration
Zone Assessment**



Environment Designations

- Historic Downtown
- Shoreline Residential
- Urban Conservancy
- City Boundary*
- Tax Parcels*
- Major Roads*
- SMA Rivers or Streams*
- Other Rivers or Streams*
- Other Water Bodies*

Note: All areas waterward of the ordinary high water mark of Wilkeson Creek are designated Aquatic.

TOWN OF WILKESON
SHORELINE MASTER PROGRAM

ENVIRONMENT DESIGNATIONS

June 2011

Data sources:
*Pierce County



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

**TOWN OF WILKESON
GRANT No. G1000070**

SHORELINE RESTORATION PLAN
for Town of Wilkeson's Shoreline: Wilkeson Creek

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June 2012

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Reference Number:
100613**

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SHORELINE RESTORATION PLAN

TOWN OF WILKESON

1.0 Introduction

The Town of Wilkeson's Shoreline Master Program applies to activities in the shoreline jurisdiction zone. Activities that have adverse effects on the ecological functions and values of the shoreline must be mitigated. By law, the proponent of that activity is required to return the subject shoreline to a condition equivalent to the baseline level at the time the activity takes place. It is understood that some uses and developments cannot always be mitigated fully, resulting in incremental and unavoidable degradation of the baseline condition. The subsequent challenge is to improve the shoreline over time in areas where the baseline condition is degraded, severely or marginally.

WAC Section 173-26-201(2)(f) of the Shoreline Master Program Guidelines (Guidelines)¹ says:

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

Degraded shorelines are not just a result of pre-Shoreline Master Program activities, but also of unregulated activities and exempt development. The new Guidelines also require that “[l]ocal master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline.” While some actions within shoreline jurisdiction are exempt from a permit, the Shoreline Master Program should clearly state that those actions are not exempt from compliance with the Shoreline Management Act or the local Shoreline Master Program. Because the shoreline environment is also affected by activities taking place outside of a specific local master program's jurisdiction (e.g., outside of town limits,

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

outside of the shoreline area within the town), assembly of out-of-jurisdiction actions, programs and policies can be essential for understanding how the Town fits into the larger watershed context. The latter is critical when establishing realistic goals and objectives for dynamic and highly inter-connected environments.

Restoration of shoreline areas, in relation to shoreline processes and functions, commonly refers to methods such as re-vegetation, removal of invasive species or toxic materials, and removal of shoreline modifications, such as bulkhead structures. Consistent with Ecology's definition, use of the word "restore," or any variations, in this document is not intended to encompass actions that reestablish historic conditions. Instead, it encompasses a suite of strategies that can be approximately delineated into four categories:

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

As directed by the Guidelines, the following discussions provide a summary of baseline shoreline conditions, list restoration goals and objectives, and discuss existing or potential programs and projects that positively impact the shoreline environment. In total, implementation of the Shoreline Master Program (with mitigation of project-related impacts) in combination with this Restoration Plan (for restoration of lost ecological functions that occurred prior to a specific project) should result in a net improvement in the Town of Wilkeson's shoreline environment in the long term.

In addition to meeting the requirements of the Guidelines, this Restoration Plan is also intended to support the Town's or other non-governmental organizations' applications for grant funding, and to identify the various entities and their roles working within the Town to enhance the environment.

2.0 Shoreline Inventory Summary

2.1 *Introduction*

The Town recently completed a comprehensive inventory and analysis of its shorelines (April 2011) as an element of its Shoreline Master Program update. The purpose of the shoreline inventory and analysis was to gain a greater understanding of the existing condition of Wilkeson's shoreline environment to ensure the updated Shoreline Master Program policies and regulations will protect local ecological processes and functions. The inventory describes existing physical and biological conditions in the shoreline jurisdiction within Town limits and includes recommendations for restoration of

ecological functions where they are degraded. The *Shoreline Inventory and Analysis Report for Town of Wilkeson: Wilkeson Creek* (TWC 2011) is summarized below.

2.2 Shoreline Boundary

As defined by the Shoreline Management Act of 1971, shorelines include certain waters of the state plus their associated “shorelands.” At a minimum, the waterbodies designated as shorelines of the state are streams whose mean annual flow is 20 cubic feet per second (cfs) or greater and lakes whose area is greater than 20 acres. Shorelands are defined as:

“those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter...Any county or city may determine that portion of a one-hundred-year-floodplain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom... Any city or county may also include in its master program land necessary for buffers for critical areas (RCW 90.58.030)”

The Town has been utilizing the Pierce County Shoreline Master Program since its adoption in 1975. The program was updated in 1981. In addition, the Town’s Comprehensive Plan, updated in 2005, includes a goal related to the conservation of the Town’s shorelines.

The Town’s shoreline management area includes the entirety of the Wilkeson Creek shoreline within Town limits. Further, shoreline jurisdiction includes two areas of associated wetlands landward of the standard 200-foot shoreline jurisdiction. A map of the Town’s shoreline jurisdiction is provided in Figure 1, and more information on the Town’s jurisdictional boundary may be found in the *Shoreline Inventory and Analysis Report for Town of Wilkeson: Wilkeson Creek* (TWC 2011).

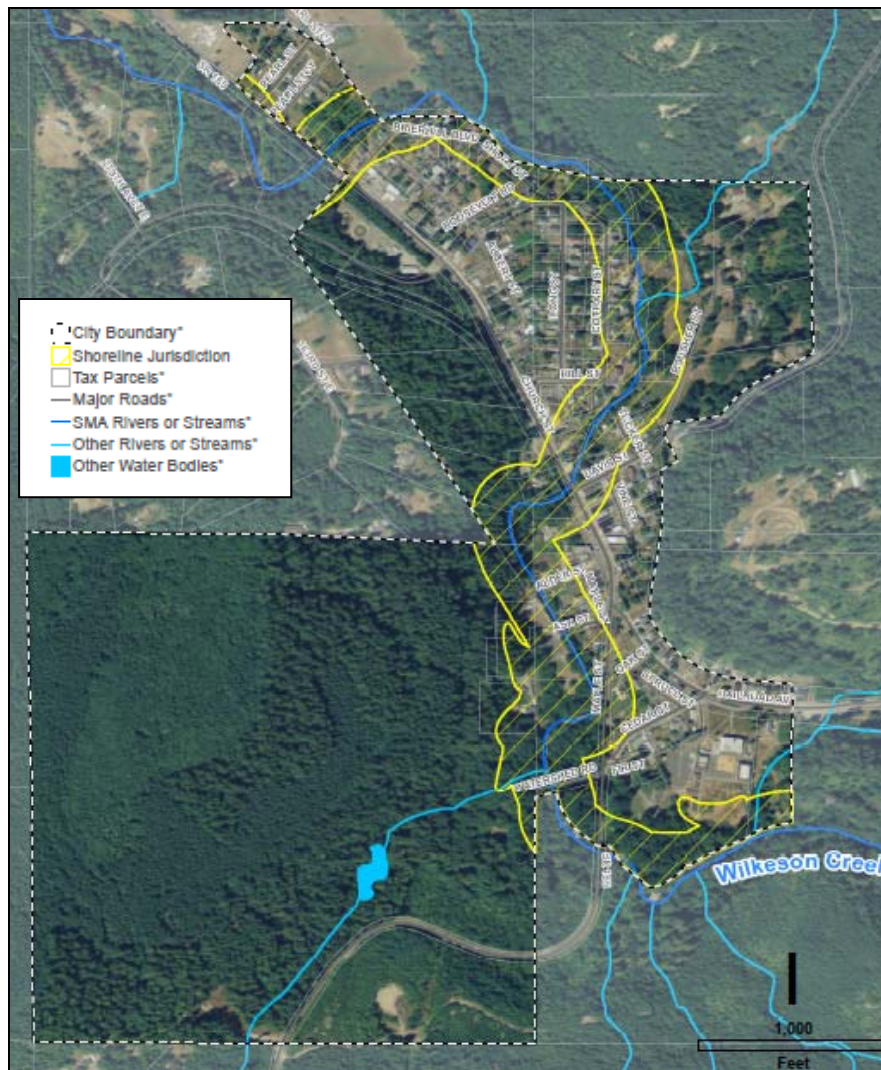


Figure 1. Map of Wilkeson shoreline jurisdiction (outlined in yellow)

2.3 *Inventory and Analysis*

The Town of Wilkeson's shoreline inventory includes all land currently within the Town's proposed shoreline jurisdiction. The total area subject to the Town's updated SMP, not including aquatic area, is approximately 51.9 acres, and encompasses approximately 1.56 miles of shoreline.

In order to break down the shoreline into manageable units and to help evaluate differences between discrete shoreline areas, the Wilkeson Creek shoreline has been divided into two assessment units based on land use patterns and ecological condition and as illustrated on Figure 2.

The following inventory and analysis information is summarized from detailed information presented in the *Shoreline Inventory and Analysis Report for the Town of Wilkeson: Wilkeson Creek*.

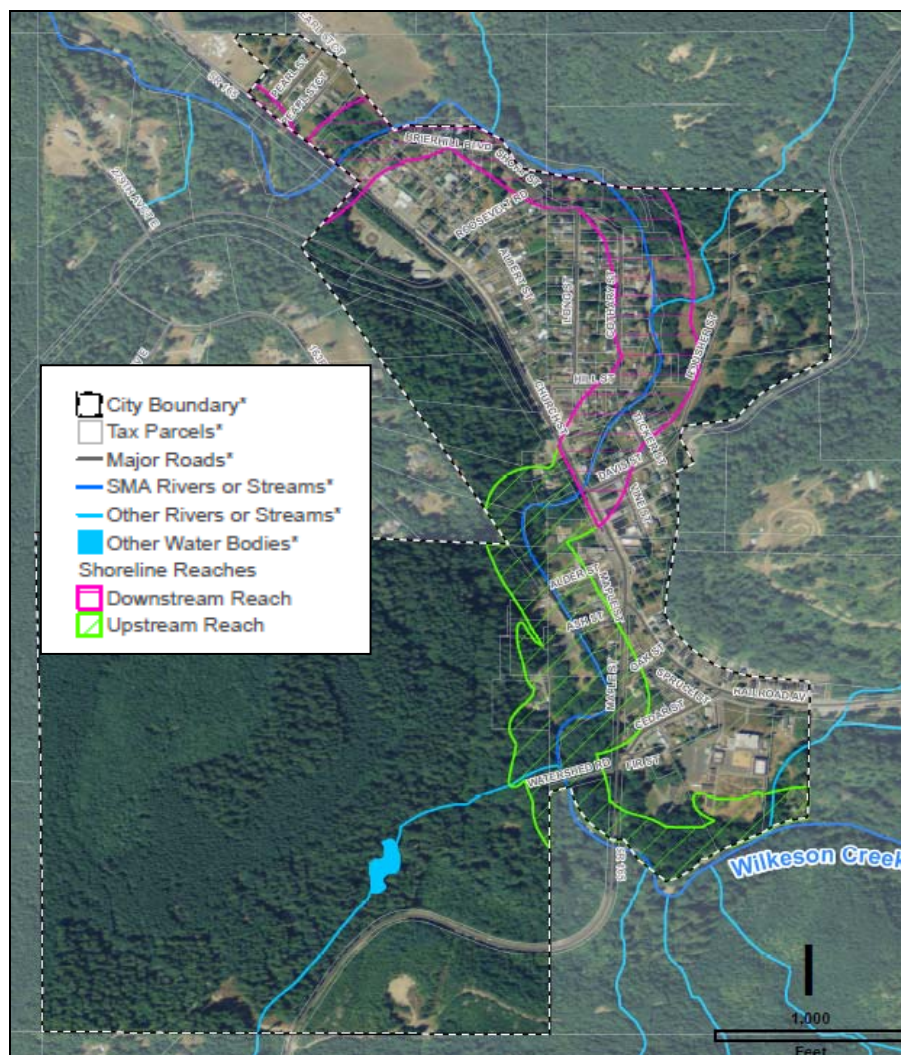


Figure 2. Map of Town's shoreline assessment units

2.3.1 Land Use and Physical Conditions

The Town of Wilkeson is located in Pierce County in the Puget Sound Region and contains freshwater shorelines associated with Washington State's Water Resource Inventory Area (WRIA) 10, Puyallup- White River. The Town's shorelines are more specifically located in the South Prairie Creek Watershed, which covers 146 square miles, and the Wilkeson Creek sub-basin, which covers 28 square miles.

Wilkeson Creek flows from its headwaters north of Burnt Mountain in a north-northwesterly direction to its confluence with South Prairie Creek. Approximately 3.5

miles from its headwaters, Wilkeson Creek becomes a shoreline of the state, as it is in this location that the 20 cfs threshold is passed. Approximately 1.3 miles downstream of this location, Gale Creek flows into Wilkeson Creek. Wilkeson Creek then flows for another two miles before entering the Town of Wilkeson. Within the Town, Wilkeson Creek totals approximately 1.56 miles in length. The total shoreline jurisdiction area for the stream and associated wetlands within the Town is 51.9 acres. After leaving the Town limits, the stream flows for approximately four miles before flowing into South Prairie Creek. South Prairie Creek then flows in a westerly direction, joining the Carbon River, then the Puyallup River, before eventually emptying into Commencement Bay in the City of Tacoma.

Within the Town of Wilkeson, the stream in many locations has been channelized with rip-rap or generally confined with armoring (although mapping of shoreline armoring has not been completed). The channel armoring precludes stream occupation of significant portions of historical floodplain (Kerwin 1999). In many cases, armoring is necessary to protect existing developed properties, many of which are located extremely close to the stream, from further erosion. Therefore, restoration of the stream banks is unlikely. The constricted channels experience increased water velocities and lack adequate pool-riffle composition which reduce salmonid rearing potential. The loss of ability for the stream to dissipate energy with overflow creates a scouring effect which reduces the stream's capacity to store and properly distribute spawning gravels, retain wood in the channel and maintain and create functional pool/riffle sequences. However, some spawning and rearing conditions persist despite the adverse effects of flood control structures (Kerwin 1999).

A summary of physical shoreline modifications by shoreline assessment unit is provided below in Table 1.

Table 1. Summary of assessment unit shoreline modifications

Physical Conditions	Assessment Unit 1	Assessment Unit 2
Reach Length (feet)	3,832	4,403
Reach Area	24.4 acres	27.5 acres
Shoreline Armoring	N/A	N/A
Overwater Cover	Three bridge crossings.	None

The level of expected change in land use patterns along both assessment units is low because both areas are relatively built out (65% for Unit 1 and 67% for Unit 2). However, further subdivision of land could occur on 63% of the lots within Unit 1 and 25% of the lots within Unit 2.

2.3.2 Biological Resources and Critical Areas

The Washington State Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database identifies Chinook, coho, and steelhead within Wilkeson Creek inside the Town limits. No additional species or habitats were identified.

The Town's critical areas regulations include wetlands, geologically hazardous areas (areas susceptible to erosion, landslides, seismic events, liquefaction, and other geologic events), critical aquifer recharge areas, floodplains, and habitat conservation areas. The inventory mapping of critical areas, provided as a part of this Shoreline Master Program update, was based on a wide range of information sources, including County GIS, critical area inventories, Washington Department of Fish and Wildlife databases, and other relevant maps and literature obtained from the Washington Department of Natural Resources (DNR), Ecology, National Marine Fisheries Service, and U.S. Fish and Wildlife Service.

3.0 Restoration Goals and Objectives

The following goal relating to the shoreline and other natural features of the Town is presented in the Visions and Goals Element of the Town's Comprehensive Plan.

The Town should respect the natural environment in any future development. Slopes in excess of 40 percent, wetlands, Wilkeson/Gale Creek, other rivers and streams, and other critical resource areas should be conserved.

Several specific objectives were also developed based on objectives in the existing SMP and the Town's Comprehensive Plan. Objectives refer to specific actions, ideally measurable, that can be taken to achieve the stated goals. Many goals are interrelated, thus one objective may contribute to achieving multiple goals. Objectives are identified below, and not listed in any prioritized order.

1. Ensure continuous sound management in the preservation of unique, fragile, and scenic elements, and of non-renewable natural resources.
2. Encourage the best management practices for the continued utilization of renewable resources of the shorelines.
3. Protect shoreline natural resources including the land, its vegetation, wildlife, and the waters of the state and their aquatic life.
4. Protect and retain significant trees and vegetation in public and privately dedicated areas.

5. Utilize the process and provisions of the Shoreline Management Act to prevent the inherent harm in an uncoordinated and piecemeal development of shoreline within the Town of Wilkeson.
6. Encourage the management practices described by the WDFW in their Recommendations for Priority Habitat and Species.

The Town is committed to further specific goals, guided by the above broader SMP goals and the South Prairie Creek Bacteria and Temperature Total Maximum Daily Load (TMDL) Detailed Implementation Plan (Ecology 2006). Wilkeson Creek within Town limits was listed as a 303(d) water for copper based on estimates; subsequent reevaluation in 2001 showed compliance with water quality standards during critical conditions and resulted in Ecology not conducting a copper TMDL for the creek. The Town owns and operates a wastewater treatment plant that discharges to Wilkeson Creek. The creek met the fecal quality coliform standard and no reduction in wasteload allocation was recommended (Ecology 2006). The wastewater treatment plant permit does not have an effluent limit for temperature. The creek met the temperature standard near the discharge but exceeded the standard at the mouth. Thus, restoration goals for Wilkeson Creek are aimed at both water quality and habitat.

1. Maintain and manage the Town's sewage treatment plant and stormwater system in compliance with current NPDES permit requirements.
2. Manage stormwater discharges to Wilkeson Creek in compliance with current regulations and Ecology's Western Washington Stormwater Manual.
3. Participate in TMDL adaptive management meetings.
4. Upgrade the Town CAO every seven years.
5. Assist residents with efforts to plant and enhance native vegetation in shoreline areas by providing resources on private land management and restoration.
6. Inform residents of agency and governmental resources, including the Pierce Conservation District and the Washington State Department of Natural Resources, for help with implementing best management practices and complying with regulations under jurisdictions in addition to the Town.
7. Include shoreline restoration as a component in redevelopment plans on any Town-owned property in shoreline jurisdiction, including establishing and enhancing vegetated buffers where they do not presently exist.
8. Enforce monitoring and maintenance of restoration actions that are required under permitting regulations.

9. Include restoration requirements in CAO and land practices regulations that target lost watershed functions. Requirements may address shorelines even if impacts are not planned, and any unavoidable impact will be mitigated so that a measureable net increase in ecological function results.
10. Continue to meet water quality standards in Wilkeson Creek within Town limits and to contribute to efforts that result in the mouth of the Creek meeting and maintaining water quality standards in the future.

These goals and objectives provide direction and guidance for developing and focusing the restoration plan. Objectives help define projects and programs needed to protect and restore natural processes and ecological functions. Measurable performance standards may be developed in the future based on the goals and objectives to quantify ecological change. These performance standards go beyond the scope of this document, but may be developed and monitored as individual projects and programs are implemented.

4.0 Ongoing Town Plans and Programs

The Town of Wilkeson implements elements of the Growth Management Act through the adoption of the Town's Comprehensive Plan, the Unified Development Ordinance, and the Critical Areas Code.

4.1 *Comprehensive Plan*

The Town of Wilkeson Comprehensive Plan (Town of Wilkeson 2005) defines goals addressing the environment in its Visions and Goals element. As previously noted, the section includes a singular goal related to the Town's shoreline.

4.2 *Critical Areas Code*

The Town of Wilkeson's critical areas code, which applies outside of shoreline jurisdiction, is based on best available science and provides protection to critical areas in the Town, including wetlands, geologically hazard areas, critical aquifer recharge areas, floodplains and habitat conservation areas. The Town uses Ecology's 2004 *Washington State Wetland Rating System for Western Washington* to rate wetlands. The code requires avoidance and minimization steps, particularly on high-quality wetlands, before impacts are permitted. Regulatory buffers depend on the intended land use action proposed and range from 35 to 200 feet for low-impact land uses and from 50 to 300 feet for high-impact land uses. The standard buffer for a Type S stream (Wilkeson Creek) is 100 feet. The Town requires critical areas reports, protective measures, and potentially mitigation when actions are proposed in or adjacent to critical areas. Management of Wilkeson's critical areas using these regulations should help ensure that ecological functions and values are not degraded and impacts to critical areas are mitigated.

4.3 *Unified Development Ordinance*

Wilkeson's Unified Development Ordinance (Kask Consulting, Inc. 1998) details regulatory protections for wetlands and wetland buffers. The rating system described in the Ordinance included only 2 possible wetland categories and has been replaced by the new rating methods in the CAO. The Ordinance designates a creek buffer of 35 feet.

The Ordinance requires regulated wetland and wetland buffer activities to be permitted and standards applied to regulated activities in wetlands and buffers.

5.0 Partnerships

Federal, state, regional, and local agencies and organizations are actively involved in shoreline restoration, conservation, and protection in and around the Town of Wilkeson. These partners and their local roles in shoreline protection and/or restoration are identified below and generally organized in order by the scope of the organization, from the larger state and watershed scale to the Town-scale in the Wilkeson area.

5.1 *Pierce County*

5.1.1 Pierce County Public Works and Utilities: Surface Water Management Division

The Pierce County Public Works and Utilities Department's Surface Water Management Division is planning the Carbon River and Upper Puyallup Basin Plan, which will be an update of the 1991 Storm Water Drainage and Surface Water Management Plan. The 1991 plan focuses on management of stormwater runoff management in unincorporated Pierce County and identifies projects to control the adverse impacts of stormwater runoff on aquatic habitat. No projects within the Wilkeson shoreline area were identified in the 1991 plan.

The 2007 Carbon River and Upper Puyallup River Basin Characterization is part of the watershed planning effort and includes an analysis of existing conditions; fish use information; and habitat, erosion, flooding/drainage, water quality problems in the basin, including problems specific to Wilkeson Creek sub-basin. Identified next steps by the County include identifying solutions to watershed needs and drafting the basin plan.

The 2001 Watershed Analysis for the Development of Salmonid Conservation and Recovery Plans within Pierce County (Motrand Biometrics, Inc. 2001) included the Puyallup-White basin and three other basins and had as its objectives:

1. To assess current and historic population performance relative to habitat conditions and prioritize protection and restoration actions for focus species, and

2. To develop and prioritize strategic candidate actions and analyze their potential benefits.

5.1.2 Pierce County Parks and Recreation

The Pierce County Park, Recreation and Open Space Plan was completed in 2008 and updated in 2009 (Pierce County 2009). One of the core values put forth in the plan is the conservation of natural and open spaces, wildlife habitat, shoreline environments, and ecological resources. Goals of the plan include providing parks and open spaces that conserve and enhance environmental features, link open space and significant environmental features, and incorporate natural areas to protect and conserve threatened species, habitat, and migration corridors.

The plan includes in its project list developing the Wilkeson Creek portion of the Foothills Trail for creek access.

5.1.3 Pierce County Lead Entity

Pierce County serves as the Lead Entity for the WRIA 10. The lead entity is charged with gathering information so that the “Citizen’s Advisory Committee” (CAC) of stakeholders can rank projects for funding consideration by the Salmon Recovery Funding Board (SRFB). The CAC’s mission is “to support the recovery of self-sustaining, harvestable salmon populations in Puget Sound by restoring and protecting the habitat in WRIAs 10 and 12.”

The Salmon Habitat Protection and Restoration Strategy for WRIAs 10 and 12 was completed in March 2008 (Pierce County Lead Entity 2008). The goal of the document is “to provide guidance to the CAC and TAG [Technical Advisory Group], the SRF Board, and Project Sponsors to identify and prioritize salmon habitat recovery projects in WRIAs 10 and 12.” No projects within Wilkeson shoreline jurisdiction are identified in the strategy, although Lead Entity’s 2010 3-Year Work Program Watershed Implementation Template include a number of basin-wide restoration projects.

5.2 *Washington State Department of Ecology*

The Town of Wilkeson utilizes Ecology staff as a resource for technical support and regulatory assistance when needed. The Town’s stormwater regulations refer to Ecology’s 2005 Stormwater Management Manual for Western Washington for minimum stormwater standards. The Town also works with Ecology in fulfilling monitoring requirements for National Pollution Discharge Elimination Permit (NPDES) permitting at the Wilkseon Wastewater Treatment Plant.

5.3 *Washington State Conservation Commission*

The completion of the Salmonid Habitat Limiting Factors Analysis for WRIA 10 (Kerwin 1999) was a collaborative effort of the Washington State Conservation Commission and the Watershed Lead Entities, with input from many individuals from WDFW, the Puyallup Tribe, Pierce County Conservation District, the Muckleshoot Indian Tribe, Ecology, and other agencies and entities. The analysis summarizes the chronology of historic impacts in the Puyallup River Basin and identifies habitat limiting factors for Wilkeson Creek.

The WRIA 10 report recognized the potential for habitat restoration, as well as the significance of habitat protection in the watershed; however, specific action items were not identified.

5.4 *Puget Sound Partnership*

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

- Develop a set of recommendations for the Governor, the Legislature and Congress to preserve the health of Puget Sound by 2020 and ensure that marine and freshwaters support healthy populations of native species as well as water quality and quantity to support both human needs and ecosystem functions.
- Engage citizens, watershed groups, local governments, tribes, state, and federal agencies, businesses and the environmental community in the development of recommendations.
- Review current and potential funding sources for protection and restoration of the ecosystem and, where possible, make recommendations for the priority of expenditures to achieve the desired 2020 outcomes.

The Partnership through the Leadership Council released an Action Agenda in December 2008, scheduled to be updated in 2011. The Action Agenda adopts ecosystem recovery targets to address in the coming years. Targets under consideration for inclusion in the 2011 update are several objectives for restoration in streams in the Partnership's Action Areas, which includes Wilkeson.

The Puget Sound Partnership, in coordination with local governments and non-profits, is also sponsoring the 'Puget Sound Starts Here' campaign to educate the public in the region about non-point source stormwater impacts on water quality. The campaign is focused on simple, clear messaging and marketing to raise awareness and effect behavior change.

5.5 *South Puget Sound Salmon Enhancement Group (SPSSEG)*

This 501 (c)(3) organization's mission is to work in cooperation with other groups to locate funding and plan, implement, and monitor fish and habitat enhancement and restoration projects, focusing on salmon and aquatic habitats. The SPSSEG takes an ecosystem approach and utilizes volunteers and public education in the region, which includes the entirety of WRIA 10.

5.6 *Muckleshoot Tribe*

The Tribe's Natural Resources Department works to protect salmon runs, elk, and other natural resources. The Tribe serves on the Pierce County Lead Entity TAG, providing expertise to the Lead Entity on basin-wide restoration.

5.7 *National Fish and Wildlife Foundation (NFWF) Community Salmon Fund*

The NFWF and Pierce County formed the Pierce County Community Salmon Fund in 2002 as a funding program for restoration projects that involved landowners and to raise local support for salmon recovery. The goals of the Fund are:

- To fund salmon protection and restoration projects that have a substantial benefit to the watershed and that are consistent with Pierce County's Ecosystem and Diagnosis Treatment (EDT).
- To enlist landowners and community groups in project implementation and monitoring.
- To foster creativity and leadership in the community to address conservation needs.
- To focus on community members and groups that can be of particular help in salmon recovery.

5.8 *Pierce Conservation District*

The Conservation District's mission is "To protect the natural resources and sustainable agriculture of Pierce County, by empowering local individuals and communities." To this end, the District provides guidance to Pierce County landowners on practices that reduce non-point pollution; in some cases, the Conservation District provides funding for landowners to assist them in implementing best management practices. The District's 5-Year Plan (2010 to 2015) summarizes the agency's priorities: to enhance and protect soil, water, biodiversity, salmon, shellfish, and native plant resources; to assist landowners in protecting water quality, improving habitat, and conserving natural resources, while sustaining the agricultural community; and to involve and educate the

local community through volunteer projects that improve stream quality in the County for the benefit of fish, wildlife and people.

The Stream Team began as a one-year Conservation District project and continues to work county-wide with volunteers to complete habitat and water quality improvement projects.

5.9 *Other Environmental Organizations*

Several environmental groups maintain offices and/or programs in Pierce County. While these groups have not historically worked in the shoreline jurisdiction of Wilkeson, this does not preclude involvement in restoration activities in the future. Potentially active groups include:

- Cascade Land Conservancy
- Audubon Society
- The Washington Wildlife and Recreation Coalition
- People for Puget Sound

6.0 Potential Projects

Potential restoration projects for the Wilkeson shoreline have been identified in existing watershed planning and analysis documents. A 2001 Pierce County Watershed Analysis (Motrand Biometrics, Inc. 2001) included as potential protection/restoration sites Wilkeson Creek. The creek scored relatively high for its potential benefit to Chinook and Coho salmon.

Although it did not define specific projects, the Carbon River and Upper Puyallup River Basin Characterization (Pierce County 2007) identified 20 problem sites in the Wilkeson Creek sub-basin that suffer from environmental problems (habitat, erosion, flooding/drainage, and water quality).

The Pierce County Draft Shoreline Restoration Plan (Pierce County 2009a) recommends addressing Wilkeson Creek water quality and riparian vegetation issues by revegetating riparian areas. It ranks this as a high priority restoration opportunity.

Pierce County Park and Recreation 2010 Capital Improvements Status Report (Pierce County 2010) mentions significant bank erosion that occurred on an approximately 400-foot section of the left bank of Wilkeson Creek in 2009 and notes that environmental issues pertaining to repair have not been resolved. The Town has initiated development of a comprehensive restoration plan for the area. The plan has not reached the implementation stage and is presently limited by lack a funding.

The SMP Cumulative Impacts Analysis (The Watershed Company 2012) identifies keys features that are part of the SMP update process and that protect and enhance shoreline ecological functions. While they do not specify location, they do indicate the general categories of restoration that would be valuable in restoring ecological process in shoreline jurisdiction. Retention and revegetation of the shoreline as part of future development and water quality and quantity standards for construction and post-construction periods are recommended as potential means of enhancing the Wilkeson shoreline.

The Wilkeson Shoreline Inventory and Analysis Report (The Watershed Company 2011) identifies opportunities for restoration in the upstream and downstream units of Wilkeson Creek. The two units of the creek vary most noticeably in degree of existing development and occurrence of critical areas, with the upstream unit generally containing more critical area and less development. The primary restoration opportunity for the upstream unit lies in riparian revegetation. Planting of native coniferous species to increase riparian function and promote future recruitment of large woody debris is the general restoration recommendation for this unit.

Restoration opportunities listed in the Inventory and Analysis report are somewhat more specific for the Wilkeson Creek downstream unit than for the upstream unit. They are as follows:

- Remove Japanese knotweed and other invasive riparian vegetation.
- Enhance shoreline vegetation by planting native trees and shrubs.
- Encourage the installation of large woody debris in flood control projects.
- Where possible on residential properties, reduce or remove bank armoring, increase native riparian vegetation cover, and reduce impervious surface in the shoreline.
- Investigate and pursue opportunities to expand floodplain capacity and enhance habitat through actions such as creation of off-channel rearing areas.

7.0 Strategies to Achieve Local Restoration Goals

This section discusses programmatic measures for the Town of Wilkeson designed to foster shoreline restoration and achieve a net improvement in shoreline ecological processes, functions, and habitats. With projected budget and staff limitations, the Town is limited in implementing restoration projects or programs on its own. However, the Town's SMP represents an important vehicle for facilitating and guiding restoration projects and programs that can be partnerships with private and/or non-profit entities. The Town can provide direction and leadership to assure that restoration designs meet

the identified goals of the various plans. The discussion of restoration mechanisms and strategies below highlights programmatic measures that the Town may potentially implement as part of the proposed SMP, as well as parallel activities that would be managed by other governmental and non-governmental organizations.

7.1 *Town Planning*

The Town could incorporate shoreline restoration goals and projects into the Town's 2010 Parks and Recreation Plan. The Town could also review the various elements of previously adopted and yet-to-be-adopted plans that apply to shoreline areas and develop a prioritized list of projects.

7.2 *Shoreline Restoration Fund*

A chief limitation to implementing restoration is local funding, which is often required as a match for State and federal grant sources. To foster ecological restoration of the Town's shorelines, the Town may establish an account that may serve as a source of local match monies for non-profit organizations implementing restoration of the Town's shorelines. This fund may be administered by the Town and be supported by a levy on new development proportional to the size or cost of the new development project. Monies drawn from the fund would be used as a local match for restoration grant funds, such as the Salmon Recovery Funding Board (SRFB), Aquatic Lands Enhancement Account (ALEA), Pierce County Conservation District grants, or another source.

7.3 *Resource Directory*

Development of a resource list would be helpful in aiding both the Town and property owners who want to be involved in restoration. For example, landowners and/or the Town might be directed toward SRFB. SRFB administers two grant programs for protection and/or restoration of salmon habitat. Eligible applicants can include municipal subdivisions (cities, towns, and counties, or port, conservation districts, utility, park and recreation, and school districts), tribal governments, state agencies, nonprofit organizations, and private landowners.

7.4 *Volunteer Coordination*

The Town could emphasize and accomplish restoration projects by using community volunteers and coordinating with organizations such as the Muckleshoot Tribe, Pierce County Conservation District, Stewardship Partners, local churches, Booster Club, Fraternal Order of Eagles, Rotary International, Chamber of Commerce, or White River School District. Probably the most important volunteer is the landowner that acts as the steward of the land following the completion of a project. The Town may have to provide ongoing assistance and resources to landowners that need additional plantings, equipment use or other materials to maintain their restoration project.

7.5 *Regional Coordination*

The Town will continue to pursue associations and involvement with the Washington State Department of Ecology, Puget Sound Partnership, and Pierce County. The Town may also look for other time sensitive opportunities for involvement in regional restoration planning and implementation.

8.0 Proposed Implementation Targets and Monitoring Methods

8.1 *Project Evaluation*

When a restoration project is proposed for implementation by the Town, other agency, or by a private party, the project should be evaluated to ensure that the project's objectives are consistent with those of this Restoration Plan of the SMP and, if applicable, that the project warrants implementation above other candidate projects. (It is recognized that, due to funding sources or other constraints, the range of any individual project may be narrow.) It is also expected that the list of potential projects may change over time, that new projects will be identified and existing opportunities will become less relevant as restoration occurs and as other environmental conditions, or our knowledge of them, change.

When evaluating potential projects, priority should be given to projects most meeting the following criteria:

- Restoration meets the goals and objectives for shoreline restoration.
- Restoration or protection of processes is generally of greater importance than restoration of functions.
- Restoration avoids residual impacts to other functions or processes.
- Projects address a known degraded condition or limiting factor for salmon recovery.
- Conditions that are progressively worsening are of greater priority.
- Restoration projects that address multiple functions or processes.
- Restoration has a high benefit to cost ratio.
- Restoration has a high probability of success.
- Restoration is feasible, such as being located on and accessed by public property or private property that is cooperatively available for restoration.
- Restoration project design should consider impacts to adjacent property owners.
- There is public support for the project.
- The project is supported by and consistent with other restoration plans.

The Town should consider developing a project "score card" as a tool to evaluate projects consistent with these criteria.

8.2 *Monitoring and Adaptive Management*

In addition to project monitoring required for individual restoration and mitigation projects, the Town should conduct system-wide monitoring of shoreline conditions and development activity, to the degree practical, recognizing that individual project monitoring does not provide an assessment of overall shoreline ecological health. The following approach is suggested:

1. Track information using the Town's permit system as activities occur (development, conservation, restoration and mitigation), such as:
 - a. New shoreline development
 - b. Shoreline variances and the nature of the variance
 - c. Compliance issues
 - d. New impervious surface areas
 - e. New and existing critical area protection easements
 - f. Removal of fill or armoring
 - g. Addition of fill or armoring
 - h. Vegetation retention/loss

The Town may require project proponents to monitor as part of project mitigation, which may be incorporated into this process. Regardless, as development and restoration activities occur in the shoreline area, the Town should seek to monitor shoreline conditions to determine whether both project specific and SMP overall goals are being achieved.

2. Review status of environmental processes and functions at the time of periodic SMP updates to, at a minimum, validate the effectiveness of the SMP. Review should consider what restoration activities actually occurred compared to stated goals, objectives and priorities, and whether restoration projects resulted in a net improvement of shoreline resources.

Under the Shoreline Management Act, the SMP is required to result in no net loss of shoreline ecological functions. If this standard is found to not be met at the time of review, the Town will be required to take corrective actions. The goal for restoration is to achieve a net improvement. The cumulative effect of restoration over time between reviews should be evaluated along with an assessment of impacts of development that is not fully mitigated to determine effectiveness at achieving a net improvement to shoreline ecological functions.

Evaluation of shoreline conditions, permit activity, policy, and regulatory effectiveness should occur at varying levels of detail consistent with the

Comprehensive Plan update cycle. A complete reassessment of conditions, policies and regulations should be considered every seven years. To conduct a valid reassessment of the shoreline conditions every seven years, it is necessary to monitor, record and maintain key environmental metrics to allow a comparison with baseline conditions. As monitoring occurs, the Town should reassess environmental conditions and restoration objectives. Those ecological processes and functions that are found to be worsening may need to become elevated in priority to prevent loss of critical resources. Alternatively, successful restoration may reduce the importance of some restoration objectives in the future.

8.3 *Implementation Schedule*

Section 6 describes project opportunities to restore shoreline conditions. The restoration opportunities included are based upon a detailed inventory and analysis of shoreline conditions by many sources. Nonetheless, exhaustive scientific information about shoreline conditions and restoration options is cost prohibitive at this stage. Additionally, restoration is at times experimental. Monitoring must be an aspect of all restoration projects, and results from monitoring studies will help inform future restoration practices. Generally, conservation of existing natural areas is the approach least likely to result in failure. Alternatively, local shoreline enhancement (as opposed to restoration of processes and associated functions), has a higher degree of uncertainty.

This Restoration Plan does not provide a comprehensive scientific index of restoration opportunities that allows the Town to objectively compare opportunities against each other. If funding was available, restoration opportunities could be ranked by which opportunities are expected to have the highest rates of success, which address the most pressing needs, and other factors. Funding could also support a long-term monitoring program that evaluates restoration over the life of the SMP (as opposed to independent monitoring for each project). Regardless of gaps in our understanding of prioritization and future funding, Table 2 outlines a possible schedule and potential funding sources for implementation of a variety of efforts that could improve shoreline ecological function.

Table 2. Implementation Schedule and Funding for Restoration Projects, Programs and Plans.

Restoration Project/Program	Schedule	Funding Source or Commitment
TMDL adaptive management	2013 and beyond	The Town will participate in meetings
Sewage treatment plant maintenance and management	Yearly	The Town will commit staff time to oversight of plant maintenance and management
Stormwater discharge management	2013	The Town will manage stormwater quality in discharges to Wilkeson Creek in compliance with current stormwater regulations and Ecology's Western Washington Stormwater Manual
Wilkeson stormwater management facilities	Yearly	The Town will monitor for compliance with current stormwater regulations and Ecology's Western Washington Stormwater Manual
Residential shoreline restoration and enhancement program	Implement by 2015	The Town will commit staff time and resources to encourage private landowners to restore and protect shorelines
Town properties shoreline enhancement	Implement by 2015	The Town will commit staff time to ensuring that restoration is included as a component of all development and redevelopment on Town shoreline properties
Town permitting conditions enforcement	Implement by 2013	The Town will commit staff time to increased enforcement of compliance with shoreline restoration conditions in local permitting
Washington Department of Ecology	Ongoing	The Puyallup-White Watershed Assessment was completed in 1995. The Town is no longer working under the Watershed Planning Act.
Carbon River and Upper Puyallup River Basin Watershed Planning	Ongoing	Grants from Salmon Recovery Funding Board, Pierce County Public Works
Wilkeson Comprehensive Plan	Ongoing	The Town will continue to make project and program reviews to determine consistency with the Comprehensive Plan.
Wilkeson Critical Areas Regulations	Ongoing	The Town makes a substantial commitment of staff time in the course of project and program reviews to determine consistency and compliance with their updated Critical Areas Regulations.
SMP – overall plan effectiveness	7-year review	Wilkeson General Fund and Ecology grant
Washington State Conservation Commission WRIA 10 Watershed Planning	Ongoing	The Town will refer to the Salmonid Habitat Limiting Factors Report for guidance regarding habitat limiting factors and data gaps as restoration projects are considered.
Local and regional non-profit organizations	Ongoing	The Town will pursue partnership opportunities as time and budget permit.
Private funded projects	Ongoing	Private or grant funding
Pierce County Public Works: Surface Water Management Division	Ongoing	The Town has adopted the 2005 Ecology Stormwater Management Manual for Western Washington.
Stakeholder partnerships	Ongoing	Grant funds or volunteer monitoring

8.3 Reporting

Town staff is encouraged to track all land use and development activity, including exemptions, within shoreline jurisdiction. A report may be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding stream bank stabilized through plantings, or linear feet of shoreline armoring removed. The report would also outline implementation of various programs and restoration actions (by the Town or other groups) that relate to watershed health.

The staff report may be assembled to coincide with Comprehensive Plan updates and may be used, in light of the goals and objectives of the Shoreline Master Program, to determine whether implementation of the SMP is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the *Inventory and Analysis Report*. In the long term, the Town should be able to demonstrate a net improvement in the Town of Wilkeson's shoreline environment.

9.0 References

Kask Consulting. 1998. Unified Development Ordinance, Town of Wilkeson: Zoning, Subdivision, Environment, Development Standards. July 1998. 312pp.

Kerwin, J. 1999. Salmon Habitat Limiting Factors Report for the Puyallup River Basin - WRIA 10. Washington Conservation Commission, Olympia, WA. July 1999.

Motrand Biometrics, Inc. 2001. Watershed Analysis for the Development of Salmonid Conservation and Recovery Plans within Pierce County. June 2001.

Pierce County. 2008. Salmon Habitat Protection and Restoration Strategy: WRIA-10 Puyallup Watershed and WRIA -12 Chambers/Clover Creek Watershed. March 2008.

Pierce County. 2009. Park, Recreation and Open Space Plan. Prepared by MIG.

Pierce County. 2009a. Pierce County SMP Update Shoreline Restoration Plan. June 2009.

Pierce County Public Works and Utilities Water Programs. 2007. Draft Carbon River and Upper Puyallup River Basin Characterization.

<http://www.co.pierce.wa.us/xml/services/home/envIRON/water/ps/basinplans/carbon/DraftCharacterization.pdf>

The Watershed Company. 2012. Cumulative Impacts Analysis. Town of Wilkeson. June 2012.

The Watershed Company. 2011. Shoreline Inventory and Analysis for the Town of Wilkeson: Wilkeson Creek. April 2011.

The Watershed Company. 2012. Shoreline Master Program: Wilkeson Creek. June 2012.

Town of Wilkeson. 1998. Town of Wilkeson Unified Development Ordinance.

Town of Wilkeson. 2005. Town of Wilkeson Comprehensive Plan.

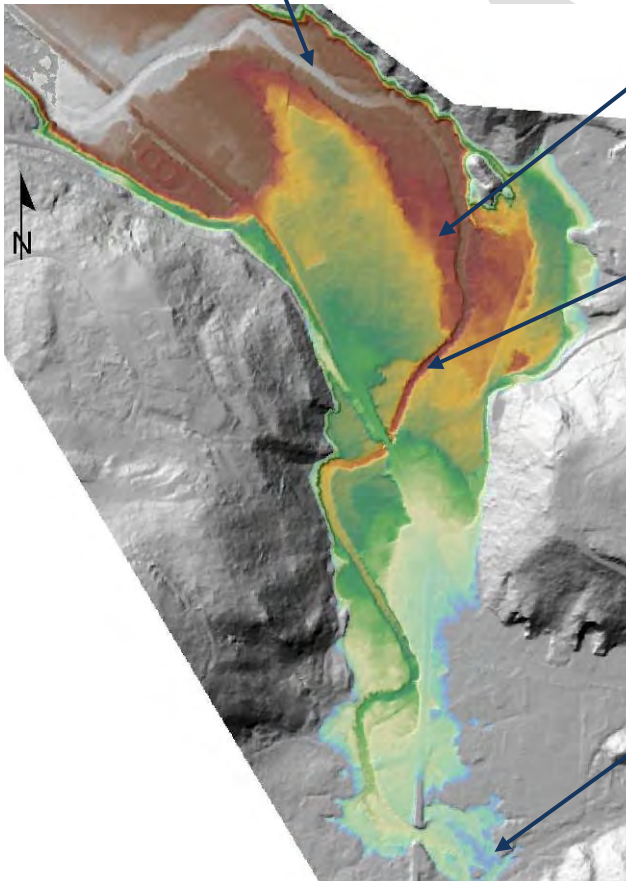
Town of Wilkeson. 2005. Town of Wilkeson Critical Areas Code.

Town of Wilkeson. 2010. Town of Wilkeson Parks and Recreation Plan.

Washington State Department of Ecology (Ecology). 2006. South Prairie Creek Bacteria and Temperature Total Maximum Daily Load (Water Clean Up Plan): Detailed Implementation Plan. Ecology Publ. No. 06-10-018. 44pp.

Williams, R.W., R.M. Laramie, and J.J. Ames. 1975. A Catalog of Washington Streams and Salmon Utilization, Vol. 1, Puget Sound Region. Washington Department of Fisheries.

CITY OF WILKESON SMP UPDATE: CHANNEL MIGRATION ASSESSMENT



03/16/2011

GENERAL CHANNEL MIGRATION MAPPING FOR SMP UPDATES

BACKGROUND

Channel migration is a natural process associated with streams¹. Streams may migrate across valleys due to a variety of reasons including channel and bank erosion, meander chute cutoff, avulsion, aggradation and incision. The channel migration zone represents the area within which a given stream may migrate over time and includes avulsion hazard and erosion hazard zones (Rapp and Abbe 2003).

Channel migration is an important stream ecosystem process supporting habitat forming processes and ecological functions. The channel migration process is also an important risk factor for humans and infrastructure in that migration can result in property damage and change flooding dynamics.

Chapter 173-26 WAC requires that channel migration areas be generally identified during the inventory and characterization phase of Shoreline Master Program updates:

WAC 173-26-201(3) (c) (vii): Local government shall, at a minimum, and to the extent such information is relevant and reasonably available, collect the following information:

(vii) General location of channel migration zones, and flood plains.

WAC 173-26-221(3)(b) indicates that the assessment should be based on the historic record, geologic character and evidence of past migration over the past 100 years. Much of this information is collected for other inventory items as well.

Existing relevant data include:

- Information on channel characteristics such as channel gradient and confinement.
- Existing GIS geology and soils data to evaluate erosion potential
- 2 to 3 time series of aerial photographs, maps, LiDAR or other spatial and temporal data that is available.

Channel migration zones are to be managed per the SMA to²:

- Reduce potential hazards to human settlements and infrastructure by guiding development near streams.
- Protect shoreline ecological functions.
- Not allow development including fill to interfere with natural channel migration processes.
- Restrict shoreline stabilization and armoring that could cause harm to other property or resources.

¹ The term stream encompasses all sizes of flowing water bodies.

² Shoreline management code citations referring to channel migration can be found at http://www.ecy.wa.gov/programs/sea/SMA/st_guide/jurisdiction/CMZ.html

INTRODUCTION

The Washington Department of Ecology (Ecology), Shorelines and Environmental Assistance Program (SEA) are responsible for managing Shoreline Master Program updates and providing technical and policy assistance and guidance to local communities. The Shoreline Management Act (SMA) *“establishes a cooperative program of shoreline management between local government and the state. Local government shall have the primary responsibility for initiating the planning required by this chapter and administering the regulatory program consistent with the policy and provisions of this chapter. The department shall act primarily in a supportive and review capacity with an emphasis on providing assistance to local government and on insuring compliance with the policy and provisions of this chapter”* (RCW 90.58.05).

In response to the SMP channel migration requirements, the SEA program published a review of relevant literature and technical framework document (Rapp and Abbe 2003) and an interactive web-based technical guidance

(<http://www.ecy.wa.gov/biblio/0806013.html>). The web guidance provides:

- A decision chart for evaluating channel migration that is linked to the specific steps (Figure 1 and <http://www.ecy.wa.gov/programs/sea/sma/cma/page2.html>).
- A decision chart to help identify when channel migration assessments are needed as part of the update (Step 1, pp 3-4, <http://www.ecy.wa.gov/programs/sea/sma/cma/page3-step1.html>).
- A range of approaches and methods to use depending on management objectives and importance of environment and infrastructure values (pp 9-11 of the Ecology web-based guidance <http://www.ecy.wa.gov/programs/sea/sma/cma/page9-step2b.html>).
- Links to channel migration assessments that have been completed in Washington.

The approaches and methods were developed in an Ecology sponsored 1-day workshop (10/2005). The workshop included practitioners and scientists experienced and knowledgeable in channel migration processes and assessments.

Ecology developed a map showing stream reaches with potential to migrate for communities that began their updates in 2009-2012. Step 1 of the web guidance was used to determine migration potential and included data on:

- Channel and valley characteristics—confinement, gradient, entrenchment
- Geology and soils
- Channel processes and pattern
- Aerial photographs, orthophotos and maps to identify channel migration processes over time
- Digital elevation models and LiDAR where available.

The map only shows reaches with potential to migrate and does not include channel migration area. Approximately 800 stream miles were identified. Approximately 550 of those miles occur within the Puget Sound region.

Many local communities do not have the resources (staff knowledgeable and experienced in fluvial geomorphology assessments and budget) to conduct channel migration assessments. The SEA program also had inadequate resources since it only had 1 staff person with the appropriate hydrologic and geomorphic experience to provide statewide technical assistance and no budget to hire other staff. So Ecology applied for grants to provide technical assistance in channel migration mapping. Ecology received a scientific and technical investigations grant from the Environmental Protection Agency (EPA), Region X. A major objective of the grant is to provide data and maps on “general” channel migration zones to the Puget Sound local governments who are updating their SMPs.

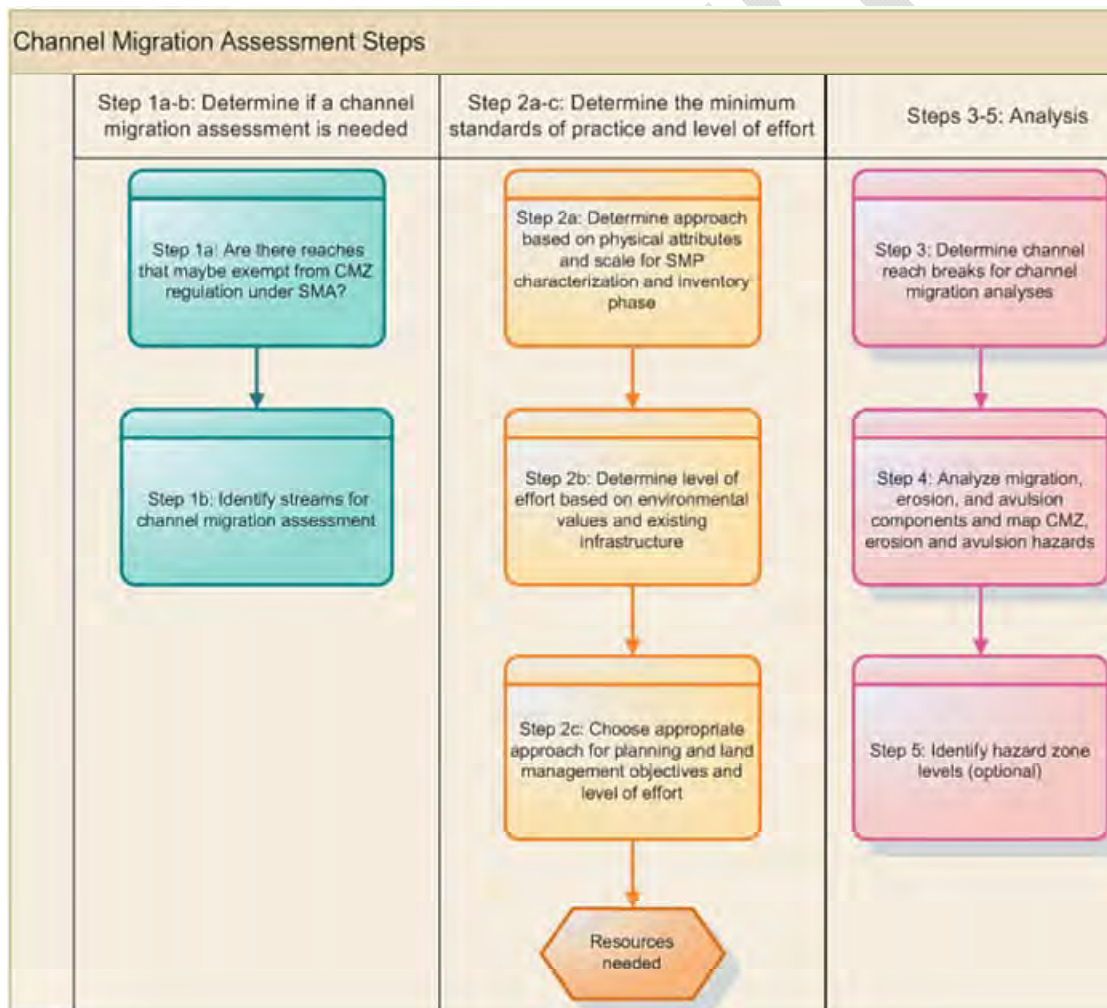


Figure 1: Decision flow chart from web guidance showing a summary of recommended steps for a channel migration assessment.

GENERAL MAPPING METHODS

Introduction

The SMP guidelines require that the channel migration zone be “generally” identified using existing relevant data. Since, channel migration areas vary over space and time; mapping provides a more efficient means to identify their location. Mapping occurs during the communities Shoreline Master Program updates if it hasn’t already been done for other zoning purposes such as their Critical Area Ordinance.

The Ecology web guidance suggest that “general” mapping methods used are low to moderate level depending on scale and channel pattern (Figure 2). Using general methods leads to a higher uncertainty in CMZ location. The final map should be considered approximate and require more detailed assessment for proposed development as the SMP guidelines recommend.

Step 2a: Determine minimum approach and methods based on physical attributes and scale for SMP characterization and inventory phase.

	Basin Scale				Reach Scale				Site Scale			
Channel Pattern	M	B	A	W	M	B	A	W	M	B	A	W
Watershed Characterization	1	1	1	1/2	2/1	2/1	2/1	2/3	3/1	3/1	3/1	3/2

Figure 2: The numbers identify the linked summary of approaches and methods [Table 4, Step 2c](#). M=meandered pattern, B=braided pattern, A=island braided pattern, W= wandering pattern. This table provides a list of minimum standards of practice approaches and methods for watershed characterization. The methods are organized by scale and channel type - meandering, braided, Island braided and wandering. Straight channel patterns that may have potential to migrate fall under meandering pattern. Channels with avulsion potential are included under island braided and wandering channel categories.

The web guidance uses a decision flow chart to answer the question: “Is a channel migration assessment needed and where?” It includes steps for determining the channel migration zone based in part on Rapp and Abbe (2003). The SMP guidelines provide some exemptions where, areas may be removed from the channel migration zone. These areas are called disconnected channel migration areas (DMA). For incorporated cities and urban growth areas, the guidelines suggest that:

- Only within **incorporated municipalities** and **urban growth areas**, channel migration areas separated from the active river channel by **legally existing**, constructed channel constraints that limit channel movement, but not built to the 100-year flood standard, could be considered within the DMA.
- Artificial constraints must be publicly maintained structures based on SMA floodway definition (RCW 90.58.030)
 - Exempted only where flood control devices are maintained by or maintained under license from government

- Commitment to maintain.
- All other areas separated from the active channel by **legally existing** constructed structures that are likely to restrain channel migration and are built above and to **remain intact through the one hundred-year flood**, including transportation facilities, could be considered within the DMA.

Descriptions of constraints are listed on page 3 of the CMZ web guidance document (<http://www.ecy.wa.gov/programs/sea/sma/cma/page3-step1.html>).

The general channel migration zone (CMZ) includes the historic channel migration area (HMZ), the probable floodplain and bank erosion hazard area (EHA) and the potential avulsion hazard area (AHZ) minus the disconnected migration area (DMA) (Figure 3). The Ecology general maps do not include the DMA except in obvious areas such as publicly maintained roads and railroads meeting the 100-year flood standard, and government maintained levees and revetments. Riprap is often placed by landowners and there is no public commitment to maintain. Also there is little to no information on bank stabilization and other hydromodifications. Local governments with technical assistance from Ecology may identify structures that meet the exemption criteria.

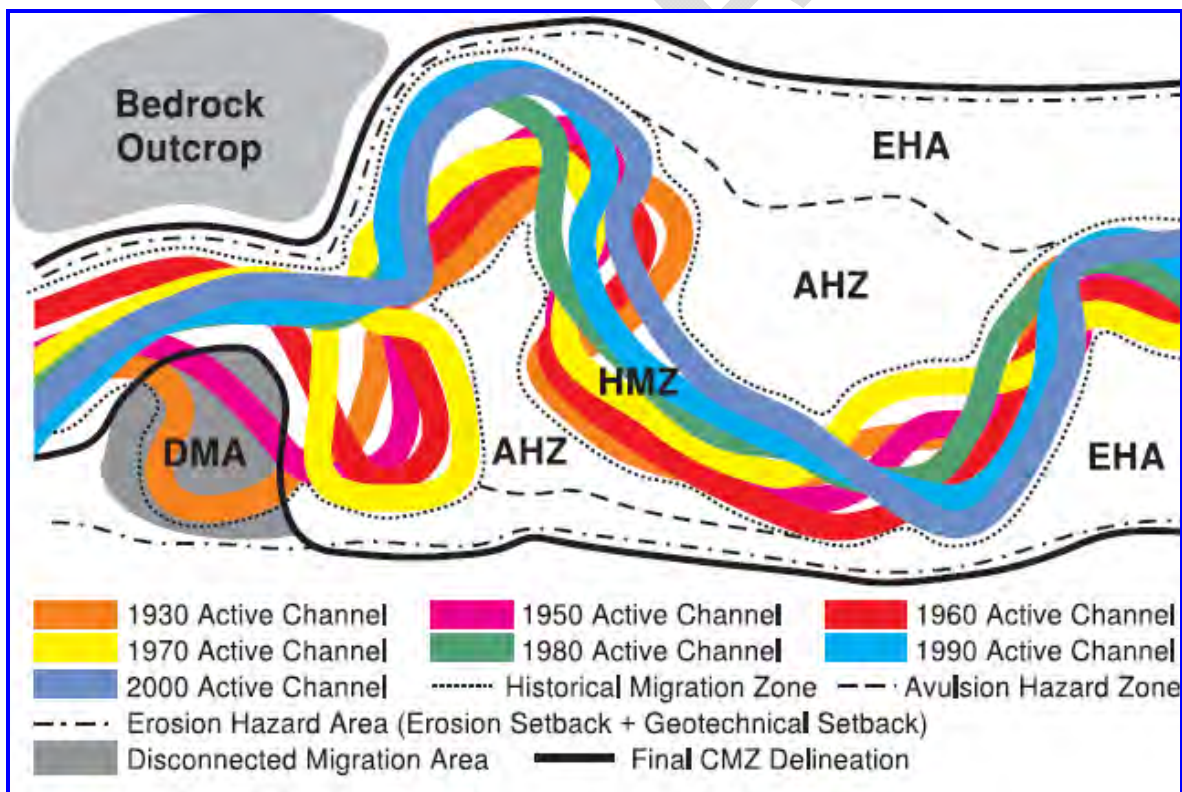


Figure 3: Channel migration zone schematic showing the elements that create the CMZ. Figure from Ecology publication (Rapp and Abbe 2003), <http://www.ecy.wa.gov/biblio/0306027.html>.

METHODS USED TO MAP A GENERAL CMZ FOR WILKESON.

Low and moderate level methods were combined to generally map the channel migration zone along Wilkeson Creek using available data (Table 1). The assessment

relied mostly on GIS data and analysis. After a draft channel migration map was developed, we evaluated the boundaries and made changes based on field evidence.

Table 1: Describes approaches and method used to map the migration, bank erosion and avulsion zones. The blue text summarizes data and analysis used for the Wilkeson Creek assessment.

Basin/watershed scale	Most applicable to basin or watershed Scale: all stream types
Approaches used	<p>Synthesize available data to understand control or relevant basin-scale processes such as geology, soils, topography/gradient, hydrology, land use, vegetation</p> <ul style="list-style-type: none"> • GIS based with limited field verification which increases uncertainty • GIS data used included USGS Lower Puget Sound 2004 LiDAR, UACOE 1941 aerial photograph (georectified), 1990 USGS orthophotos and the 2006 and 2009 NAIP orthophotos, NRCS Pierce County soil data, DNR 1:100,000 geology layers, 1:24000 NHD water course layer, Pierce County preliminary FEMA floodplain maps. • Other information and data obtained from SMP inventory, characterization, WRIA reports, geologic reports, and USGS stream flow data from South Prairie Creek USGS gage. • 1 day field verification using field evidence and Trimble GPS to evaluate draft channel migration area map and potential constraints to channel migration.
1. Low accuracy method	<p>Minimum Level of Effort</p> <ul style="list-style-type: none"> • Identify the purpose of the CMZ delineation <ul style="list-style-type: none"> ◦ To generally map the CMZ for the shoreline update • Use available tools such GIS, DEM, LiDAR and hydrologic data to minimize costs (Refer to approach) • Determine the characteristics and processes operating within the basin, including sources of sediment, climate and land use changes by researching floodplain & geologic and soils maps, and historic stream flow data <ul style="list-style-type: none"> ◦ Much of this information was obtained from GIS data, USGS stream flow data on SF Prairie Creek, NRCS Pierce County soil data, mining geology reports, and other historical information • Identified possible channel migration areas using DEM, LiDAR, and multi-date orthophotos
2. Moderate accuracy method	<p>Minimum Level of Effort—Above plus the following</p> <ul style="list-style-type: none"> • Evaluate channel erosion and aggradation areas based on stream power analysis • Trace the 2004 active channel and the 1941, 1990, 2006, 2009 channel lines • Identify relative rate of migration by reaches • Identify potential bank erosion hazard areas (EHA) from soils and geology and profiles derived from LiDAR DEM. • Map potential avulsion hazards (AHZ) channels • Map the CMZ as the historic migration zone (HMZ), probable migration area based on photo and map record plus the erosion hazard area and AHZ • Remove areas (disconnected migration areas) landward of publicly maintained roads that are above the 100-year flood. • Field verification on channel migration evidence and boundaries.

GIS Method

Wilkeson Creek was divided into 2 reaches within the City's boundary. These reaches correspond with the reaches identified in the inventory and characterization. However, the 2 reaches were not sufficient for describing channel change and response. The reaches were subdivided into smaller reaches based on channel, bank, floodplain and riparian characteristics (Figure 4). These smaller reaches are used in describing channel conditions, processes and channel migration zone. The 1:24000 National Hydrography Data (NHD) layer was used as the base streamline layer (available publicly through USGS National Hydrography Dataset <http://nhd.usgs.gov/data.html>). The Washington layer was developed from 2006 or earlier data.

The Lower Puget Sound Pierce County 2004 LiDAR bare earth elevation data (Puget Sound LiDAR Consortium 2004) were used to develop a DEM along Wilkeson Creek and valley and a hillshade model. The DEM was draped over the hillshade layer. This provides a visual image of channel locations within the valley (refer to Figures 10 and 12 stream power). The DEM was also converted into a relative elevation model which shows the elevation of adjacent land relative to water surface (Appendix A).

The LiDAR elevation data were also used to develop channel cross-sections. The cross-sections provide information on floodplain elevations relative to the channel and areas that have avulsion and erosion potential. The channel thalweg and banks were traced from the LiDAR to provide elevation data on banks and channel. The channel elevation data were used to calculate channel gradient and bank traces were used to calculate active channel width. Gradients and channel width were calculated using Ttools Version 7.56 (Kasper and Boyd 2009).

The channel gradient data were also used for a stream power analysis. Unit stream power (specific weight of water * channel gradient * discharge / active channel width) is an indicator of transport capacity that is the ability of the stream to transport sediment. High transport capacity can result in channel incision and bank erosion. Low transport capacity may cause channel aggradation. The USGS Streamstats program was used to estimate the 2-year recurrence flood discharge along the channel for the upstream and downstream boundaries as well as before and after tributaries (<http://water.usgs.gov/osw/streamstats/Washington.html>). The 2-year flood was used as an indicator of the discharge that initiates channel forming / changing processes.

Although the average bankfull discharge in Washington approximates the 1.4-1.5-year flood frequency (Castro and Jackson 2002), the bankfull discharge varies depending on channel geometry and other factors. Since there are no predictive equations for these flood recurrence intervals, we assume that the 2-year flood is bankfull. Our definition for bankfull discharge is the discharge where sediment transport, channel movement and other geomorphic work is done.

Historic Migration Zone (HMZ): The LiDAR (2004) and 1941, 1996, 2006 and 2009 orthophoto layers were compared to determine channel changes over time. Only mid-channel streamlines were digitized for 1941, 1990, 2006, and 2009 channels

because the canopy cover obscured much of the active channel on the orthophotos. Reach 1 posed the greatest challenge for locating side channels and main channel braids. For obscured reaches, the LiDAR DEM was cross-referenced to check stream locations. The GPS data obtained during our field reconnaissance provided additional information. The channel streamlines, visible secondary channels on 1941, 1990, 2006, and 2009 orthophotos, secondary channels from LiDAR DEM, and secondary channels identified during field observations were used to map the historic migration zone (HMZ).

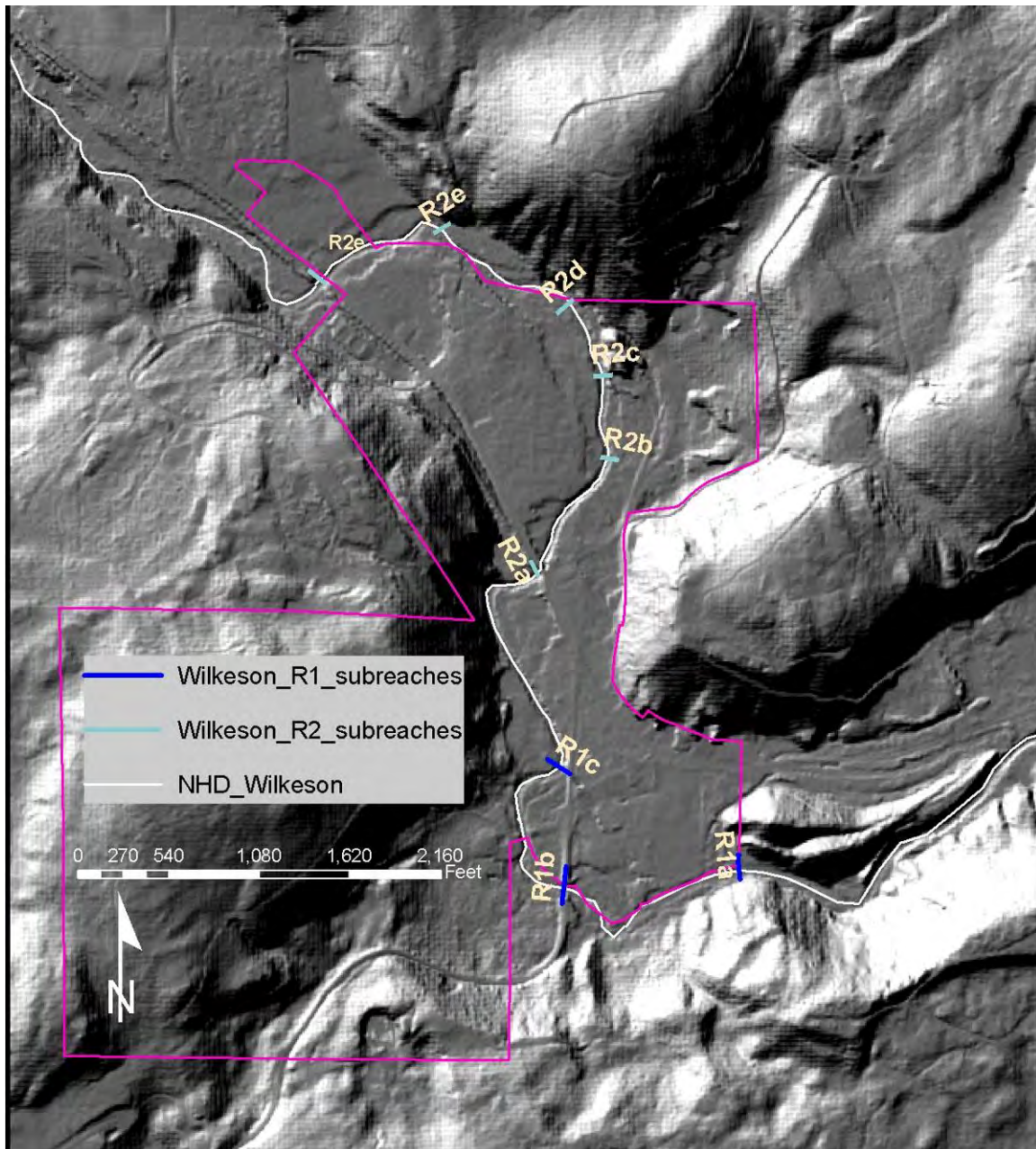


Figure 4: Reach breaks on Wilkeson Creek shown on 2004 LiDAR hillshade layer.

Erosion hazard areas: The erosion hazard area (EHA) includes the floodplain surface landward of the HMZ and the terraces and hillslopes bordering the floodplain and banks along the landward boundary of the HMZ. Migration rates and erosion potential were used to determine the EHA.

Migration rates were estimated by measuring distance between streamlines for 1941, 2004, 2006, 2009 streamlines. Migration rates were estimated using the Arc Toolbox\ analyst\proximity\near commands. The migration rates don't provide information on right or left channel migration because they aren't based on active channel locations. The most recent maximum annual migration rates (migration from 2006-2009) for each subreach were multiplied by 10 years and measured from the HMZ to estimate the landward extent of floodplain erosion hazard area. The EHA boundary was then adjusted based on LiDAR elevation data, location of public roads outside the floodplain, and field observations. The LiDAR elevation data and cross-section profiles were used to identify older channel features that have potential to be eroded or occupied.

Since erosion potential of soils and underlying geology influence bank and floodplain erosion and channel migration, shapefiles of geologic formations and soil characteristics that intersected with the SMP streams were created.

Geology: Lithology is considered an upland control as well as a local control on channel morphology and process. Bedrock along streams is generally considered a geologic control on channel migration. However, coarse sediment during transport can erode bedrock (e.g., Sklar and Dietrich 2001, 2004; Montgomery 2004). This erosion can occur within a 100-year timeframe. So rocks with low tensile strength are an indicator of areas that could potentially be eroded by flow and sediment transport. Local conditions may alter the potential. There are many factors that may influence fluvial erosion of bedrock such as uplift, knickpoint propagation, debris flows, sediment size, sediment supply, storm events versus long term averages.

Geology qualitative erosion potential (low-high) was assigned to surface geology classes (Table 2) and bedrock (Table 3). Geology erosion ratings were given for the Wilkeson area (Figure 5). The geology data were obtained from the WDNR geology GIS layer (<http://www.dnr.wa.gov/geology/dig100k.htm>)

Table 2; Relative erosion ratings are assigned to surface geology units.

Surface geology deposits	Erosion potential
Holocene alluvial and active alluvial fan deposits; landslides; peat; glacial deposits—recessional outwash, outburst flood, recent volcanic deposits—lahars, ash	High
Glacial—coarse undifferentiated drift and fractured till, terraces (coarse grained), advance outwash such as the Esperance sands, or coarse clasts	Moderate High
Undifferentiated glacial drift with clay matrix (Pleistocene or older alluvium and alluvial/debris fans, landslides), terraces with clay matrix	Moderate
Basal till,	Moderate Low

Table 3: Bedrock strength classification is used to assign relative erosion ratings to bedrock.

Strength classification	Unconfined fracture strength (MPa)	Typical rock types	Fluvial erosion potential
Very weak	10-20	weathered and weakly-compacted; highly fractured; marine sedimentary rocks	Moderate High
Weak	20-40	weakly-cemented sedimentary rocks; tuffs,	Moderate
Medium	40-80	competent sedimentary rocks; tuff breccia	Moderate Low
Strong	80-160	competent igneous rocks; some metamorphic rocks and fine-grained sandstones, schists; some low-density coarse-grained igneous rocks	Low
Very strong	160-320	quartzite; dense fine-grained igneous rocks	Very Low

Soils: Floodplain and bank sediments (soils) are local controls on channel morphology. NRCS SSURGO soil data were used to estimate the bank and floodplain erosion potentials [NRCS, <http://soildatamart.nrcs.usda.gov/>]. Soil texture was the primary variable used to create bank and floodplain erosion potential. Soil texture was chosen over other factors because knowledge of soil texture provides an indication of cohesive properties of the banks or floodplains. The soil data contains a soil erodibility factor. But it applies more to upland rill erosion and sediment detachment than to fluvial or shear-related erosion. For example, silt soils have the highest rill erodibility factor while sands are quite low. However, banks composed of coarser materials are less cohesive than clayey banks and thus more susceptible to fluvial erosion. Using the Bank-toe stability model (Simon and Langendoen 2006) and keeping all things equal except soil texture indicates that banks composed of clay with silt are less likely to erode than sandy soils with silt. Banks composed of clay with silt tend to have a steeper slope than sandy soils.

The 2 end point textures were used: clayey soils (lower erosion potential) and sandy soils (higher erosion potential). Many of the clay soils have high silt content also, so while these soils have lower erosion potential than sandy soils they are still erodible. Textural class tables were used to define the two textures where clayey soils were defined as having clay content > 15%. Sandy soils were classified as total sand > 35%. There may be some overlap between sandy clay, sandy clay loam, clay loam and loam textures.

Areas with moderate to high erosion potential were included in the EHA. Along Wilkeson this includes the steep banks in Reaches 1c, 2a, 2b, 2c and terraces in Reach 1a and 1b. The fracture plan and erosion distance was estimated using the Bank-toe stability model (Simon and Langendoen 2006).

Avulsion hazard zone: Avulsion hazard zones (AHZ) are identified using elevation differential between historic and current channel as well as channel locations. The LiDAR DEM and cross-section profiles also provided information on potential avulsion hazards. The stream power analysis in combination with LiDAR

elevation data and profiles indicate there are potential avulsion hazard areas within the city boundaries.

FACTORS CONTRIBUTING TO CHANNEL MIGRATION ALONG WILKESON CREEK

Hydrologic changes

A large portion of Wilkeson Creek watershed is located within the transient snow zone which is the area most influenced by rain-on-snow produced floods. The rain-on-snow storms produce larger floods and contribute substantial channel migration. Wilkeson Creek does not have a stream gage. We used the South Prairie Creek stream gage (USGS station) as a surrogate for evaluating high flow hydrologic regimes. Wilkeson Creek is a tributary to South Prairie Creek. A hydrologic analysis of high flows for South Prairie show there has been an increase in high flows. Since Wilkeson does not have a gage and is tributary to South Prairie Creek, we are assuming that similar increases have occurred for Wilkeson Creek. Both the daily mean discharge data (Table 4) and annual maximum peak data show increases in high water (Table 5, Figure 5).

The low magnitude, high frequency floods such as the flood that has a 50% chance of occurring in any given year have not changed significantly (Table 5, Figure 5). However lower frequency, higher magnitude floods such as the 10-year flood or greater show a significant change. For example, the flood that had 2% chance of occurring (50-year event) in any given year based on 1950-1979 record now has 7% chance (7.5 year flood) in any given year based on 1988-2009 record. The January 2009 flood at Prairie Creek had a 1.9% chance of occurring (53-year flood) based on the entire record (1950-1979; 1988-2009). However, the 2009 flood had a 4.5% chance of occurring (22.5 year flood) using the 1988-2009 peak flow record.

Table 4: Mean daily discharge data from USGS Station—12095000 South Prairie Creek at South Prairie, WA were used to evaluate daily high flows. Flow statistics show there is an increase in daily high flows between 2 periods of record: 1950-71 and 1988-2010.

	MEANS		COEFF. of VAR.		DEVIATION FACTOR		DEV. of C.V.	
	Pre	Post	Pre	Post	Magnitude	%	Magnitude	%
1-day maximum	2165	2609	0.3821	0.726	443.9	20.5	0.344	90.02
3-day maximum	1575	1798	0.3554	0.6412	223	14.16	0.2858	80.41
7-day maximum	1105	1141	0.313	0.5453	35.88	3.247	0.2323	74.22

Table 5: The annual maximum peak flow data shows increases in the peak floods, most notable with the higher magnitude floods, when the 1950-1979 data are compared to the 1988-2010 data. The Red discharge numbers are estimates based on Bulletin 17b flood analysis methods.

Station - 12095000 South Prairie Creek at South Prairie, WA	50% chance (2-year) (cfs)	10% chance (10-year) (cfs)	2% chance (50-year) (cfs)	1% chance (100-year) (cfs)
1950-1979; 1988-2009	3017	5794	8383	9511
1950-1979	3005	5230	7052	7790
1988-2009	3027	6493	10860	13150

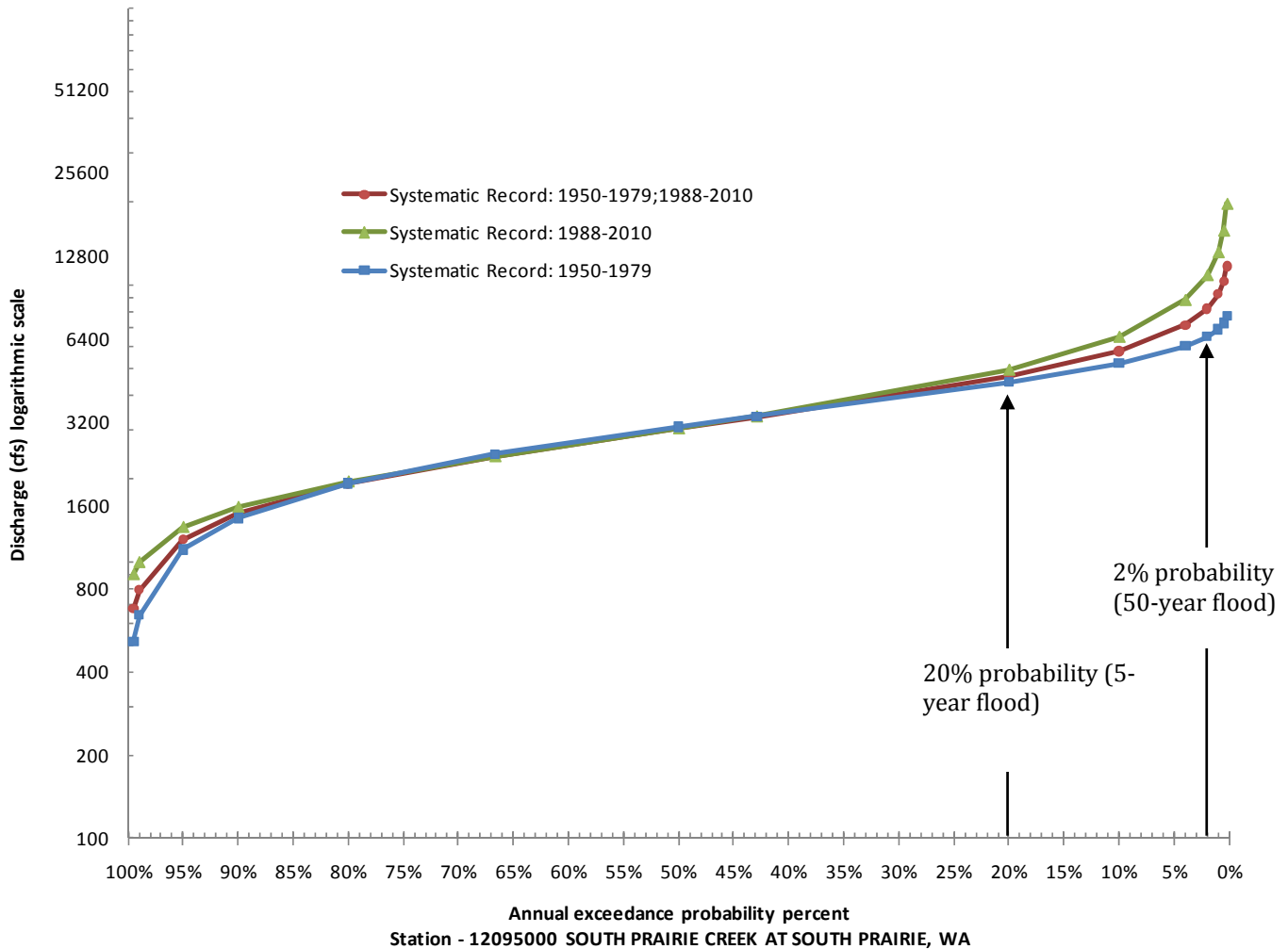


Figure 5: The hydrograph shows the change in peak flows between 2 periods of record and the entire period of record. The 1988-2010 record

Soils and geology

Wilkeson Creek within City jurisdiction has two distinct reaches based on geology and soils. Both influence the channel pattern and response. Upstream of the City of Wilkeson's eastern boundary, Wilkeson Creek flows through a narrow bedrock valley with channel gradient ranging from 1.2 to 15%. Low falls and rapids occur in the ravine reach of Wilkeson Creek where the stream crosses resistant sandstone layers (Gard 1968). The stream gradient quickly decreases when it emerges from the incised ravine and enters the Puget Sound Lowlands where the stream is superimposed on alluvial fan, floodplain, and glacial drift deposits. The LiDAR DEM indicates that the stream in this reach exhibits characteristics similar to Holocene incised (e.g. multi-channel with low sinuosity) (e.g. Collins and Montgomery 2010).

The soil series in Reach 1 are aquic xerofluvents which are associated with floodplains and recent terraces. The soil in this reach is a sandy silt loam with silt (57.1%) being the major texture component. Sand follows at 32.9% while the remaining 10% is clay. Both the silt and sand components are erodible. Field observations indicate that there is a shallow subsurface water body that maintains

wetlands and produces seepage on the terraces and banks. Since this soil series has a higher soil erosion coefficient ($k_{\text{fact}}=0.37$) and seepage, surface rills or gullies could increase bank erosion potential where the rills or gullies intersect with banks. The riparian vegetation reduces the erosion so should be maintained.

Where the large ice-marginal melt water channel (Gard 1968) intersects Wilkeson Creek valley near Reach 1c, the glacial geology changes to glacial drift with a high erosion potential (Figure 6). The soils also change to the Alderwood series which have high sand content (68.5%) and low silt and clay content. The high sand content increases the erosion hazard on stream banks.

The stream contacts the Carbonado Formation (Eocene, middle to upper, continental sedimentary deposits) on stream left in Reach 1a and 1c. The sandstones are relatively resistant and are geologic constraints to channel movement where the channel is bordered by the formation. The valley bottom is coarse glacial drift which has a moderately high to high erosion potential. Some material from the coal slag deposits are being delivered to the stream. These deposits are evident in Reach 1.

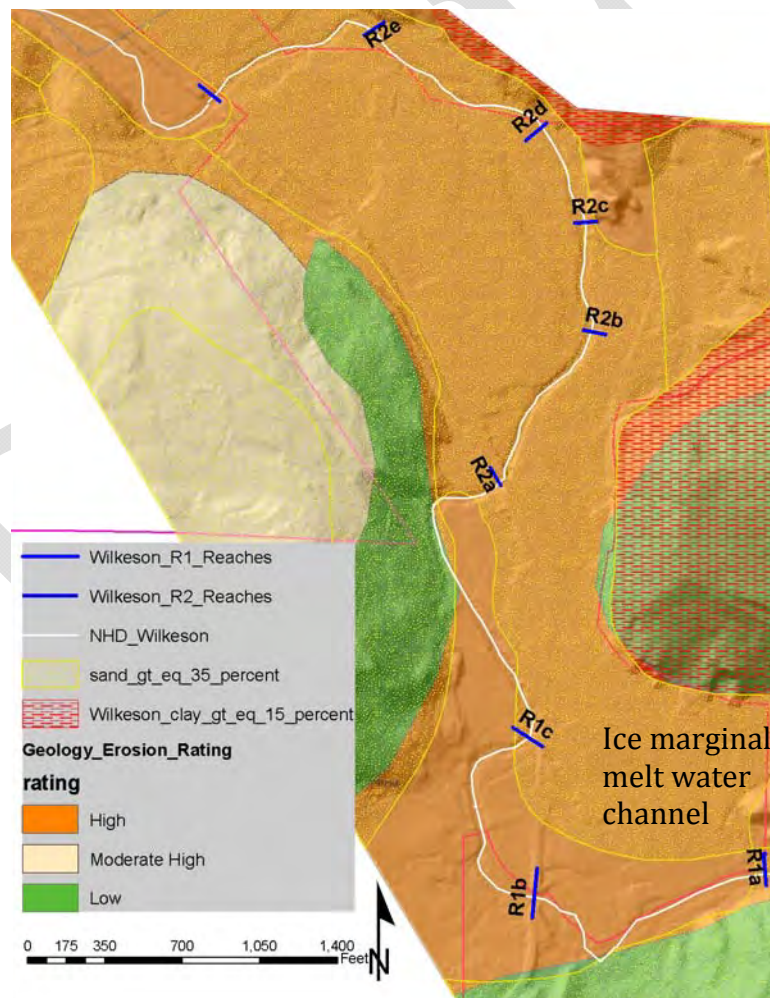


Figure 6: Soil texture along Reach 2, Wilkeson Creek is mostly sand (high bank erosion potential) overlying glacial drift deposits (high erosion potential) associated with ice marginal channel.

Channel migration: Wilkeson Creek

Recent events show that channel migration processes, which include channel incision, bank erosion, aggradation, meander cutoffs and avulsions as well as lateral and translational movement, occurs along Wilkeson Creek. The channel migration that occurred during the 01/2009 flood was episodic with an approximate maximum of 61 feet of channel erosion during that event. However, a comparison of older orthophotos to 2006 orthophotos and 2004 LiDAR DEM in addition to onsite observations show that channel migration has occurred and is still active in other reaches (Figure 7, Table 6).

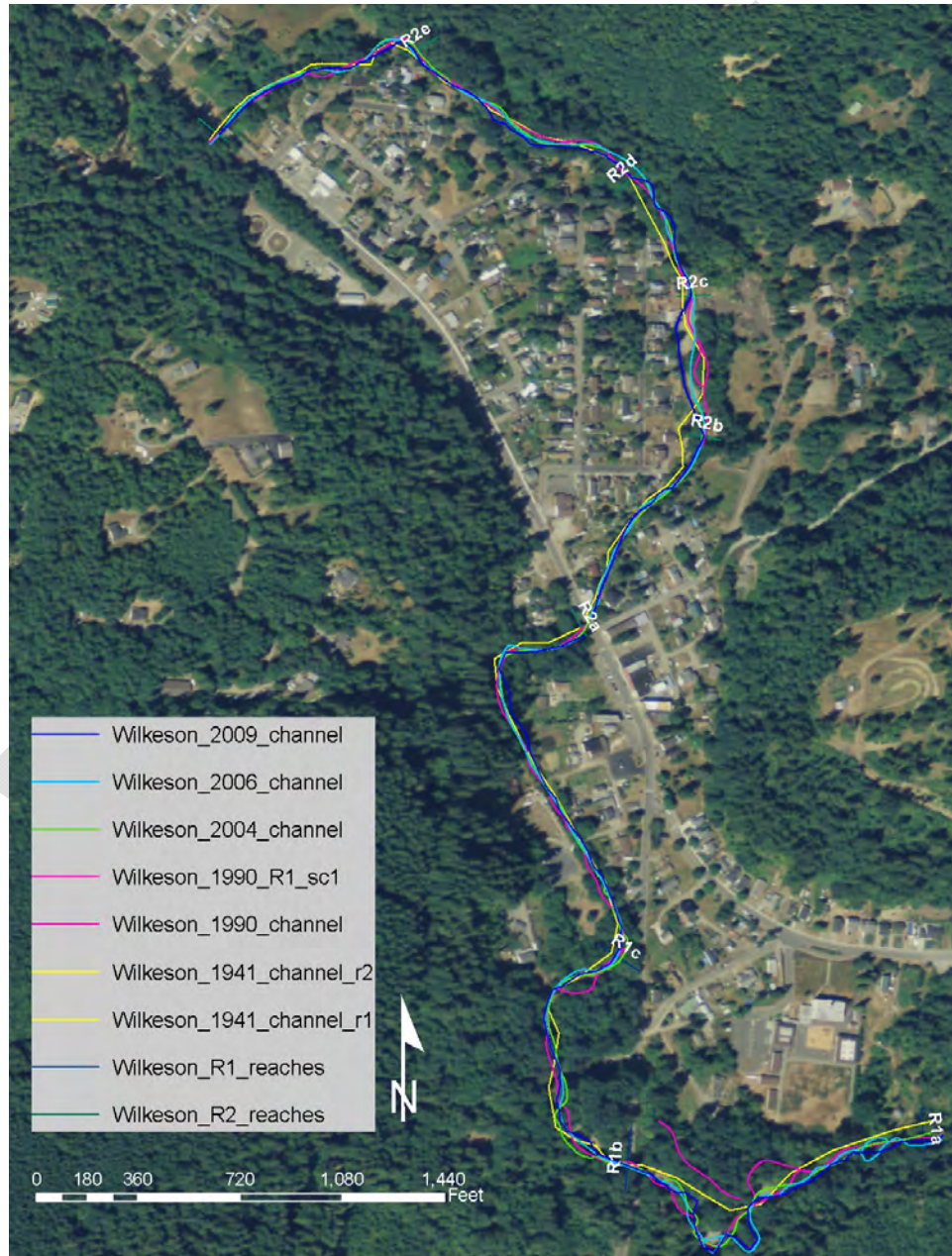


Figure 7: Channel streamline traces show channel location from 1941, 1990, 2004, 2005, 2006 and 2009.

Table 6: Annual migration rates calculated by reach for 2 periods: 2006-2009 and 1990-2006. Since high flows appear to be increasing the maximum annual rates from the most recent period are used to map the channel migration area. The 1941 orthophoto was not used to estimate migration rates because geo-rectification error was higher than annual migration rates.

	Average annual rate (ft yr ⁻¹)		Maximum annual rate (ft yr ⁻¹)	
Reach 1				
Years	2006-2009	1990-2006	2006-2009	1990-2006
1a	1.8	3.7	6.7	12.9
1b	1.0	2.5	4.6	7.1
1c	0.53	3.1	1.6	9.8
Reach 2				
Years	2006-2009	1990-2006	2006-2009	1990-2006
2a	2	0.34	3.6	0.77
2b	11.1	1.61	21.7	3.87
2c	3.4	0.51	10.9	2.1
2d	4.8	0.68	11.9	2.4
2e	3.3	0.61	8.9	1.7

Reaches 1a and 1b:

Wilkeson Creek has been highly disturbed through mining activities and development. Because of the disturbance, the channel migration processes have been altered and evaluating future channel response is complex. In Reach 1a, disturbance from mining activities is still somewhat evident in sediment deposition areas. Evidence of coal slag deposits (and petrified wood) indicates that the slag deposits are still being eroded and transported downstream to Reach 1a. However, Reach 1a and portions of Reach 1b appear to be recovering from past mining and other disturbances. The migration rates also suggest that Reach 1 conditions may be improving. Even though the flood of record occurred between the 2006-2009 orthophotos, the annual migration rates were less than rates estimated from 1990-2006 (Table 6). The opposite is occurring in Reach 2. The stream in Reach 1a and 1b exhibits characteristics similar to Holocene incised channel with multi-channels. There is much evidence of secondary channels that have conveyed recent high flows, main channel braiding and switching and large wood recruitment (Photos 1, 2, 4). Because of this the channel migration zone is larger in this area than further downstream (Figure 8).

The channel migration area consists of the historic migration area, avulsion hazard area and floodplain, terrace and bank erosion hazard area. Potential avulsion paths were identified in both Reach 1a and 1b (Figure 8). In Reach 1a, avulsions are to be expected because avulsions are commonly associated with multi-channel patterns such as Holocene incised streams. The side channel elevations in relation to the main channel (Photo 3. Figure 9) and the power analysis (Figure 10) support this assumption.



Photo 1: Reach 1a view downstream at large wood accumulations and active channel erosion.



Photo 2: Reach 1a view upstream at dry channel adjacent to main channel.



Photo 3: Side channel and potential avulsion path on right floodplain near school yard. Water in channel is mostly groundwater.

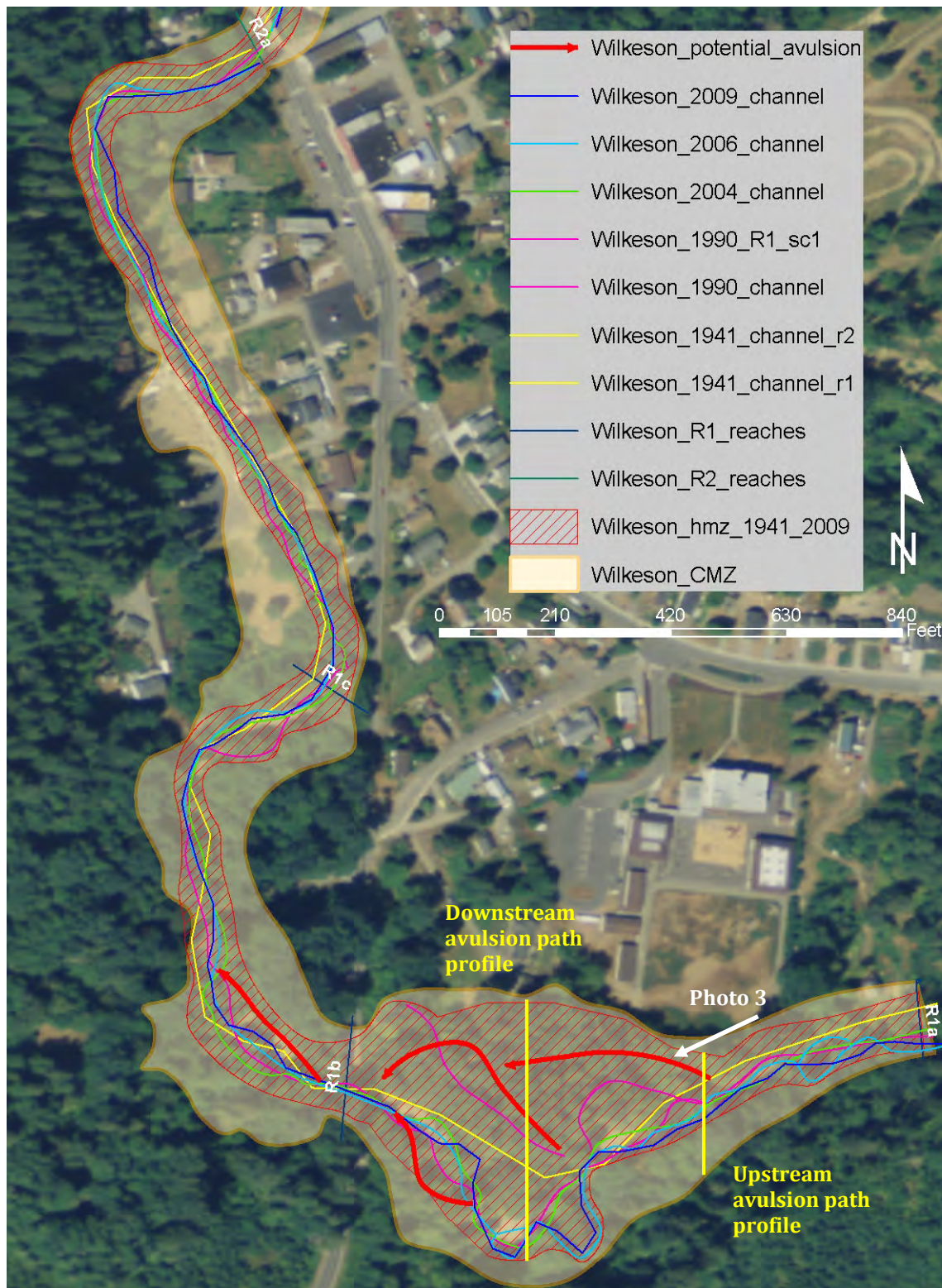


Figure 8: The CMZ is the HMZ plus floodplain, bank and terrace EHA plus potential avulsion zones (Reaches 1a and 1b). The HMZ is based on stream locations from 1941, 1990, 2006, 2009 orthophotos and 1004 LiDAR. No disconnected migration areas (DMA) were included because there are no public roads within the CMZ and much of the channel constraints are privately maintained.

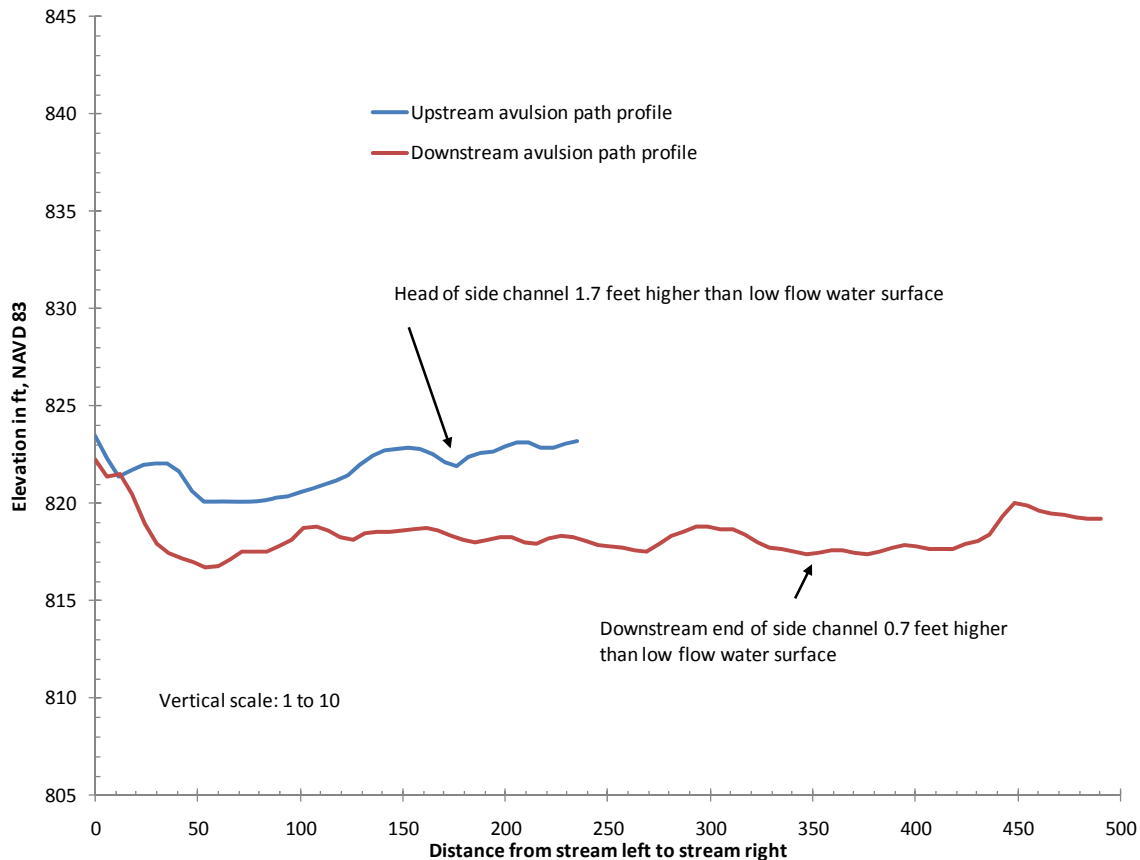


Figure 9: Profiles of the upper and downstream avulsion path (Figure 8, Photo 3) show that side channel elevation is not much higher than water surface elevation at low flow. At higher flows, this channel will be occupied and become part of the main channel.

The riparian vegetation and large wood jams in Reach 1a and 1b reduce floodplain, terrace and bank erosion (Photo 4). In Reach 1a, floodplain and terrace surface have



Photo 4: View upstream in Reach 1b showing vegetation protection of banks.

active shallow groundwater seeps that create piping and channel initiation points. Removal of vegetation and wood would increase erosion hazards in both reaches. But removal would result in even a larger increase in the erosion near these seeps. The seeps on stream left are not within the City boundaries. However, vegetation removal in these areas will affect channel response of stream right which is within the city boundaries.

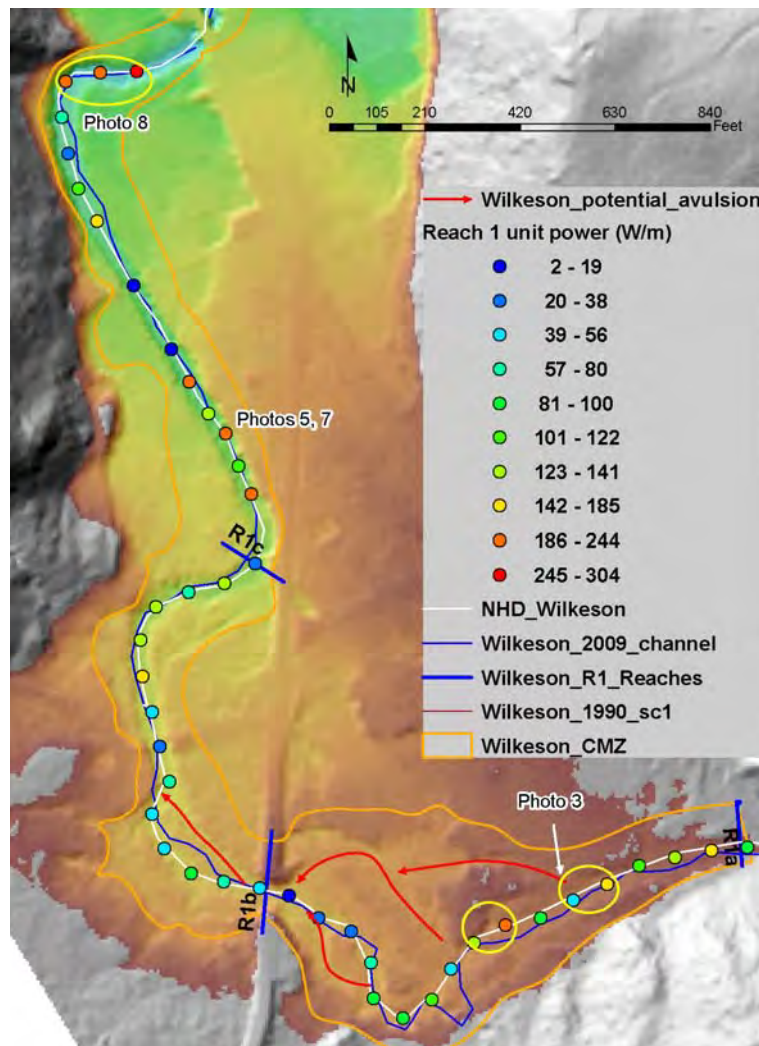


Figure 10: Stream power analysis (unit power $N\ m^{-1}\ s^{-1}$) shows that Reach 1a and 1b have lower unit stream power indicating that they are depositional areas. The yellow circles in Reach 1b highlight areas of high stream power to lower stream power at the head of potential avulsion paths. This condition can create avulsions.

Reaches 1c and 2b

Some incision has occurred in Reach 1c along Maple Street (Photo 5). However, Reach 2b is more incised (Photo 6). Incision can be caused by many factors including natural floods, increase in storm runoff (for example by loss of floodplain storage and increased runoff from impervious areas), an increase in high flow regime (e.g. Tables 4-5), a decrease in sediment, and hardening of stream banks through riprap, revetments and bridge abutments. Some empirical evidence indicate that the channel shape (width: depth ratio) is related to the percentage of silt and clay in the sediments forming the channel perimeter (e.g. Schumm 1977). Channels with higher silt-clay percentages may be narrower and deeper than those with high sand content. However, along Wilkeson Creek, the narrowest stream reaches with the steepest banks are occurring in soils with high sand content indicating that it is not naturally caused (Figure 11).

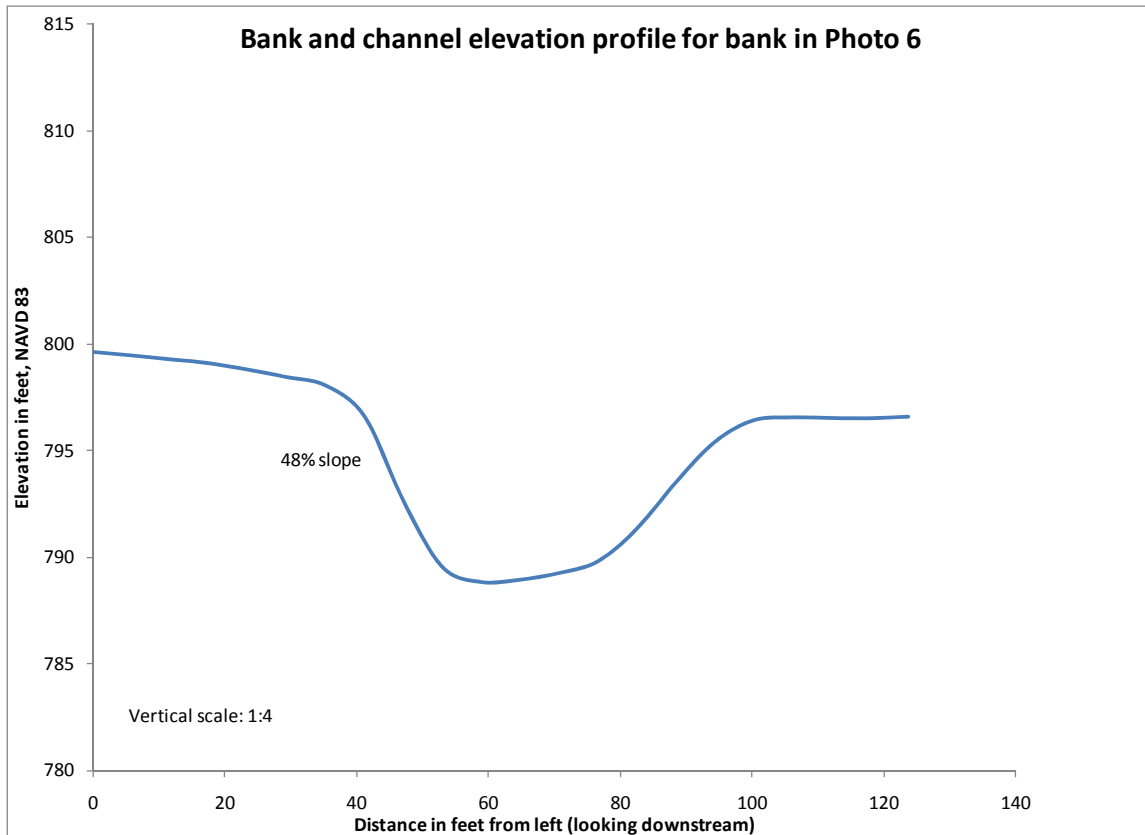


Figure 11: Bank and channel elevation is from the 2004 LiDAR data. The bank slope is 48% which is overstep for sand. The profile is located near Photo 6 (also see Figure 12)

When transport capacity (that is the ability of a stream to transport sediment) continually exceeds sediment supply, bank erosion, channel incision and entrenchment typically occurs. Erosion becomes the dominant channel process resulting in an increase in the mean size of bedload materials, lack of bed forms and reduction of channel complexity (Photo 5, 6). Channel pattern is often straight and incised with smaller width to depth ratios. In Wilkeson Creek, transport capacity likely increased in the constrained reaches as water velocity and stream power (a function of velocity and channel gradient) increased (Figures 10, 12). When a stream can no longer incise its channel bed, bank erosion will increase (Figure 14, Table 8). Consequently both incision and bank erosion occurs (Photo 5, 6, 7).

Some aggradation is occurring in Reach 1c. Photo 7 shows aggradation in the incised part of Reach 1c. The sand deposits are likely from bank erosion as the upstream channel sediment size ranges from gravels to cobbles. Bank erosion is also occurring in lower part of Reach 1c (Photo 8). This is occurring on in conjunction with increased stream power (Figure 10) likely due to Highway 169 bridge which confines the channel and high flow.

The channel migration area is dominated by the erosion hazard area in Reaches 1c and 2a (Figure 8, 15). The LiDAR data and orthophotos indicate that there has been limited lateral migration in these incised reaches but there is higher erosion potential (Photo 6, 7). Disconnected migration areas were not identified. There is

riprap within Reach 1c but it is privately maintained and some is failing so does not meet the SMP criteria as constraints to migration (Photo 5, 7). In subreach 2a, the left stream bank at the sewer pipe location has been stabilized and we assume will be maintained by the city but it does constitute a constraint for the entire Reach 2a.

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Photo 5: Reach 1c: Photo on left is incised channel in Reach 1c. Riprap is evident on stream right. Some is failing.



Photo 6: Reach 2a: View downstream at incised channel. Bank erosion is occurring on stream left.



Photo 7: Reach 1c: Aggradation and bank failure occurring in incised channel.



Photo 8: Reach 1c: View downstream showing bank erosion downstream of the incised reach. Photo J from Wilkeson's first draft Inventory and Characterization

Reach 2b

During the 01/2009 flood, the channel changed from straight to meander along Cothary Street with substantial lateral migration (approximately 61 feet maximum erosion). Likely there was evidence of bank erosion occurring before the channel moved during 2009. Human activity can cause significant channel change by creating a “threshold crossing” (e.g., Church 2002). Apparently, a threshold “crossing” occurred in Reach 2b. Channel migration in Reach 2b appears to be a response to upstream hardening. Incision often results in downstream aggradation (sediment deposition) as the eroded sediment from the incised reach is transported to a reach with lower stream gradient such as Reach 2b (Photo 9). Aggradation can increase bank erosion and subsequent lateral migration or cause avulsions (channel switching to a new location).



Photo 9: Photo 9a on left shows flood deposits on channel left at head of channel migration section. Photo 9b on right shows older aggradation as bars on channel right as well as damage caused by channel migration.

Thresholds are set by conditions that govern channel processes and response. The more important conditions include flow regime, sediment volume and size, and topographic setting ((Church 2002) Channel change from one pattern to another is closely related to transport capacity (ability of stream to transport sediment) and bank stability. Stream power provides a metric for transport capacity. A stream power analysis was done to evaluate the possible causes of channel change in Reach 2b (Figure 12).

The analysis suggests that an increase in stream power and downstream aggradation may have caused the channel to migrate during the 01/2009 flood. In 2004, just upstream of where the channel migration occurred stream power was much higher than at other stream points (Figure 12, Table 6). Stream power decreased substantially just downstream of the channel migration head. Channel aggradation was occurring before the 01/2009 (Photo 9b). Deposition of fines occurred during the flood (Photo 9a). Cross-section profiles indicate that the channel elevation in the area of higher stream power (Cross-section 3, Figures 12, 13) was lower than channel elevation at the downstream cross-section (Cross-section 5, Figures 12, 13) confirming that aggradation was occurring in 2004.

LiDAR elevation data and cross-section profiles from Reach 2b provide additional information for evaluating the incision effects on bank erosion and channel movement (Figure 13). The banks in Reaches 2a and b are steep for the soil type (sands) (Figures 11, 13). The bank steepness increases bank failure potential. The stream power analysis, bank profiles and recent events indicate that in the incised reaches, channel movement may be responding to channel incision and subsequent bank failure. The channel evolution model illustrates this response (Figure 14, Table 8). Reach 1b and 2a appear to be Type II-III channels. Reach 2b, where the channel moved, appears to be approaching Type IV which is more stable form than the Type II-III.

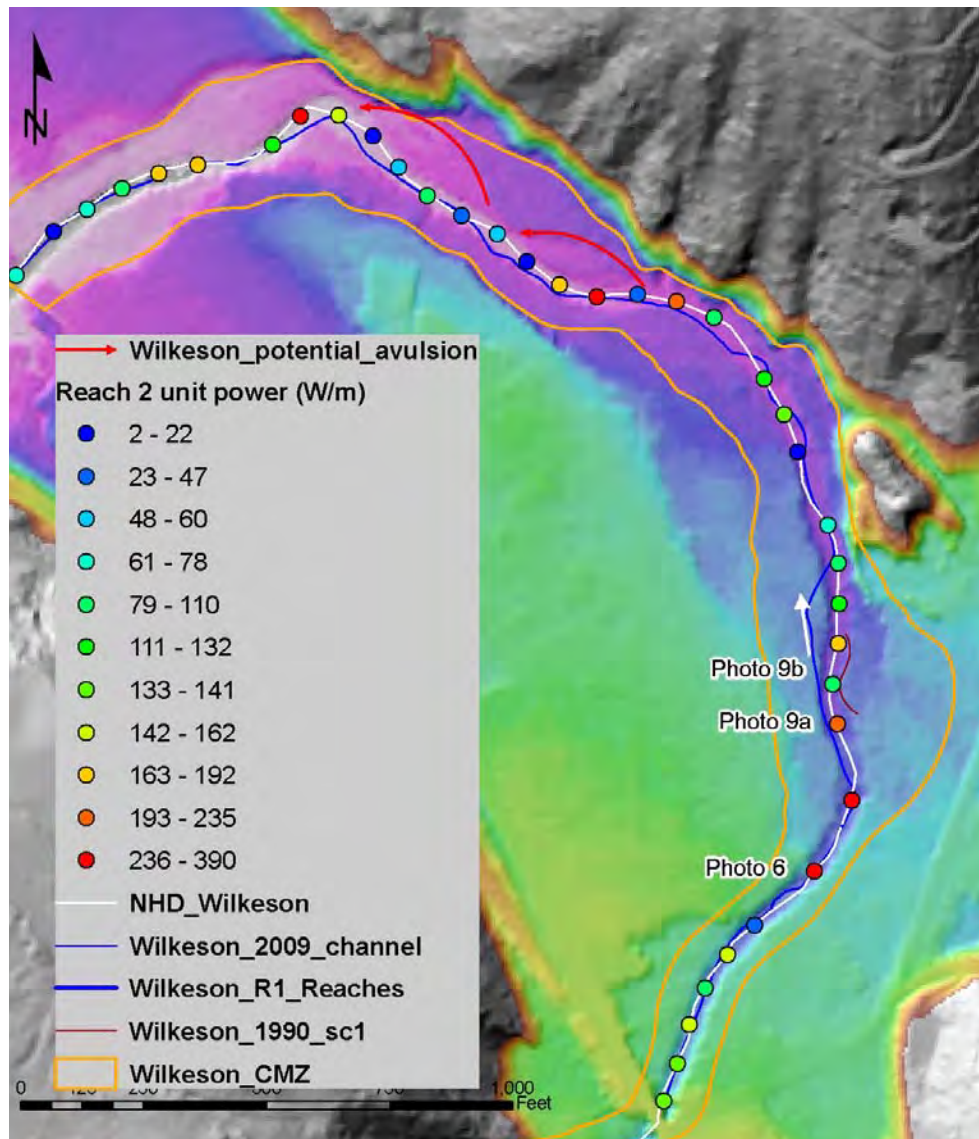


Figure 12: : Stream power analysis (unit power $\text{N m}^{-1} \text{s}^{-1}$) shows that Reach 2 shows areas of incision (orange to red colors) and aggradation (blue-green to blue colors). The cross-section profile shown in Figure 11 is yellow. The white cross-sections show locations in Figure 13.

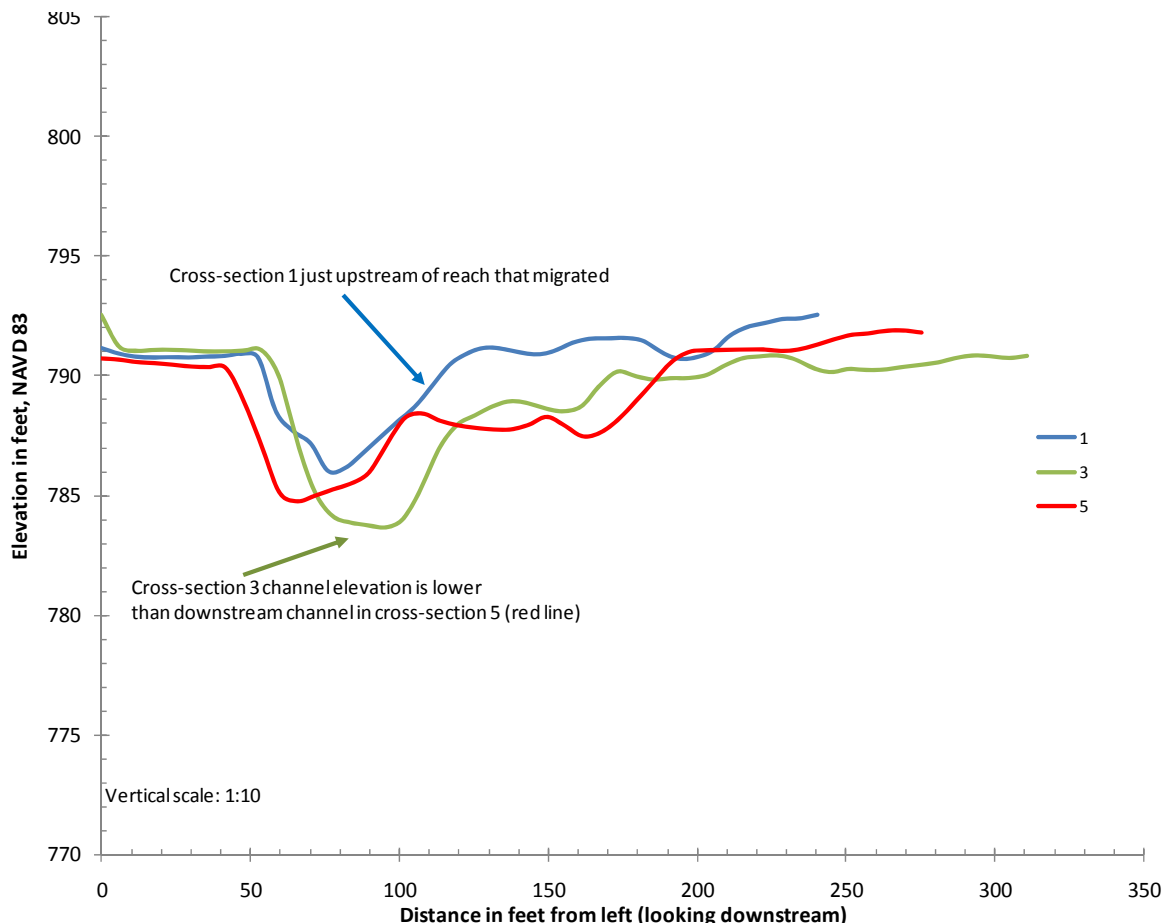


Figure 13: Bank and channel elevation is from the 2004 LiDAR data. Cross-section profile locations are shown on Figure 12. Cross-section 1 is just upstream of where the channel migrated during the 01/2009 flood. Cross-section 3 is the downstream end of the incised stream in Reaches 2a, 2b. Cross-section 5 is in an aggrading reach. The aggrading reach channel elevation is higher than the upstream cross-section 3. Conditions like these can initiate an avulsion or substantial bank erosion may occur. Incision and downstream aggradation appear to be major contributors to channel migration in this reach.

Stream power is directly related to discharge. The South Prairie Creek discharge data indicates that the frequency of higher magnitude flows is increasing. Increased flow results in higher stream power. Other factors can reduce the high flow effects on the channel and banks. Vegetated banks have greater strength especially where the channel bed is at or near the rooting zone. In the case of Reach 2 much of the vegetation with deeper roots (trees) has been reduced substantially and replaced by shallow rooted vegetation such as grass and shrubs. Off channel flood storage, such as wetlands and connected floodplains, also reduce high flow effects.

For example, Reach 1a and portions of 1b have more extensive riparian buffers as well as riparian wetlands and less artificial confinement and disconnection from the floodplain. This reach was much less affected by the 01/2009 flood indicating that artificial channel confinement, significant reduction in deeper rooted riparian vegetation, and loss of floodplain storage were major contributors to the incision and subsequent bank erosion and aggradation. The combination of factors created conditions favoring channel migration.

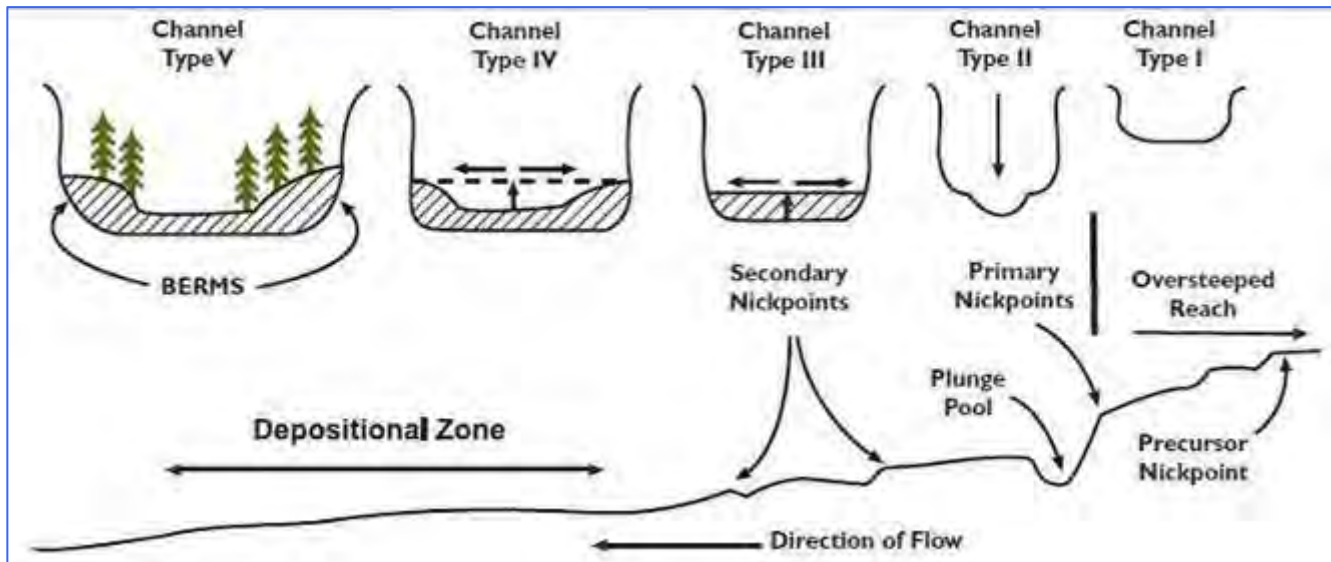


Figure 14: Schumm et al (1984) developed a conceptual channel evolution model for degraded alluvial channels. The model describes the systematic response of a degraded channel over time.

Table 7: Descriptions for the channel evolution model schematic in Figure 10.

<p>Type I—</p> <ul style="list-style-type: none"> • Sediment transport capacity > sediment supply. For example, an increase in discharge increases sediment capacity. • Bank height (h) < critical bank height (h_c). • U-shaped channel cross-section.
<p>Type II—</p> <ul style="list-style-type: none"> • Immediately downstream of knickpoint. A knickpoint is an abrupt change in thalweg elevation, and may be visualized as a small rapid or waterfall. • Sediment transport capacity > sediment supply. • $h < h_c$ • Bed slope < than Type I because water depth has increased
<p>Type III—</p> <ul style="list-style-type: none"> • Sediment transport capacity varies with respect to sediment supply • $h > h_c$ with bank erosion often due to slab failure • Bank loss rates at a maximum • variable sediment deposition may start forming bars • Channel depth generally > Type II depth • Channel widening due to bank failure
<p>Type IV—</p> <ul style="list-style-type: none"> • Sediment supply > transport capacity resulting in bed aggradation • h approaches h_c • Less bank failure than Type III & failure may change from slab to circular-arc failures • Channel widened • Berm, natural levees at the edge of the effective discharge channel may form
<p>Type V—</p> <ul style="list-style-type: none"> • Sediment supply and transport capacity in balance—dynamic equilibrium • $h < h_c$ • vegetation is colonizing bank with decreased bank angle from accumulation of failed bank materials at toe slope • aggraded channel • channel sinuosity increases • newly formed floodplain

The channel migration zone in this reach is defined by recent and historic lateral migration as well as erosion hazard areas (Figure 15). The erosion hazard area extends landward of the Cothary Street. However, the SMP guidelines exempt areas that are landward of publicly maintained roads that are above the 100-year flood elevation. Cothary Street meets the exemption criteria so the channel migration zone is not mapped landward of the road.

Reaches 2c-e

Some aggradation occurs within these reaches (Photo 10). The channel movement



in Reach 2b added additional sediment available for transport downstream to Reaches 2 c-e. For now, the sediment mostly has stayed within Reach 2b and upper Reach 2c.

Photo 10: View downstream at channel aggradation, Reach 2d. Photo in Wilkeson's 12/2010 draft Inventory and Characterization taken 9/30/2010 by The Watershed Company.

The channel migration zone in this reach is defined by recent and historic lateral migration as well as erosion hazard areas (Figure 15). The erosion hazard area extends landward of Brierhill Boulevard and Short Street. However, the SMP guidelines exempt areas that are landward of publicly maintained roads that are above the 100-year flood elevation. Cothary Street meets the exemption criteria so the channel migration zone is not mapped landward of the road. While the avulsion hazard zone in Reach 2d is not within the city's boundaries, an avulsion in this location will affect channel response within the city

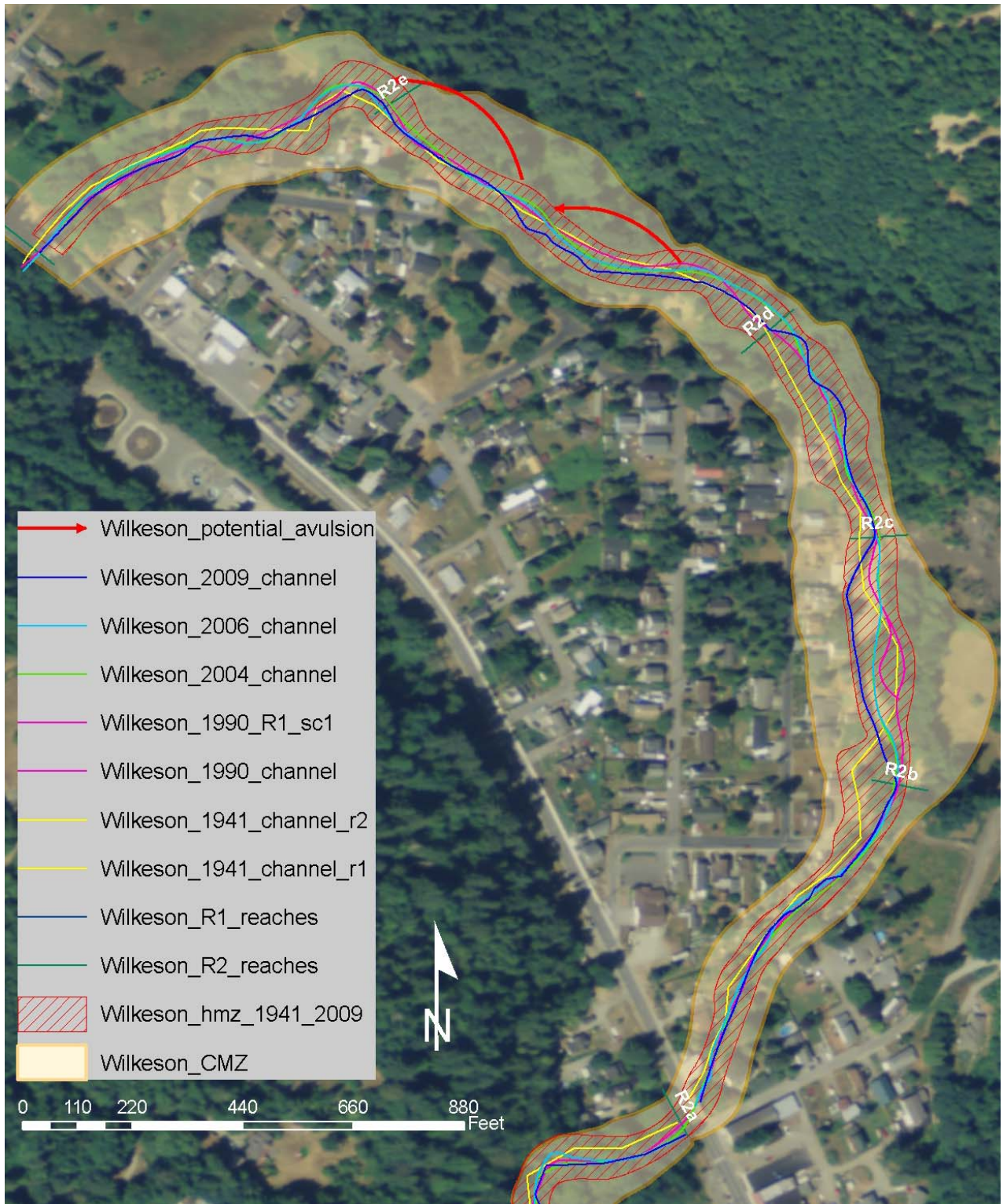


Figure 15: The CMZ is the HMZ plus floodplain, bank and terrace EHA plus potential avulsion zones (Reach 2d). The HMZ is based on stream locations from 1941, 1990, 2006, 2009 orthophotos and 1004 LiDAR. Disconnected migration areas are located landward of Cothary and Short Streets and Brierhill Boulevard.

Conclusion

The evidence suggests that artificial channel confinement, loss of flood water storage and removal of channel wood are likely major contributors to changing Wilkeson Creek's transport capacity and subsequent bank erosion and channel migration. Increased frequency of higher magnitude floods will also contribute to increased bank erosion, channel migration and possible avulsions. Under this scenario, maintenance of riprap and other bank protection structures will be require more diligence and will be more expensive. For example in Reach 1c, some riprap appears to be unmaintained (so not a legal constraint to channel migration) and appears to be failing. While structures can be flood proofed, there are no standards to "channel migration proof" structures.

The SMP guidelines allow existing primary structures to be protected by bank stabilization when need is shown. However, geotechnical reports by qualified and licensed people (for example geotechnical engineer or engineering geologist) are required.

- [WAC 173-26-231\(3\)\(a\)\(iii\)\(B\)](#): *New structural stabilization measures not allowed except when need is demonstrated to protect an existing **primary** structure and meets criteria outlined in WAC 173-26-231(3)(a)(iii)(B)(I-IV).*
- [WAC 173-26-231\(3\)\(a\)\(iii\)\(C\)](#): *Existing structures can be replaced if there is a demonstrated need to protect principle use or structures from erosion based on criteria listed in this section*
- [WAC 173-26-231\(3\)\(a\)\(iii\)\(D\)](#): *Geotechnical reports are needed to demonstrate need to prevent damage to primary structure. The report must show time frames and rates of erosion, and urgency for stabilization. Stabilization methods using Hard armoring solutions (defined in [WAC 173-26-231\(3\)\(a\)\(ii\)](#)) should not be permitted except if the structure will be damaged within 3 years.*
- [WAC 173-26-231\(3\)\(a\)\(iii\)\(E\)](#): *Standards for new stabilization structures (besides geotechnical reports) when found to be necessary include limiting the size to minimum, using measures to assure no net loss of shoreline ecological functions, using soft approaches, and mitigating for impacts.*

However, new development within channel migration areas such as on vacant lots along Reach 2b and 2c on channel left should not be placed were future flood or channel migration measures will be needed:

- [WAC 173-26-221\(3\)\(c\)\(i\)](#): *New development or new uses in shoreline jurisdiction, including the subdivision of land, should not be established when it would be reasonably foreseeable that the development or use would require structural flood hazard reduction measures within the channel migration zone or floodway.*

Increasing flood water storage, adding more riparian vegetation with larger buffers, and maintaining the character of Reach 1a and 1b will help reduce, but not eliminate, the potential impacts. In incised reaches, grade control and large wood

could possibly reverse the effects of incision on the channel and stream side structures. However, they should be designed by qualified persons with much experience in fluvial geomorphology and channel response as well as hydraulic dynamics.

Errors and Disclaimer

Data error from geo-rectification and digitizing channel traces can lead to under or over estimated migration rates. In this lower level assessment method, error is assumed but not quantified. The primary limitation is the maps will have lower accuracy than a more detailed assessment. We assume that the assessment only provides a general map of the channel migration areas. More detailed assessments, conducted by qualified, and preferably licensed, geomorphologists, hydrologists, geologists (including engineering and hydrogeology specialties) or engineers with at least 5 years of fluvial geomorphology experience should be required for regulatory purposes and future development.

REFERENCES

- Church, M., 2002. "Geomorphic thresholds in riverine landscapes." *Freshwater Biology* 47: 541-557.
- Collins, B. D. and D. R. Montgomery, 2011. "The legacy of Pleistocene glaciation and the organization of lowland alluvial process domains in the Puget Sound region." *Geomorphology* 126(1-2): 174-185.
- Gard, Leonard M., 1968, *Bedrock geology fo the Lake Tapps Quadrangle Pierce County Washington*, US Geological Survey Professional Paper 388-B, US Government Printing Office, Washington DC, pp 45.
- Montgomery, D.R., 2004. Observations on the role of lithology in strath terrace formation and bedrock channel width [*American Journal of Science*, Vol. 304, May, 2004, P. 454–476]
- Puget Sound LiDAR Consortium, 2004. *Pierce County Lowlands 2004 - Bare Earth 6 foot raster LiDAR DEM: TerraPoint*. Available: Puget Sound LiDAR Consortium, Seattle, WA
http://pugetsoundlidar.ess.washington.edu/lidardata/metadata/pslc2004pierce/piercelow04_be_dem.htm#1 [December 15, 2010].
- Richards, K., 1982. *Rivers: Form and Process in Alluvial Channels*, Methuen & Co, NY, NY USA, pp. 361.
- Schumm, S. A., 1977. *The Fluvial System*, Wiley Interscience, NY, NY USA, pp.338.
- Simon, A., Langendoen, E.J., 2006. A deterministic bank-stability and toe-erosion model for stream restoration. In: *Proceedings of the Environmental and Water Resources Congress* (R. Graham, Ed.), May 21-25, 2006, Omaha, Nebraska.
- Sklar, L. S., and W. E. Dietrich, 2004. A mechanistic model for river incision into bedrock by saltating bed load, *Water Resour. Res.*, 40, W06301, doi:10.1029/2003WR002496
- Sklar, L. S. and W. E. Dietrich, 2001. "Sediment and rock strength controls on river incision into bedrock." *Geology* 29(12): 1087-1090.

APPENDIX A: Wilkeson CMZ

DRAFT

0 112.5225 450 675 900 Feet



→ Wilkeson_potential_avulsion

Wilkeson_CMZ

Relative Elevation Model (ft)

<VALUE>

-5.9 - -5

-4.9 - -4

-3.9 - -3

-2.9 - -2

-1.9 - -1

-0.9 - 0

0.01 - 1

1.1 - 2

2.1 - 3

3.1 - 4

4.1 - 5

5.1 - 6

6.1 - 7

7.1 - 8

8.1 - 9

9.1 - 10

11

12

13

14

