RESOLUTION NO. 1326

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EDMONDS, WASHINGTON, EXPRESSING INTENT TO ADOPT AN UPDATE TO THE SHORELINE MASTER PROGRAM AS ATTACHED HERTO.

WHEREAS, the City Council heard a brief introduction to the Shoreline Master Program at the December 4, 2012 council meeting; and

WHEREAS, the December 4, 2012 introduction focused on how the Shoreline Master Program applied to the Harbor Square property; and

WHEREAS, the City Council continued review of the SMP at the February 26, 2013 meeting with a broader overview of the SMP update; and

WHEREAS, at the March 26, 2013 meeting, staff provided an in depth review of the three Urban Mixed Use shoreline environments (ECDC 24.30.070) as well as brief discussion of the allowed uses in the different shoreline environments and setbacks for various uses and shoreline environments; and

WHEREAS, at the April 23, 2013 Council meeting, staff reviewed how proposed changes to the City's SMP may impact property owners around Lake Ballinger as well as other single family property owners within the City's shoreline jurisdiction as well as changes to the Meadowdale Marina area; and

WHEREAS, the City Council held a public hearing on the SMP update on June 6, 2013; and

WHEREAS, the City Council continued discussion at the October 8, 2013 Council meeting and directed staff to bring back options for a new shoreline environment and setbacks/buffers for the Harbor Square property; and

WHEREAS, at the December 17, 2013 Council meeting, Council directed staff to draft an Urban Mixed Use IV interim shoreline designation for Harbor Square and the Unocal/Chevron property on the south side of Edmonds marsh; and

WHEREAS, the City Council received a briefing on the SMP update at the September 2, 2014 Council meeting, including discussion of the new Interim Urban Mixed Use IV shoreline designation; and

WHEREAS, the City Council held a public hearing on the attached proposed update to the Shoreline Master Program on September 16, 2014; and

WHEREAS, RCW 90.58.090 requires that proposed Shoreline Master Programs be reviewed and approved by the state prior to taking effect, now therefore,

THE CITY COUNCIL OF THE CITY OF EDMONDS, WASHINGTON, HEREBY RESOLVES AS FOLLOWS:

Section 1. INTENT TO ADOPT NEW SHORELINE MASTER PROGRAM. The city council hereby expresses intent to adopt the following attached documents:

1. A new Shoreline Master Program to read as set forth in **Attachment A** hereto, which is attached hereto and incorporated herein by this reference as if set forth in full.
2. Updated Shoreline Jurisdiction and Environmental Designation Maps, to read as shown in **Attachment B**, which is attached hereto and incorporated herein by this reference as if set forth in full.
3. An updated Shoreline Inventory and Characterization, to read as shown in **Attachment C**, which is attached hereto and incorporated herein by this reference as if set forth in full.
4. An updated Shoreline Restoration Plan, to read as shown in **Attachment D**, which is attached hereto and incorporated herein by this reference as if set forth in full.
5. A cumulative Impacts Analysis, to read as shown in **Attachment E**, which is attached hereto and incorporated herein by this reference as if set forth in full.

RESOLVED this 18th day of November, 2014.

CITY OF EDMONDS

MAYOR, DAVE EARLING

ATTEST:

CITY CLERK, SCOTT PASSEY

FILED WITH THE CITY CLERK: November 14, 2014
PASSED BY THE CITY COUNCIL: November 18, 2014
RESOLUTION NO. 1326

Edmonds Shoreline Master Program

Part I. Introduction

24.10.000 Purpose and Intent

This master program, in harmony with the Shoreline Management Act of 1971, is based on the philosophy that the shorelines of the state and our city are among the most valuable and fragile

resources that we possess. The Shoreline Management Act made clear that there is a great public concern regarding the use, protection, restoration, and preservation of these shorelines, which concern is the premise of this master program. In recognition of private property rights, local public opinion, existing realities, and the necessary coordination between several levels of government, this program represents an approach toward the enhancement of shorelines rather than the restriction of their use.

The purposes of this Master Program are:

A. To carry out the responsibilities imposed the City of Edmonds by Washington State Shoreline Management Act (RCW 90.58).

B. To promote uses and development of the City of Edmonds shoreline consistent with the City of Edmonds Comprehensive Plan while protecting and restoring environmental resources.

C. To promote the public health, safety, and general welfare by providing a guide and regulation for future development of the shoreline resources of the City of Edmonds.

24.10.010 Authority

Authority for enactment and administration of the program is the shoreline Management Act of 1971, chapter 90.58 RCW, as now or hereafter amended

24.10.020 Applicability

All proposed uses and development occurring within shoreline jurisdiction of the City of Edmonds must conform to the Shoreline Management Act and this Chapter. All uses, even those not meeting the definition of development, are subject to the provisions and development regulations of this chapter, even though a permit may not be required.

24.10.030 Relationship to Other Plans or Regulations

A. Uses, developments and activities regulated by this Chapter may also be subject to the provisions of the city of Edmonds comprehensive Plan, the Washington State Environmental Policy Act, Edmonds City Code, and various other provisions of local, state, and federal law, as may be amended. Project proponents shall comply with all applicable laws prior to commencing any use, development or activity.

B. The shoreline master program has been developed as a both a policy and a regulatory program. As such, the shoreline master program is a part of and was developed to be consistent with the city of Edmonds comprehensive plan and its component elements.

C. The Edmonds Community Development Code establishes specific and detailed regulations for most of the uses, development, and activities regulated in this chapter. The Edmonds Community Development Code and this chapter are intended to operate together to produce

coherent and thorough shoreline regulations. Uses, developments and activities must comply with both the Edmonds Community Development Code and the shoreline master program in all cases. If there is a conflict between the two, the shoreline master program shall prevail.

24.10.040 Liberal Construction

As provided for in RCW 90.58.900, the Shoreline Management Act is exempted from the rule of strict construction; the Act and this Master Program shall, therefore, be liberally construed to give full effect to the purposes, goals, policies, and standards for which the Act and this master Program were enacted.

24.10.050 Administrative Procedures

The general administrative procedures for this Title 24 (Edmonds Shoreline Master Program) are not part of this program. They are included with the text of Title 24 for consistency and ease of use. The Department of Ecology will be notified of any changes to the administrative chapters listed below.

The use of separate local administrative and enforcement procedures is consistent with the 2003 Washington State Shoreline Master Program Guidelines (WAC 173-26-191(2)(a)(iii)(C)), Administrative Provisions.

> "Local governments may include administrative, enforcement, and permit review procedures in the master program or the procedures may be defined by a local government ordinance separate from the master program. In either case, these procedures shall conform to the Shoreline Management Act, specifically RCW 90.58.140, 90.58.143, 90.58.210 and 90.58.220 and to chapter 173-27 WAC."

This allows the city of Edmonds to revise local administrative procedures (fees, application meetings, authority of Administrator, etc) without another formal state amendment process. ECDC 24.80 must still be consistent and remain consistent with the related provisions in the Shoreline Management Act and sate shoreline rules (WACs). In the event of a conflict, the state RCW or WAC, as amended, will prevail over the local ordinance.

The following sections are administrative procedures separate from Title 24:

ECDC 24.80.070	Minimum Application Requirements
ECDC 24.80.080	Notice of Application
ECDC 24.80.100	Public Hearings
ECDC 24.80.110	Notice of Decision, Reconsiderations, and Appeals
ECDC 24.80.130	Initiation of Development
ECDC 24.80.160	Administrative Authority and Responsibility
ECDC 24.80.170	Compliance
ECDC 24.80.180	Enforcement

24.10.060 Document Organization

This Master Program is divided into the following ten parts, consistent with the material to be included within a master program as established in Chapter 173-26 WAC:

A. Part I, ECDC 24.10.000 through 24.10.000, contains basic and general information regarding the shoreline master program.

B. Part II, ECDC 24.20.000 through 24.20.110, contains the city's goals and policies with respect to the program elements established in Chapter 173-26 WAC.

C. Part III, ECDC 24.30.000 through 24.30.080, contains information regarding the different shoreline environments to be found within the city including goals, policies and regulations specific to each of the shoreline environments.

D. Part IV, ECDC 24.40.000 through 24.40.060, contains policies and regulations with respect to general master program provisions identified in Chapter 173-26 WAC.

E. Part V, ECDC 24.50.000 through 24.50.070, contains policies and regulations that apply to specific modifications that are regulated under the shoreline master program.

F. Part VI, ECDC 24.60.000 through 24.60.090, contains policies and regulations that apply to specific uses that are regulated under the shoreline master program.

G. Part VII, ECDC 24.70.000 through 24.70.050, contains policies and regulations that apply to nonconforming development with the shoreline jurisdiction of the City of Edmonds.

H. Part VIII, ECDC 24.80.000 through 24.80.180, contains administrative procedures for shoreline permitting

I. Part IX, ECDC 24.90.000 through 24.90.060, contains definitions applicable to the shoreline master program

J. Part X, ECDC 24.100.000 through 24.100.010, contains appendices pertaining to this chapter.

Part II. Master Program Elements: Goals & Policies for the Edmonds Shoreline Master Program

24.20.000 Introduction

This section contains goals and policies that form the foundation of Edmonds' Shoreline Master Program which are implemented through the regulations in ECDC chapters 24.40 through 24.60, and apply to all areas of the City of Edmonds shoreline jurisdiction, regardless of the designated

shore environment. The Shoreline Management Act requires cities to adopt goals, or "elements," to guide and support major shoreline management issues.

24.20.010 Economic Development Element

A. Purpose.

The economic development element provides for the location and design of industries, industrial projects of statewide significance, transportation facilities, port facilities, tourist facilities, commerce and other developments that are particularly dependent on their location on or use of the shorelines of the state in accordance with RCW 90.58.100(2)(a).

B. Economic Development Goal.

It is a goal of the city to encourage port facilities, tourist facilities, mixed use, commercial and light industrial development in specific and limited shoreline areas which enhance the public's access to the shoreline. Water dependent, oriented and water enjoyment development are preferred in shoreline areas. The nature of this economic development should attract, and be open to, the general public and should not unduly interfere with the character of the shoreline area or with nearby shoreline and upland uses.

C. Economic Development Policies.

1. Mixed-use commercial and light industrial uses in the shoreline area should be permitted only where compatible with existing or planned shoreline and upland development, or where legal parcels of land can be aggregated to minimize the impacts from the mixed-use commercial or light industrial use.

2. Mixed-use commercial and light industrial uses should be permitted only where infrastructure, particularly the roadway system, is presently adequate or is made adequate to accommodate the demands generated by commercial or light industrial development.

3. New shoreline light industrial and commercial development should be limited to that which is classified as water-dependent, water-related, or water-enjoyment uses and non-water-oriented uses which are not accessory to a water-oriented use should be discouraged and/or prohibited.

4. Permitted mixed-use commercial and light industrial development in shoreline areas should enhance opportunity for the public to take advantage of shoreline amenities. Uses that support or enhance the opportunity for public access and compliment the cultural arts related to the shoreline should be encouraged. This might include uses wherein the public can view and enjoy the aesthetic qualities of the shoreline and vista beyond.

5. New development or redevelopment should avoid or mitigate additional loss of shoreline ecological functions.

6. Development should be discouraged in any critical area and only allowed where impacts to these areas can be mitigated.

7. In shoreline areas where large tracts of land can be aggregated, some degree of flexibility is appropriate to allow for innovative and planned site design within parameters established by the city.

8. Economic benefits derived from wildlife, marine and fish habitats, public access, recreational scuba diving and tourism should be recognized and retained.

9. Priority should be given to those mixed-use commercial or light industrial uses which are water-dependent.

10. The potential adverse effects of mixed-use commercial and light industrial development on other activities should be minimized through local performance standards.

11. The recreational opportunities along the shoreline should be developed as an economic asset in a manner that will enhance the public enjoyment of the shorelines and in-water-related activities.

12. Commercial activities in shoreline areas should be operated with minimum adverse impact on the quality of the environment of the shoreline and adjacent areas.

24.20.020 Public Access Element

A. Purpose

The public access element provides for public access to publicly owned or privately owned shoreline areas where the public is granted a right of use or access in accordance with RCW 90.58.100(2)(b).

B. Public Access Element Goal 1

It is a goal of the city to provide the maximum reasonable opportunity for the public to view and enjoy the amenities of the shoreline area from public viewpoints, while assuring that such access does not contribute to intrusions upon private property, nuisance, personal danger, or over-burdening of fragile natural resources.

C. Public Access Policies 1

1. The city should use street ends and other publicly owned or controlled land within the shoreline area as a means of providing additional safe public access to shoreline areas. When these types of areas are developed, the city should also provide for some associated

limited off-street parking or public transportation connection in order to minimize impacts to surrounding properties.

2. The city should develop signage, public information brochures and publications for distribution which identify all locations for public access to the shorelines, and underwater activities with information about each site location.

3. The city should maintain public shorelines, waterways and tidelands in public ownership for continued public access and use.

4. With principal access to tidelands existing at public beaches to the north and south, the city, where practicable, should acquire and develop safe convenient public access for pedestrian access and water access to and use of public tidelands and beaches.

5. Public pedestrian access for neighborhood use should be encouraged.

6. Public access afforded by shoreline street ends, public utilities and rights-of-way should be preserved, maintained and enhanced.

D. Public Access Goal 2

Incorporate public access into new shoreline development and unify individual public access elements into an organized system.

E. Public Access Policies 2

1. Public access will be considered in the review of all private and public developments (including land division) with the exception of one- and two-family dwelling units when necessary to mitigate significant environmental impacts or through provisions designed to exchange access rights for development bonuses.

2. Developments, uses and activities on or near the shoreline should not impair or detract from the public's access to the water.

3. Public access should be provided as close as possible to the water's edge without adversely affecting a sensitive environment and, if feasible, should be designed with provisions for disabled and physically impaired persons.

4. Public access should be designed to provide for public safety and to minimize potential impacts to private property and individual privacy.

5. Assure that public access improvement result in no net loss of shoreline ecological functions.

6. No public access shall be acquired through a taking without just compensation.

24.20.030 Recreational Element

A. Purpose

The recreation element provide for the preservation and enlargement of recreational opportunities including but not limited to parks, tidelands, beaches, and recreational areas in accordance with RCW 90.58.100(2)(c).

B. Recreational Goal

It is the goal of the city to provide substantial recreational opportunities for the public in shoreline areas through the preservation and expansion of these opportunities through programs such as acquisition, development and maintenance.

C. Recreational Policies

1. The city should continue to acquire and develop park land within shoreline areas. The city should also, where feasible, develop street ends within the shoreline area to provide for public recreation. The nature and extent of recreational opportunities provided within the various lands in the shoreline area owned or controlled by the city depends on the nature of the area involved, the amenities and natural resources to be found in that area, the location of the area and the needs of the community.

2. When mitigation requirements or bonus programs permit, large or intensive private developments within the shoreline area should provide some public recreation amenities, in addition to public pedestrian access along the water's edge.

3. The city should consider both active and passive in-water, shoreline and upland recreational needs in development of recreational areas to meet local and regional needs.

4. The city should acquire, develop, expand and maintain public recreation facilities to meet public demand for recreation use and enjoyment of the water and shoreline.

5. Recreation facilities in the shoreline area should be restricted to those dependent upon a shoreline location, or those benefiting from a shoreline or in-water location that are in the public interest.

6. Public recreation facilities should be designed, developed, and maintained to respect the shoreline environment and minimize the degradation of the shoreline and its natural systems.

7. Public information and education programs, and attendant enforcement procedures, should be developed and implemented to help ensure that the public is aware of park regulations and private property rights, and to prevent the abuse of the shoreline and its natural ecological system.

8. Recreational boating facilities including waterway trails and trailheads, terminals, moorage, and service facilities should be provided for on publicly owned land.

9. Recreational boating facilities including waterway trails and trailheads, terminals, moorage, and service facilities should be allowed on private property, except in the Natural Environment.

24.20.040 Circulation Element

A. Purpose

The circulation element provides for the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public utilities and facilities in accordance with RCW 90.58.100(2)(d).

B. Circulation Goal

It is the goal of the city to provide for the safe and efficient movement of people, goods, and emergency services within the shoreline area while recognizing and enhancing the unique, fragile and scenic character of the shoreline area with minimum disruption to the shoreline environment and minimum conflict between different users.

C. Circulation Policies

1. Railroad Avenue, Dayton Street, Main Street, Admiral Way, and Sunset Avenue, which provide access to and through the city's accessible downtown shoreline area, should be designed and regulated to safely accommodate the vehicular, bicycle and pedestrian traffic using these corridors, as well as to facilitate egress and ingress from adjacent properties and to enhance the scenic character and recreational use of this corridor, while recognizing that shoreline uses should have primary access to Railroad Avenue and Admiral Way.

2. Whenever practicable, safe pedestrian and bicycle movement on and off roadways in the shoreline area should be encouraged as a means of personal transportation and recreation.

3. Where new streets are needed to serve uses in the shoreline area, these streets should be the minimum size necessary to provide safe and efficient vehicular, pedestrian and bicycle access, including access for emergency vehicles, to the properties to be served.

4. Public waterborne transportation linked to public and private forms of ground transportation should be encouraged to minimize auto usage, and to eliminate barriers between public waterborne transportation and ground transportation in conformance with the Americans with Disabilities Act.

5. All transportation planning should be coordinated to provide efficient use and transfer between modes while minimizing the adverse environmental impacts of such facilities.

6. Circulation and transportation systems should be located, designed and developed with respect to existing and/or planned rail, highway and ferry facilities.

7. Public transit systems should be linked to the urban waterfront.

8. Pedestrian walkways, trails and bicycle linkages should be provided between the historic downtown and the waterfront, including the train station and ferry terminal.

9. New or expanded non-water oriented transportation facilities should be located outside of shoreline jurisdiction whenever feasible.

24.20.050 Shoreline Use Element

A. Purpose

The shoreline use element considers the proposed general distribution and general location and extent of the use on shorelines and adjacent land areas for housing, business, industry, transportation, agriculture, natural resources, recreation, education, public buildings and grounds, and other categories of public and private uses of the land in accordance with RCW 90.58.100(2)(d).

B. Shoreline Use Goals

The goals of the city are to:

1. Allow for a diversity of uses within the shoreline area consistent with the dramatically different character of the various shorelines within the city, and to preserve and enhance the natural and aesthetic quality of important shoreline areas while allowing for reasonable development which meet the goals and policies of the Shoreline Management Act.

2. Provide performance and development standards for shoreline uses which achieve compatibility among activities.

3. Reserve shoreline and water areas particularly suited for specific and appropriate uses, especially water-oriented and water-dependent uses, for such uses whether they are existing or potential.

4. Establish and implement policies and regulations for shoreline use consistent with the Shoreline Management Act of 1971. These policies and regulations should insure that the overall land use patterns in shoreline areas are compatible with existing shoreline

environment designations and will be sensitive to and not degrade habitat and ecological systems and other shoreline resources.

5. Ensure that proposed shoreline uses are distributed, located and developed in a manner that will maintain or improve the health, safety and welfare of the public.

6. Ensure that proposed shoreline uses do not minimize the rights of others or infringe upon the rights of private ownership.

7. Encourage restoration of shoreline areas that have been degraded or diminished in ecological value and functions as a result of past activities or catastrophic events.

8. Ensure that planning, zoning and other regulatory and non-regulatory programs governing lands adjacent to shoreline jurisdictions are consistent with SMA policies and regulations and the provisions of this SMP.

9. Encourage increased accessibility to the shoreline for a variety of users and activities.

10. Develop adaptive management strategies to increase capacity to respond to future possible impacts on the Edmonds shoreline from climate change in the Puget Sound region.

11. Ensure that residential development in the shoreline area is compatible with adjacent uses and minimizes impacts to shoreline processes and functions.

12. Ensure future shoreline development will achieve no net loss of ecological functions and values.

C. Shoreline Use Policies

1. “Environmentally critical areas” are to be protected and regulated consistent with the city’s environmental review and critical areas regulations contained in Chapters 20.15A and 23.40 through 23.90 ECDC, less the exceptions listed in ECDC 24.40.020.C.

2. New uses and developments in shoreline areas that have established desirable development patterns should be designed to be compatible with those areas; provided the existing uses are consistent with the Shoreline Management Act and the City’s comprehensive plan and shoreline master program.

3. In shoreline areas without established development patterns and which are not unique or fragile, the city should allow for a wide range of development options consistent with the Edmonds Community Development Code within established limits to protect the public interest.

4. Over-water structures other than ferry terminal passenger shelters, docks, piers, walkways, breakwaters and other similar structures should be prohibited with the exception of minor appurtenant buildings, buoys, divers resting floats, and art sculpture.

5. Water-dependent uses should have priority over non-water-dependent uses in the shoreline area. Nonetheless, uses such as dry-docks, boat yards, and similar marine enterprises are incompatible with the character of the majority of the shoreline area and should be limited to specific designated areas.

6. Uses in shoreline areas should not degrade water quality and land disturbances (land covered by water and the land area adjacent to the ordinary high water mark) should be the minimum necessary.

7. The pattern and distribution of land and water uses should be controlled and encouraged in order to enhance the shoreline natural systems, protect against their damage, and provide for their public use and enjoyment.

8. Multiple uses of shorelines should be encouraged. Shoreline uses which allow large numbers of people to enjoy the marine environment should be given a higher priority than uses that lead to the usurpation of the limited urban waterfront by any single use activity.

9. Shoreline use should be compatible with its site, in harmony with adjacent uses, and consistent with long-range comprehensive planning for waterfront use.

10. Uses which adversely alter or degrade the defined shoreline "natural systems" should be prohibited.

11. The City of Edmonds shall stay abreast of scientific information regarding climate change and sea level rise and reevaluate the Shoreline Master Program development standards as soon as adequate scientific information is available.

12. The Edmonds Marsh study identified in the City of Edmonds Capital Improvement Plan is an important study for determining the potential impacts of climate change and sea level rise on the City of Edmonds and should be considered a high priority for completion.

13. All use and development should use low impact development (LID) techniques where appropriate and feasible.

14. The rehabilitation of "natural systems" (e.g., the improvement in water quality, removal of beach obstructions, etc.) should be encouraged.

15. Shoreline Use and Development Review.

a. Shoreline use and development should be provided for through a process of review and analysis that gives priority to:
   i. The protection and enhancement of the shoreline natural system;
   ii. The provision for shoreline-dependent uses;
   iii. The provision for shoreline-oriented uses; and
   iv. The accommodation of necessary uses that are neither shoreline-dependent nor shoreline-oriented.

b. The priority system will recognize, but not be limited to, the following systems and uses:
   i. Protect and enhance natural systems:
      A. Biological:
         1. Critical areas for fish spawning, rearing, feeding, and migration, including beaches, marshland, aquatic vegetation and nearshore subtidal area;
         2. Waterfowl and water associate bird nesting, resting, feeding and nursery areas;
         3. Shellfish life – supporting areas;
         4. Upland mammal breeding, rearing and feeding areas;
         5. Upland plant growth areas (greenbelts, etc.);
         6. aquatic (non-fish and non-shell fish) marine organisms life supporting areas; and
         7. Other.
      B. Geological:
         1. Bluff and landslide areas;
         2. Beaches and tidelands – shoals and coves;
         3. Marshland and slough area;
         4. Streams and ravines;
         5. Below low water submerged lands – canyons, cliffs, rock reefs, sand or mud flat, etc.; and
         6. Other.

   ii. Provide for shoreline-dependent uses, such as:
      A. Ferry and passenger terminals;
      B. Terminal and transfer facilities for marine commerce and industry;
      C. Marine and fresh water construction, dismantling and repair;
      D. Marinas – boats;
      E. Intakes and outfalls;
      F. Boat launch facilities;
      G. Shoreline recreation – including parks, bike and walking trails, beaches, etc.
      H. Water-related recreation – including scuba diving, waterway trail system, fishing and small craft boating;
      I. Marine and limnological research, interpretation and education;
      J. Piers and related facilities for the loading and unloading of petroleum products; and
      K. Other uses of like intensity and dependency.

24.20.060 Conservation Element

A. Purpose

The shoreline conservation element provides for protection of natural resources, including but not limited to scenic vistas, aesthetics, and vital estuarine areas for fisheries and wildlife protection in accordance with RCW 90.58.100(2)(f).

B. Conservation Goal

It is the goal of the city to preserve, protect, and enhance unique and fragile areas of flora and fauna and scenic vistas to help assure the continued availability of these resources for future generations and to protect the ecological functions of the shoreline to ensure no net loss of functions. This element is concerned with the preservation of the natural shoreline resources, considering such characteristics as scenic vistas, linear park systems, waterway trail systems, estuarine areas for fish and wildlife protection, critical habitat, beaches and other valuable natural or aesthetic features. Assure preservation of the unique, fragile and scenic shoreline resources by carefully preserving the non-renewable resources and managing for the continued utilization of renewable resources.

C. Conservation Policies

1. The City should work to maintain environmentally sensitive and critical areas for present and future generations, such as the Edmonds Marsh, the historically contiguous wetland east of SR-104, the Edmonds Underwater Park and the shoreline sanctuary.

2. Development in shoreline areas should be managed so that any adverse impacts on aquatic and land plants and animals are avoided or mitigated to result in no net loss of ecological function.

3. Where practicable, steps should be taken to enhance the shoreline area as a spawning ground for salmon, forage fish, and other species of fish and aquatic marine life.

4. Irreplaceable shoreline resources should be preserved for their intrinsic value and continued public enjoyment.

5. Beneficial use of shoreline resources should be provided for while respecting the natural shoreline environment.

6. Where practicable, restoration of damaged shoreline features and systems should be encouraged.

7. Limited improvements in public recreation areas should be permitted where such improvements would enhance public access to and public education and understanding of

the value of the shoreline resource (an example of which is the Edmonds Underwater Park).

8. Provide for the preservation of the natural shoreline resources through the protection of existing and the designation of potential public recreational areas.

9. Provide for the preservation of the natural shoreline resources through the continuation and expansion of interpretive and environmental education programs, and public outreach and involvement in stewardship.

10. The city, where practicable, should acquire key shoreline parcels that become available; such parcels are those integral to necessary expansion of existing prime beach areas.

24.20.070 Historic, Cultural, Scientific and Educational Element

A. Purpose

The historic, cultural, scientific and educational element provides for the protection and restoration of buildings, sites, and areas having historic, cultural, scientific, or educational values in accordance with RCW 90.58.100(2)(g).

B. Historic, Cultural, Scientific and Educational Goal

Identify, protect, preserve and restore important archaeological, historical, art and cultural sites located within the shoreline jurisdiction area for educational and scientific uses and enjoyment of the natural amenities by the general public.

C. Historic, Cultural, Scientific and Educational Policies

1. Wherever practicable, shoreline development should recognize the former and current use of much of the city's shoreline area for such uses as boatyards, railroads, ferry landings, logging, and industrial sites, and recognize the earlier uses of the shoreline by Native American cultures.

2. The large, relatively undisturbed area known as the Edmonds Marsh should be preserved for, among other reasons, its educational and scientific value as well as its role in stormwater management.

3. Educational projects and programs including signage should be encouraged that foster a greater appreciation of the importance of shoreline management, maritime activities, environmental conservation, cultural and maritime history.

4. The city should develop signage and informational programs which identify and explain unique scenic and cultural opportunities.

5. Important archaeological, historical and cultural sites located within the shoreline jurisdiction area should be identified, protected, preserved or restored for educational and scientific uses and enjoyment of the natural amenities by the general public.

6. Historical/cultural sites should be acquired through purchase or gift, so as to insure their protection and preservation.

7. Where practicable, buildings, sites and areas having historic, cultural, educational, or scientific value to the community should be protected and restored.

8. Where practicable, all buildings, sites, and areas which are placed on the State or Federal Historic Register should be preserved, protected and restored.

9. Where practicable, significant archeological features and data should be protected for scientific study and public observation.

24.20.080 Flood Damage Prevention Element

A. Purpose

The flood damage prevention element provides for protection against flood damage and the preservation and restoration of ecosystem wide ecological functions in accordance with RCW 9038.100.

B. Flood Damage Prevention Element Goal

It is a goal of the city to reduce the likelihood of flood damage by locating development away from flood-prone areas and by protecting and restoring shoreline ecological functions and ecosystem-wide processes.

C. Flood Damage Prevention Policies

1. Structural flood control devices should be allowed only after it is demonstrated that nonstructural solutions are not feasible to reduce the hazard.

2. Participate in watershed-wide programs to reduce flood hazards and improve the shoreline ecology.

3. Discourage new development in shoreline areas that are reasonably likely to be harmed by flood conditions, or which would create or intensify flood hazard impacts on other properties.

4. Ensure that flood hazard reduction measures do not result in a net loss of ecological functions in shoreline areas.

24.20.090 Views and Aesthetics Element

A. Purpose

The views and aesthetics element provides for preservation and/or protection of public scenic vistas, public views of the water, and other aesthetic qualities of shorelines for enjoyment by the general public.

B. Views and Aesthetics Goal

It is the goal of the city to assure that the public's ability and opportunity to enjoy shoreline views and aesthetics is protected.

C. Views and Aesthetics Policies

1. The scenic and aesthetic qualities of shorelines and public vistas should be preserved through development standards.

2. Public views from the shoreline upland areas should be enhanced and preserved. Enhancement of views should not be construed to mean excessive removal of vegetation which partially impairs views.

3. Public visual access should be maintained, enhanced and preserved on shoreline street ends, public utilities and rights-of-way and within public "view corridors" as designated by the city.

24.20.100 Urban Design Element

A. Purpose

The urban design element provides for the development between the shoreline and adjacent areas in manner that provides linkages that will enhance the beauty and visual identity of Edmonds.

B. Urban Design Goal

It is a goal of the city to encourage development within the shoreline area that is visually coherent, provides visual and physical linkage to the shoreline, enhances the waterfront, and is consistent with the Streetscape Plan.

C. Urban Design Policies.

1. The shoreline area within and south of the north boundary of the Brackett's Landing North Park, to the south city limits (generally the urban mixed-use shoreline environment) is one of the most scenic areas of the city. It also, to a large extent,

establishes the visual identity of Edmonds. As such, both public and private development in these areas should be controlled and regulated to provide an urban environment which preserves or enhances the opportunity for the public to enjoy the scenic quality of the shoreline.

2. Projects should be encouraged to provide "street furniture," public art, related interpretative signage, landscaping and other amenities within or adjacent to the right-of-way of Railroad Avenue and Admiral Way to complement a pedestrian promenade along the shoreline consistent with the streetscape plan.

3. Where possible, the owner of uplands abutting pedestrian waterfront activities should be encouraged to incorporate public art elements, public art and cultural amenities that promote aesthetic considerations consistent with the City of Edmonds Arts Commission goals.

4. New and remodeled developments should provide public view corridors adjacent to either the north or south property line to enhance public visual access to the Puget Sound and to provide for a visual link between the downtown and its waterfront roots. The location of the view corridor should be coordinated with the development of adjacent properties in order to maximize public visual access to the Puget Sound. Properties with significant frontage on the shoreline should consider providing view corridors in multiple locations so as to maximize public visual access to the shoreline. In the application of design standards, the preservation of public views shall be given priority over landscaping and fencing requirements.

5. Projects should minimize the amount of vehicular parking in the Urban Mixed-Use I and II shoreline environments through use of joint use parking agreements (where permitted), and by locating employee parking off-site and outside the Urban Mixed-Use I and II shoreline environments.

6. Projects should be designed to locate vehicular parking away from the shoreline, bulkhead, or areas of pedestrian circulation.

7. Developments should provide conveniently situated bicycle parking on site.

8. Projects should be designed to minimize impacts to existing shoreline ecological functions.

24.20.110 Restoration Element

A. Purpose

The restoration element provides for the timely restoration and enhancement of ecologically impaired areas within available economic resources in a manner that achieves a net gain in

shoreline ecological functions and processes above baseline conditions as of the adoption of the city's shoreline master programs.

B. Restoration Goal

It is the goal of the city to improve water quality, restore degraded and lost habitat corridors, and improve connectivity of the shoreline environments though voluntary and incentive-based public and private programs and actions consistent with the City of Edmonds Shoreline Master Program Restoration Plan.

C. Restoration Policies

1. Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes.

2. Protect and restore wetland and restore salt marsh habitat to improve shoreline ecological functions.

3. Remove intertidal fill; restore beach deposits and processes and ecological functions.

4. Remove/replace creosote-treated logs, pilings, and debris.

5. Increase availability of large woody debris and opportunities for recruitment in the nearshore zone.

6. Protect and restore native species of vegetation, fish, and wildlife.

7. Remove or improve fish- and wildlife-passage barriers.

8. Manage and treat stormwater to improve water quality, decrease peak flow events, and increase implementation of low impact development (LID) practices.

9. Protect naturally eroding bluffs and associated ecological functions.

10. Protect and restore wildlife corridors.

11. Ensure that shoreline restoration projects do not degrade critical areas and water quality.

12. Establish incentives that could provide opportunities for new development to restore impaired shoreline ecological functions.

13. Work with the Burlington Northern Santa Fe Railway to encourage nearshore restoration projects on the railroad right-of-way.

Part III. Shoreline Environments

24.30.000 Introduction

Local governments are required, under the Washington State Shoreline Management Act of 1971 through WAC 173-26, to develop and assign a land use categorization system of shoreline areas as a basis for effective Shoreline Master Programs. The intent of designating shoreline environment is to encourage development that will enhance the present or desired character of the shoreline. To accomplish this, segments of shoreline are given an environment designation based on existing development patterns, natural capabilities and limitations, and the aspiration of the local community.

24.30.010 Adoption Criteria

Shoreline Designations have been determined after consideration of:

A. The ecological functions and processes that characterize the shoreline, together with the degree of human alteration; and

B. Existing development patterns together with ECDC Title 16 Zoning designations, the City Comprehensive Plan designations and other officially adopted plans; and

C. The goals of the City of Edmonds citizens for their shorelines; and

D. Other state policies in the Act and the Shoreline Master Program Guidelines (RCW 90.58.020 and WAC 173-26, respectively).

24.30.020 Shoreline Jurisdiction and Environments Designation Maps

A. The location and extent of areas under the jurisdiction of the Master Program, and the boundaries of the various shoreline environments affecting the lands and waters of the City are shown in Appendix A of this Master Program. (ECDC 24.100.000)

B. The purpose of the official shoreline maps in Appendix A is to identify Shoreline area designations. The map does not necessarily identify or depict the lateral extent of shoreline jurisdiction. Where uncertainty or conflict may occur in the exact location of jurisdictional or shoreline designation boundary line, the shoreline Administrator shall rely up the criteria contained in RCW 90.58.030(2) and chapter 173-22 WAC pertaining to determinations of shorelands, as amended, rather that the incorrect or outdated map.

C. In the event that new shoreline areas are discovered (e.g. associated wetlands) that are not mapped and/designated on the official shoreline map, these areas will be designated in the following manner.

1. If a newly discovered shoreline area is adjacent to a single shoreline area environment, then the newly discovered shoreline area will be assigned the same shoreline designation as the adjacent shoreline area.

2. If a newly discovered shoreline area abuts more than one shoreline area environment, the shoreline area environment that is most restrictive shall be assigned to the newly discovered shoreline area.

24.30.030 Aquatic Environment

A. Purpose

The purpose of the aquatic low-intensity environment (Aquatic I) is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high water mark.

The purpose of the aquatic high-intensity environment (Aquatic II) is to protect the unique characteristics and resources of the aquatic environment by managing water-dependent use activities to prioritize preservation and restoration of natural resources, navigation, recreation, and commerce, and by assuring compatibility between shoreland and aquatic uses.

B. Classification Criteria

1. General. These are lands waterward of the ordinary high water mark for both saltwater and freshwater bodies of water, including any submerged or inter-tidal areas. The Aquatic I and II environment designations include the water surface together with the underlying lands and the water column. Information from the shoreline inventory and characterization report was used in conjunction with the comprehensive plan and zoning information to determine the appropriate environment designation.

2. Aquatic I (Low Intensity). These areas are mostly characterized by aquatic ecosystems that have been modified by the Burlington Northern Santa Fe railroad bed fill that covers the intertidal and transitional upland zones along the beach. The beach has been altered by seawalls or large-rock riprap. These shoreline areas generally exhibit low-intensity development and few over-water structures. In freshwater areas, there may be a significant number of docks and piers serving residential areas.

3. Aquatic II (High Intensity). These areas are more intensely developed areas with water-dependent uses. The marine nearshore has been significantly modified by commercial waterfront development, including the Port of Edmonds Marina and the Washington State Ferries pier.

C. Area Designated

1. Aquatic I (Low Intensity): Applicable to all marine aquatic environments waterward of the ordinary high water mark between the southern boundary of the City and the old Union Oil dock, between the northern edge of the Edmonds fishing pier and the southern edge of the Main Street ferry terminal, between the northern edge of the Main Street ferry terminal and the northern boundary of the City, and Lake Ballinger.

2. Aquatic II (High Intensity): Applicable to those marine aquatic environments waterward of the ordinary high water mark between the old Union Oil dock and the northern edge of the Edmonds fishing pier, and between the southern and northern edges of the Main Street ferry terminal.

D. Management Policies

1. New over-water structures should be limited and allowed only 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 a structure's intended use.

3. Uses and activities within the Aquatic I and II environments should be compatible with the adjoining shoreline environments.

4. 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, provided that use conflicts can be avoided.

5. All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation and moorage.

6. Uses and activities within Aquatic I shoreline environments should be limited to public access, boat moorage, and necessary utility and transportation facilities.

7. All developments and uses should consider impacts to public views.

8. All developments and uses should allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.

9. Restoration opportunities associated with project impacts should be encouraged in the aquatic environment.

10. Uses that adversely impact the ecological functions of critical saltwater and freshwater habitats should not be allowed except where necessary to achieve the objectives of RCW 90.58.020, and then only when their impacts are mitigated according to the sequence

described in WAC 173-26-201(2)(e) necessary to achieve no net loss of ecological functions.

11. Dredging and dredge material disposal should be limited to the minimum amount necessary. Dredging operations should minimize impacts to other shoreline uses and functions.

12. Filling should be avoided if practicable and limited to the minimum amount necessary. Filling operations should minimize impacts to other shoreline uses and functions.

13. Ensure that piers and docks are compatible with the shoreline area where they are located and are designed and maintained to minimize adverse impacts to the environment.

14. Ensure that marinas are located, designed, constructed, and operated in a manner that will minimize damage to shoreline processes and functions, be compatible with adjacent uses, and protect the aesthetic qualities of the shoreline environment.

15. All developments and uses on navigable waters should be located and designed to minimize interference to navigation.

24.30.040 Natural Environment

A. Purpose

The purpose of the Natural environment designation is to protect those shoreline areas that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use. These systems require that only very low-intensity uses be allowed in order to maintain the ecological functions and ecosystem-wide processes.

B. Designation Criteria

A Natural designation should be considered for shoreline areas if any of the following criteria apply:

1. The shoreline is ecologically intact and therefore currently performing an important, irreplaceable function or ecosystem-wide process that would be damaged by human activity;

2. The shoreline is considered to represent ecosystems and geologic types that are of particular scientific and educational interest; or

3. The shoreline is unable to support new development or uses without significant adverse impacts to ecological functions or risk to human safety;

Such shoreline areas include largely undisturbed portions of shoreline areas such as wetlands, estuaries, unstable bluffs, coastal dunes, spits, and ecologically intact shoreline habitats.

Ecologically intact shorelines, as used here, means those shoreline areas that retain the majority of their natural shoreline functions, as evidenced by the shoreline configuration and the presence of native vegetation. Generally, but not necessarily, ecologically intact shorelines are free of shoreline structural modifications, structures, and intensive human uses. In forested areas, they generally include native vegetation with diverse plant communities, multiple canopy layers, and the presence of large woody debris available for recruitment to adjacent water bodies. Recognizing that there is a continuum of ecological conditions ranging from near natural conditions to totally degraded and contaminated sites, this term is intended to delineate those shoreline areas that provide valuable functions for the larger aquatic and terrestrial environments which could be lost or significantly reduced by human development. Whether or not a shoreline is ecologically intact is determined on a case-by-case basis.

The term “ecologically intact shorelines” applies to all shoreline areas meeting the above criteria ranging from larger reaches that may include multiple properties to small areas located within a single property.

C. Area Designated

The Natural Designation includes all natural diverse wetland and riparian habitat areas within shoreline management jurisdiction. These include, but are not limited to:

1. The Edmonds Marsh and the historically contiguous wetland to the east of State Route 104.

2. The Shell Creek wetland and lower riparian zone, and the wetlands which are now isolated on the east side of the railroad tracks, which are partially or entirely within 200 feet of the ordinary high water mark of Puget Sound.

D. Management Policies

1. Any use that would substantially degrade the ecological functions or natural character of the Natural shoreline area should not be allowed.

2. The following new uses should not be allowed in areas designated Natural:

    a. Residential

    b. Commercial uses,

    c. Industrial uses,

    d. Non-water-oriented recreation,

e. Roads, utility corridors, and parking areas that can be located outside Natural-designated shorelines.

3. Scientific, historical, cultural, educational research uses, and low-intensity, water-oriented recreational access uses may be allowed, provided that no significant ecological impact on the area will result.

4. New development or significant vegetation removal that would reduce the capability of vegetation to perform normal ecological functions should not be allowed. Subdivision of property in a configuration that would, to achieve its intended purpose, require significant vegetation removal or shoreline modification that adversely impacts ecological functions should not be allowed.

5. Critical areas within shorelines designated as Natural should be protected pursuant to the Edmonds Critical Areas Ordinance, less the exceptions listed in ECDC 24.40.020.C.

6. Restoration opportunities should be encouraged in areas with a Natural designation.

24.30.050 Urban Conservancy Environment

A. Purpose

The purpose of the Conservancy designation is to protect and restore ecological functions of open space, floodplains, and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses.

B. Designation Criteria

The Urban Conservancy environment is applied to shoreline areas within the City where any of the following characteristics apply:

1. They are suitable for water-related or water-enjoyment uses;

2. They are open space, flood plain or other sensitive areas that should not be more intensively developed;

3. They have potential for ecological restoration;

4. The retain important ecological functions, even though partially developed; or

5. They have the potential for development that is compatible with ecological restoration.

C. Area Designated

Areas generally lying upland of the ordinary high water mark and in between the southern boundary of the City and the south side of the old Union Oil dock, the Willow Creek outlet

of the Edmonds Marsh, between the southern edge of the area known as Brackett's Landing South and the southern edge of the Main Street ferry terminal, and from the northern edge of the Main Street ferry terminal to the northern boundary of the area known as Brackett's Landing North, including the spit, and to the east as far as the Burlington Northern Santa Fe railroad right-of-way.

D. Management Policies

1. Uses that preserve the natural character of the area or promote preservation of open space or sensitive lands either directly or over the long term should be the primary allowed uses in Conservancy areas.

2. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the Conservancy designation and the setting.

3. Public access and public recreation objectives should be implemented in Conservancy areas whenever feasible.

4. Water-oriented uses should be given priority over non-water-oriented uses. For shoreline areas adjacent to commercially navigable waters, water-dependent uses should be given highest priority.

5. New development should be designed and located to preclude the need for shoreline armoring, vegetation removal, flood control, and other shoreline modifications.

6. Restoration opportunities should be encouraged in Conservancy areas.

7. Standards should be established for shoreline stabilization measures, vegetation conservation, water quality, and shoreline modifications within Conservancy areas. These standards shall ensure that new development does not result in a net loss of shoreline ecological functions or further degrade other shoreline values.

24.30.060 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

1. General. These are areas typified by residential development in areas where topography, transportation systems, and development patterns make it extremely unlikely that more intensive use would be appropriate.

2. Shoreline Residential I: This designation is appropriate for shoreline areas with larger-lot residential development along the marine shoreline.

3. Shoreline Residential II: This designation is appropriate for shoreline areas with smaller-lot residential development along the marine shoreline.

4. Shoreline Residential III: Designation for single-family residential development adjacent to freshwater (e.g., Lake Ballinger).

C. Area Designated

1. General. A shoreline residential environment designation has been assigned to shoreline areas that are predominantly single-family or multifamily residential development or are planned and platted for residential development. There are three levels of shoreline residential environment designations corresponding to the Edmonds zoning and comprehensive plan designations. The areas which are appropriate for this classification are as follows:

2. Shoreline Residential I: The upland area adjacent to the eastern boundary of the Urban Railroad environment designation which is zoned RS-12 and RS-20.

3. Shoreline Residential II: The upland area adjacent to the eastern boundary of the Urban Railroad environment designation which is zoned RS-6.

4. Shoreline Residential III: The upland area adjacent to the shoreline of Lake Ballinger which is zoned RSW-12.

D. Management Policies

1. Multi-lot residential and recreational developments should provide public access and joint use for community recreational facilities when consistent with statutory and constitutional limitations on development exactions.

2. Commercial development within the shoreline residential environment should be limited to water-oriented uses. Commercial development does not include lawful home occupations.

3. Structurally engineered shoreline modifications and stabilization should be prohibited except in cases of emergency as defined.

4. Steep slopes shall be protected per the requirements of ECDC 23.80, the building code, and this SMP.

5. Any new development or redevelopment should utilize low impact development techniques where feasible and appropriate.

6. Standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality shall be set to assure no net loss of shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations.

7. Access, utilities, and public services should be available and adequate to serve existing needs and/or planned future development.

24.30.070 Urban Mixed Use

A. Purpose

The purpose of the urban mixed-use environment is to provide for high-intensity, water-oriented commercial, transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.

B. Designation Criteria

1. General. These areas have been intensely developed with a mix of commercial uses, port facilities, multimodal transit facilities, railroad facilities, and limited light industrial uses.

Two very distinct areas make up the three Urban Mixed-Use environments. The Edmonds waterfront area west of the railroad tracks which has the ability to provide direct access to the navigable waters of the Puget Sound and the near waterfront area east of the railroad tracks with no direct access to Puget Sound. A policy of the Shoreline Management Act is to plan for and foster all reasonable and appropriate uses and the shoreline master program rules generally prohibit nonwater-oriented development unless navigability is severely limited. Given these two distinct areas, the Urban Mixed-Use environments west of the railroad tracks is appropriate for water-oriented development, while the area east of the railroad tracks may be appropriate for nonwater-oriented development given its separation from Puget Sound.

The environmental differences between the Urban Mixed-Use environments are further emphasized by the City of Edmonds Comprehensive Plan designation and zoning applied to these areas. West of the railroad tracks the comprehensive plan designation and zoning encourage water-oriented type development and uses, while east of the railroad tracks the comprehensive plan designation and zoning encourage mixed-use type development, including mixed commercial-residential development.

2. Urban Mixed-Use I: This designation is appropriate to water-related and water-enjoyment commercial and recreational uses.

3. Urban Mixed-Use II: This designation is assigned to areas that are suitable and planned for high-intensity, water-dependent uses related to commerce, transportation, and recreation.

4. Urban Mixed-Use III: The designation is appropriate for those areas that have been intensely developed and that have no direct access to navigable waters. This designation is assigned to areas that are suitable and planned for mixed-use development including high-intensity, commerce, transportation, recreation and residential development.

5. Urban Mixed-Use IV: The Urban Mixed-Use IV designation is being established as an interim shoreline designation. The Edmonds Marsh being identified as a shoreline of the state is new to this SMP update and was identified as a shoreline of the state late in the planning process. With properties within 200-feet of the salt influenced portions of the marsh now under shoreline jurisdiction (where they had not previously been so designated) specific review of the effects of establishing a shoreline environment on existing and proposed uses around the marsh must be studied.

   The south side of the marsh has been identified as the future site of the Edmonds Crossing Ferry Terminal which underwent significant environment review with a Final Environmental Impact Statement issued in 2004. On the north side of the Marsh is the Harbor Square commercial development owned by the Port of Edmonds. The SMP update process was delayed to allow the Port of Edmonds time to submit a long planned Harbor Square Master Plan for concurrent review by the City of Edmonds. The Port's proposed Harbor Square Master Plan was ultimately not adopted by the City.

   The Edmonds Marsh is also being studied for potential restoration projects including the daylighting of the Willow Creek outlet as well as the marshes role in the flooding problem at the Dayton Street/State Route 104 intersection and the role the marsh and play in a solution to the flooding problem.

   Establishing the Urban Mixed-Use IV designation as an interim designation will allow the City, in cooperation with property owners, Ecology, scientists, interested agencies/organizations, and members of the public, to carefully review effects of establishing a new shoreline jurisdiction for the area around the marsh on existing and planned development as well as the ecological role the Edmonds Marsh plays in the City of Edmonds. The City intends to study the issues surrounding the Edmonds Marsh and related Urban Mixed-Use IV designation for two years from the effective date of this SMP. At the end of the study period, the City will adopt appropriate shoreline environment designation(s) for the area surrounding the Edmonds Marsh including evaluating whether a new designation is needed and whether the entire area should have the same designation.

C. Area Designated

1. Urban Mixed-Use I: The upland area above ordinary high water north of the northern border of the Edmonds fishing pier to the southern edge of the area known as Brackett's Landing South. This area would include the waterfront commercial area.

2. Urban Mixed-Use II: The upland area above ordinary high water between the old Union Oil dock and the northern border of the Edmonds fishing pier and between the southern and northern edges of the Main Street ferry terminal. This area would include the Edmonds Marina and associated facilities, as well as the Main Street ferry terminal.

3. Urban Mixed-Use III: The six parcels near the existing ferry terminal bounded by the railroad right-of-way to the west, Main Street, Sunset Avenue North, Bell Street.

4. Urban Mixed-Use IV: The upland areas beyond the tidally influenced portions of Edmonds Marsh including portions of Harbor Square on the north side of the marsh and portions of the former UNOCAL oil storage facility on the south side of the marsh.

D. Management Policies

1. In regulating uses in the Urban Mixed-Use environments, first priority should be given to water dependent uses. Second priority should be given to water-related and water-enjoyment uses. Non-water oriented uses may be allowed as part of mixed use developments. Non-water oriented uses may also be allowed in limited situations where they do not conflict with or limit opportunities for water oriented uses or on sites where there is no direct access to the shoreline.

2. Full utilization of existing urban areas should be achieved before further expansion of intensive development is allowed.

3. Reasonable long-range projections of regional economic need should guide the amount of shoreline designated Urban Mixed-Use However, consideration should be given to the potential for displacement of non-water-oriented uses with water-oriented uses when analyzing full utilization of urban waterfronts and before considering expansion of such areas.

4. Where feasible, visual and physical public access should be provided.

5. Aesthetic objectives should be implemented by means such as sign control regulations, appropriate development siting, screening and architectural standards, and maintenance of natural vegetative buffers.

6. Any new development or redevelopment should utilize low impact development techniques where feasible and appropriate.

7. Any new development shall include environmental cleanup, restoration of shoreline or other development techniques where feasible and appropriate to assure no net loss of shoreline ecological functions, and shall comply with any relevant state and federal law.

24.30.080 Urban Railroad

A. Purpose

The purpose of the Urban Railroad environment designation is to identify the 100-foot right-of-way for the Burlington Northern Santa Fe railroad along the Edmonds shoreline. This designation will provide for high-intensity transportation uses while protecting ecological functions.

B. Designation Criteria

This area has been historically developed and used as a dedicated railroad right-of-way and contains limited improvements which are designed to aid in the transportation of goods and passengers by rail. This shoreline environment area generally contains very few areas of undisturbed natural shoreline.

With the exceptions of Lund's Creek estuary, Edmonds Underwater Park, Brackett's landing and part of Marina Beach Park, the entire Edmonds shoreline (more than 90 percent) is armored by the BNSF railroad bed and bulkheads. Most of the BNSF rail bed along the Edmonds shoreline consists of an armored berm with two sets of parallel tracks on top, comprising a top width of at least 24 feet or more and a wider base width. The waterward side of the berm is typically armored with large rock or granite blocks, placed vertically or on a 2:1 slope.

C. Area Designated

The area is defined as that area within the Burlington Northern Santa Fe Railway right-of-way as established on the date of the adoption of this master program, from the northern right-of-way line of Main Street to the northern city limits, and from the southern city limits north approximately 300 feet.

D. Management Policies

1. Restoration opportunities associated with project impacts should be encouraged in areas designated Urban Railroad.

2. Aesthetic objectives should be implemented by means such as sign control regulations, appropriate development siting, screening and architectural standards, and maintenance of natural vegetative buffers.

Part IV General Policies & Regulations

24.40.000 Applicability

The provisions of this chapter shall be applied either generally to all shoreline areas or to shoreline areas that meet the specified criteria of the provision without regard to environment designation.

24.40.010 Archaeological and Historic Resources

A. Applicability. The following provision apply to archaeological and historic resources whose presence are either recorded at the State Historic Preservation Office and/or by the City of Edmonds or such resources that are uncovered during development activities. 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 section.

B. Regulations:

1. Where practicable, consistent with constitutional and statutory limitations, public or private developments shall be prevented from destroying or destructively altering potential or recognizable sites having historic, cultural, scientific, or educational value as identified by appropriate authorities.

2. The city may require that a site be redesigned or that development be postponed for a definite or indefinite period if this is reasonably necessary to protect a historic site or items of historic, archeological or cultural significance

3. Upon receipt of application for a shoreline permit or request for a statement of exemption for development on properties with 500 feet of a site known to contain an historic, cultural or archaeological resource(s), the City shall require a cultural resource site assessment; provided that, this requirement may be waived if the Administrator determines that the proposed development activities do not include any ground disturbing activities and will not impact a known historic cultural or archaeological site. The site assessment shall be conducted by a professional archaeologist or historic preservation professional, as applicable, to determine the presence of significant historic or archaeological resources. The fee for the services of the professional archaeologist or historic preservation professional shall be paid by the landowner or responsible party.

4. Whenever historic, cultural or archaeological sites or artifacts are discovered in the process of development on shorelines, work on that portion of the development site shall be stopped immediately, the site secured and the find reported as soon as a possible to the Administrator. Upon notification of such find, the property owner shall notify the Washington State Department of Archaeology and Historic Preservation and appropriate Native American Tribes. In such cases, the developer shall allow site inspection and

evaluation by a professional archaeologist and tribal representative to ensure that all possible valuable archaeological data are properly salvaged. Work should not resume until approval is obtained from the Shoreline Administrator.

24.40.020 Critical Areas

A. Applicability. Critical areas include the following areas and ecosystems: wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.

B. The City of Edmonds Critical Area Ordinance, as codified in Chapters 23.40 through 23.90 ECDC (dated November 23, 2004, Ord. 3527), are herein adopted as a part of this Program, except for the specific subsections list below in ECDC 24.40.020.D. All references to the City of Edmonds Critical Area Ordinance in this Program are for this specific version. As a result of this incorporation of the Edmonds Critical Area Ordinance, the provisions of Chapters 23.40 through 23.90 ECDC, less the exceptions listed in ECDC 24.40.020.D, shall apply to any use, alteration or development within shoreline jurisdiction whether or not a shoreline permit or written statement of exemption is required. In addition to the critical area regulations in Chapters 23.40 through 23.90 ECDC (Appendix B) of this Master Program), the regulations identified in this section also apply to critical areas within shoreline jurisdiction. Where there are conflicts between the City of Edmonds Critical Area Ordinance and this Shoreline Master Program, provisions of the Shoreline Master Program shall prevail.

C. The specific provisions of the Critical Area Ordinance listed below may only be implemented within shoreline jurisdiction through the shoreline variance process;

1. Wetlands:

    a. ECDC 23.50.040.F.3. Any shoreline project that proposes going beyond a 25% buffer reduction through the mechanisms described in ECDC 24.40.020.E.3 would require a shoreline variance. No variance is required for wetland buffer reductions consistent with ECDC 24.40.020.E.3.

2. Geologically Hazardous Areas:

    a. ECDC 23.80.040.B.1 & 2: Allowed activities in geologically hazardous areas

    b. ECDC 23.80.070.A.1.b & A.2: Buffer reduction and alterations

3. Fish and Wildlife Habitat Conservation Areas

    a. ECDC 23.90.040.D.2: Reduced buffer widths

    b. ECDC 23.90.040.D.4: Additions to structures existing within stream buffers

D. Exceptions. The specific provisions of the Critical Area Ordinance listed below shall not apply to development within shoreline jurisdiction.

1. General Provisions:

    a. Provisions of chapter 23.40 ECDC relating to reasonable economic use of property do not apply to property with shoreline jurisdiction; specifically ECDC 23.40.000 and ECDC 23.40.210(2).

    b. ECDC 23.40.130.D: Monitoring Program

    c. ECDC 23.40.210: Variance

    d. ECDC 23.40.220.C.8: Minor Site Investigation Work

    e. ECDC 23.40.230: Exemptions

2. Wetlands:

    a. ECDC 23.50.010.B: Wetland Ratings

    b. ECDC 23.50.040.F.1: Standard Buffer Widths

    c. ECDC 23.50.040.F.4: Wetland Buffer Width Averaging.

    d. ECDC 23.50.040.F.8.b: Passive Recreation

    e. ECDC 23.50.040.I: Exemptions

    f. ECDC 23.50.050.F: Mitigation Ratios

    g. ECDC 23.50.050.G: Wetlands Enhancement as Mitigation

E. Development limitations.

1. All uses, modifications and activities on sites containing marine shorelines, environmentally sensitive areas and/or critical areas must comply with all applicable local, state, and federal laws pertaining to development in these areas unless in conflict with the provisions of this Master Program.

2. The site must be specifically designed so that hazards from or impact on the environmentally sensitive area and/or critical areas will be mitigated.

3. Mitigation sequencing. In order to comply with ECDC 24.40.020.E.2 above, a shoreline permit applicant or project proponent shall demonstrate all reasonable efforts have been taken to provide sufficient mitigation such that the activity does not have significant adverse impacts. Mitigation shall occur in the following prioritized order:

a. Avoiding the impact altogether by not taking a certain action or parts of an action.

b. 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.

c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment to the historical conditions or the conditions existing at the time of the initiation of the project.

d. Reducing or eliminating the impact or hazard over time by preservation and maintenance operations during the life of the action.

e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.

4. Monitoring Program. Mitigation plans shall include a program for monitoring construction and for assessing a completed project. A protocol shall be included outlining the schedule for site monitoring (for example, monitoring shall occur in years 1, 2, 3, 5, 7, and 10 after site construction), and how the monitoring data will be evaluated to determine if the performance standards are being met. A monitoring report shall be submitted as needed to document milestones, successes, problems, and contingency actions of the compensation project. The compensation project shall be monitored for a period necessary to establish that performance standards have been met, but not for a period less than ten years.

5. Long-term Protection of Mitigation Sites. The City shall require documentation that a mitigation site has been permanently preserved from future development or alteration that would be inconsistent with the functions of the mitigation. The documentation may include, but is not limited to, a conservation easement, deed restriction or other agreement between the applicant and the owner of a mitigation site. Such documentation shall be recorded with the Snohomish County auditor.

F. Wetlands. Wetlands are those areas, designated in accordance with WAC 173-22-035 that are inundated or saturated by surface or ground water 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. Wetlands do not include those artificial wetlands intentionally created from nonwetland 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.

1. Wetlands shall be rated according to the Washington State wetland rating system for western Washington (*Washington State Wetland Rating System for Western Washington*

– *Revised*, Ecology Publication #04-06-025) or as revised by Ecology. This document contains the definitions and methods for determining the criteria and parameters defining the following wetland rating categories:

a. Category I. Category I wetlands are: 1) relatively undisturbed estuarine wetlands larger than 1 acre; 2) wetlands that are identified by scientists of the Washington Natural Heritage Program/DNR as high quality wetlands; 3) bogs; 4) mature and old-growth forested wetlands larger than 1 acre; 5) wetlands in coastal lagoons; or 6) wetlands that perform many functions well (scoring 70 points or more).

b. Category II. Category II wetlands are: 1) estuarine wetlands smaller than 1 acre, or disturbed estuarine wetlands larger than 1 acre; 2) interdunal wetlands larger than 1 acres; 3) disturbed coastal lagoons or 4) wetlands with a moderately high level of functions (scoring between 51-69 points).

c. Category III. Category III wetlands are: 1) wetlands with a moderate level of functions (scoring between 30 and 50 points); or 2) interdunal wetlands between 0.1 and 1 acre in size.

d. Category IV. Category IV wetlands have the lowest levels of functions (scoring fewer than 30 points) and are often heavily disturbed.

2. Development in designated wetlands within shoreline jurisdiction shall be regulated in accordance with the following:

a. Buffer Requirements. The standard buffer widths in ECDC 24.40.020.F.2.b below have been establish in accordance with best available science. The buffers are based on the category of wetland and the habitat score as determined by a qualified wetland professional using the Washington state wetland rating system for western Washington.

i. The use of the standard buffer widths requires the implementation of the measures in ECDC 24.40.020.F.2.c, where applicable, to minimize the impacts of the adjacent land uses.

ii. If an applicant chooses not to apply the mitigation measures in ECDC 24.40.020.F.2.c, than a 33% increase in the width of all buffer is required.

iii. The standard buffer widths assume that the buffer is vegetated with a native plant community appropriate for the ecoregion. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer should either be planted to create the appropriate plant community or the buffer should be widened to ensure that adequate functions of the buffer are provided.

iv. Additional buffer widths are added to the standard buffer widths. For example, a Category I wetland scoring 32 points for habitat function would require a buffer of 225 feet (75 + 150).

b. Wetland Buffer requirements for wetlands within City of Edmonds shoreline jurisdiction.

Wetland Category	Standard Buffer Width	Additional buffer width if wetland scares 21-25 habitat points	Additional buffer width if wetland scares 26-29 habitat points	Additional buffer width if wetland scares 30-36 habitat points
Category I: Based on total score	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category I: Bogs	190 ft	NA	NA	Add 35 ft
Category I: Forested	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category I: Estuarine	150 ft	NA	NA	NA
Category II (all)	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category III (all)	60 ft	Add 45 ft	Add 105 ft	NA
Category IV (all)	40 ft	NA	NA	NA

c. Required measures to minimize impacts to wetlands. Measures are required, where applicable to a specific proposal.

Disturbance	Required measures to Minimize Impacts
Lights	• Direct lights away from wetland
Noise	• Locate activity that generates noise away from wetland • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10’ heavily vegetated buffer strip immediately adjacent to the out wetland buffer
Toxic runoff	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetland • Apply integrated pest management
Stormwater runoff	• Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the buffer • Use Low Impact Development techniques (per PSAT publication on LID techniques)
Change in water regime	• Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• Use privacy fencing OR plant dense vegetation to

	delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion • Place wetland and its buffer in a separate tract or protect with a conservation easement
Dust	• Use best management practices to control dust
Disruption of corridors or connections	• Maintain connections to offsite areas that are undisturbed • Restore corridors or connections to offsite habitats by replanting

d. Where wetland or buffer alterations are permitted by the City of Edmonds, the applicant shall mitigate impacts to achieve no not loss of wetland acreage and functions. Compensatory mitigation shall be provided according to *Wetlands in Washington State, Volume 2: Guidance for Protecting and Managing Wetlands*, Appendix 8-C, Table 8-C11, Ecology Publication #05-06-008, or as revised by Ecology.

e. Buffer width Reductions Though Buffer Enhancement. At the discretion of the Edmonds development services director, wetland buffer width reductions (or approval of standard buffer widths for wetlands where existing buffer conditions require increased buffer widths) may be granted concomitant to the development and implementation of a wetland buffer enhancement plan for Category III and IV wetlands only. Approval of a wetland buffer enhancement plan shall, at the discretion of the director, allow for wetland buffer with reduction to no less than 25 percent of the standard width; provided, that:

i. The plan provides evidence that wetland functions and values will be increased or retained through plan implementation to at least the level provided by a standard buffer or through additional mitigation;

ii. The plan documents existing native plant densities and provides for increases in buffer native plant densities to no less than three feet on center for shrubs and eight feet on center for trees;

iii. The plan requires monitoring and maintenance to ensure success in accordance with ECDC 24.40.020.E.4; and

iv. The plan specifically documents methodology and provides performance standards for assessing increases in wetland buffer functioning as related to:

1. Water quality protection;

2. Provision of wildlife habitat;

3. Maintenance of wetland hydrology; and

4. Restricting wetland intrusion and disturbance.

f. Wetland Buffer Width Averaging. The director may allow modification of a standard buffer width in accordance with an approved critical areas report and the best available science on a case-by-case basis by averaging buffer widths. Only those portions of a wetland buffer existing with the project area or subject parcel shall be considered for buffer averaging. Averaging of buffer widths may only be allowed where a qualified professional wetland scientist demonstrates that:

i. It will not reduce the function and value of wetlands or associated buffers;

ii. The wetland contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation, and the wetland would benefit from a wider buffer in places and would not by adversely impacted by narrower buffer in other places;

iii. The total area contained in the buffer area, or the total buffer area existing on a subject parcel for wetland extending off-site, after averaging is no less than that which would be contained within a standard buffer; and

iv. The buffer width at any single location is not reduced to less than 25 percent of the standard buffer width.

g. Physically Separated and Functionally Isolated Buffers.

i. Areas which are both physically separated and functionally isolated from a wetland and do not protect the wetland from adverse impacts due to preexisting public roads, structures, or similar circumstances, shall be excluded from the buffers otherwise required by this subsection.

ii. A critical area report prepared by a qualified professional is required to determine whether the buffer is functionally isolated.

h. Passive Recreation. The following passive recreation facilities may be permitted within a wetland buffer provided the facilities are designed and in accordance with an approved critical area report:

i. Walkways and trails; provided, that those pathways are limited to minor crossings having no adverse impact on water quality. They should be generally parallel to the perimeter of the wetland, located only in the outer twenty-five percent (25%) of the wetland buffer area, and located to avoid removal of significant trees. They should be limited to pervious surfaces no more than five (5) feet in width for pedestrian use only. Raised boardwalks utilizing non-treated piling may be acceptable;

ii. Wildlife viewing structures; and

iii. Fishing access areas down to the water's edge that shall be no larger than six feet.

i. Additions to structures existing within wetlands and/or wetland buffers may be permitted pursuant to ECDC 23.50.040.H. Additions to structures within wetlands will also require state and federal approval.

G. Geologically hazardous areas. Development in designated geologically hazardous areas shall be regulated in accordance with the following:

1. New development or the creation of lots should not be allowed that would cause foreseeable risk from geological conditions to people or improvements during the life of the development.

2. New development should not be allowed that would require structural shoreline stabilization over the normal, useful life of the development. Exception may be made for instances where stabilization is necessary to protect allowed uses where no alternative locations are available and no net loss of ecological functions will result. The stabilization measures shall conform to ECDC 24.50.020, Shoreline stabilization.

3. Where no alternatives, including relocation or reconstruction of existing structures, are found to be feasible, and less expensive than the proposed stabilization measure, stabilization structures or measures to protect existing primary residential structures may be all in conformance with ECDC 24.50.020 requirements and then only if no net loss of ecological functions will result.

H. Critical Saltwater Habitats.

1. Development shall not intrude into or over critical saltwater habitats except when all of the conditions below are met:

a. The public's need for such an action or structure is clearly demonstrated and the proposal is consistent with protection of the public trust, as embodied in RCW 90.58.020;

b. Avoidance of impacts to critical saltwater habitats by an alternative alignment or location is not feasible or would result in unreasonable and disproportionate cost to accomplish the same general purpose.

c. The project, including any required mitigation, will result in no net loss of ecological functions associated with critical saltwater habitat.

d. The project is consistent with the state's interest in resource protection and species recovery.

2. Private, non-commercial docks for individual residential or community use may be allowed provided that:

a. Avoidance of impacts to critical saltwater habitats by an alternative alignment or location is not feasible;

b. The project, including any required mitigation, will result in not net loss of ecological functions associated with critical saltwater habitat.

3. Where inventory of critical saltwater habitat has not been completed, all over water and near-shore developments in marine and estuarine waters shall be required to conduct an a habitat assessment of the site and adjacent beach sections to assess the presence of critical saltwater habitats and functions.

I. Critical Freshwater Habitats.
   1. Existing hydrological connections into and between water bodies, such as streams and wetlands, shall be maintained. Obstructed channels shall be reestablished as a condition of nonwater-dependent uses, where feasible.

J. Additional authority. In addition to any other authority the city may have, the city is hereby authorized to condition or deny a proposed use, modification or activity or to require site redesign because of hazards associated with the use, modification or activity on or near an environmentally sensitive and/or critical area, and/or the effect of the proposal on the environmentally sensitive area and/or critical area.

24.40.030 Flood Hazard Reduction

A. Applicability. The following provisions apply to actions taken to reduce flood damage or hazard and to uses, development, and shoreline modification that may increase flood hazards.

B. Regulations.

1. Development and redevelopment shall be located and designed to prevent the need for structural flood hazard reduction measures.

2. Nonstructural flood reduction measures shall be given preference over structural measures.

3. Flood control works shall be permitted when it is demonstrated by engineering and scientific evaluations that:

   a. They are necessary to protect health/safety and or existing development;
   b. Non-structural flood hazard reduction measures are infeasible; and
   c. The flood control work will not result in a net loss of ecological function in the shoreline area.

4. New structural flood control works shall be placed landward of associated wetlands, and designated habitat conservation areas, except for works that improve ecological functions, such as wetland restoration.

5. Development within the shoreline environment shall meet the standards and provisions for protection of frequently flooded areas as provided to areas of special flood hazard in the current edition of the International Residential Code and International Building Code, as adopted in ECDC Title 19.

24.40.040 Public Access and Views

A. Applicability. Public access includes the ability of the general public to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations. The public access provisions below apply to all shorelines within the City of Edmonds.

B. Regulations

1. Except as provided in subsections 2 through 4 of this section, shoreline substantial developments or conditional uses shall provide public access where any of the following conditions are present:

    a. Where the use or modification will create increased demand for public access to the shoreline, the development shall provide public access to mitigate this impact.

    b. Where the use or modification will interfere with an existing public access way, the development shall provide public access to mitigate this impact.

    c. Where a use which is not a priority shoreline use under the Shoreline Management Act will locate on a shoreline of the state, the use or modification shall provide public access to mitigate this impact.

    d. Within the Edmonds shoreline jurisdiction, where a use or modification will interfere with a public use of lands or waters subject to the public trust doctrine, the development shall provide public access to mitigate this impact.

    e. New multifamily residential development.

    f. Where there is a subdivision of land into more than four parcels.

2. An applicant need not provide public access where one or more the following conditions apply:

    a. Unavoidable health or safety hazards to the public exist which cannot be prevent by any practical means;

    b. Inherent security requirements of the use cannot be satisfied through the application of alternative design features or other solutions;

c. The cost of providing the access, easement or an alternative amenity is unreasonably disproportionate to the total long-term cost of the proposed development;

d. Unacceptable environmental harm will result from the public access which cannot be mitigated;

e. Significant undue and unavoidable conflict between any access provisions and the proposed use/modification and adjacent uses would occur and cannot be mitigated; or,

6. Statutory or constitutional requirements would prohibit the mandatory dedication of access without just compensation or compliance with statutory criteria.

3. In order to meet any of the conditions in subsection 2.a through 2.e of this section, the applicant must first demonstrate and the city determine in its finds that all reasonable alternatives have been exhausted, including but not limited to:

a. Regulating access by such means as maintaining a gate and/or limiting hours of use;

b. Designing separation of uses and activities (e.g., fences, terracing, use of one-way glazings, hedges, landscaping, etc.); and

c. Developing provisions for access at a site geographically separated from the proposal such as street end, vista or trail system.

4. Exceptions. The following uses, developments, modifications and activities are exempt form providing public pedestrian access under this section:

a. The construction, repair, remodeling and use of one detached single-family dwelling unit, as well as the construction, remodeling, repair, and use of bulkheads, docks and other uses, modification and activities incidental to the use of the subject property as a detached single-family residence.

b. All shoreline uses, modifications and activities in conservancy environments, or environmentally sensitive areas where the city determines that access would create distinct and unavoidable hazards to human safety or be contrary to city policies regarding the protection of unique and fragile environments.

5. Shoreline development by public entities, such as local governments, port districts, state agencies, and public utility districts, should provide public access measures as part of each development project, unless such access is shown to be incompatible due to reasons of safety, security, or impact to the shoreline.

6. Public Use Facilities.

a. In addition to the public pedestrian areas required by subsection 1 of this section, the applicant may propose and/or the city may require that benches, picnic tables, a public

access pier or boardwalk, or other public use facilities be constructed on the subject property.

b. If public use facilities are required or proposed, the city will determine the size, location and other regulations (design considerations) on a case-by-case basis.

7. Timing. The public pedestrian access required by this section must be completed and available at the time of occupancy or completion of work; provided, however, that the city may on a case-by-case basis defer the physical availability of public access in the following cases:

a. If shoreline development without public pedestrian access exists on both sides of the subject property and the city determines that the size, location and topography or the subject property does not warrant making public waterfront access available until additional adjacent waterfront access can be obtained.

b. If pre-existing legal or nonconforming improvements on the subject property physically preclude the provisions of public waterfront access within a reasonable period of time.

8. Easements recorded. In each case where public pedestrian access is required, whether it is physically available at the end of development or deferred until a later date, all owners of the subject property must record a public pedestrian easement, in a form approved by the city attorney, establishing the right of the public to access, use and traverse that portion of the subject property.

9. Signs. The city shall require the posting of signs, obtained from the city at the city's cost, designating public pedestrian access. The planning manager or his/her designee is authorized to establish reasonable rules and regulations governing the public's use of public pedestrian access and use areas under this chapter. Where appropriate, these rules and regulations shall be included within the document recorded under subsection 8 of this section.

10. Shoreline uses, modifications and activities shall be designed and operated to avoid blocking, reducing or adversely interfering with the public's existing physical and visual access to the water and shorelines.

11. View Protection Regulations.

a. Within the Urban Mixed Use I, Urban Mixed Use II and adjacent Aquatic I and Aquatic II shoreline designations no building or other major structure may be located within the following required view corridors:

i. Landward of the ordinary high water mark, a view corridor must be maintained across 30 percent of the average parcel width. The view corridor must be in one continuous piece. Within the view corridor, structures, parking areas, and landscaping will be allowed; provided, that they do not obscure the view from adjacent public right-of-way to and beyond the Puget Sound. This view corridor must be adjacent to either

the north or south property line, whichever will result in the widest view corridor given development on adjacent properties. If the subject property has shoreline frontage in excess of 1,000 feet, the city may require a maximum of one-third of the required view corridor to be placed in a location between the north and south property lines, in a location which will provide for the greatest unobstructed view of the Puget Sound.

ii. Waterward of the ordinary high water, view corridors which are required pursuant to this section must be maintained starting at a width equal to the adjacent upland view corridor and expanding in a conical fashion 30 degrees from the prolongation of the view corridor water of the ordinary high water mark.

b. Within the Urban Mixed Use IV designation

i. Uses and activities must be designed and operated to avoid blocking or adversely interfering with visual access from public areas to the water and shorelines.

12. Public access provided by shoreline street ends, public utilities and rights-of-way shall not be diminished (RCW 35.79.035 and 36.87.130).

13. Public access sites shall be connected directly to the nearest public street and shall include provisions for disabled and physically impaired persons, where feasible.

14. Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running contemporaneous with the authorized land use, at a minimum. Said recording with the county auditor's office shall occur at the time of permit approval (RCW 58.17.110).

15. The minimum width of public access easements shall be 25 feet, unless the administrator determines that undue hardship would result. In such cases, easement width may be reduced only to the minimum extent necessary, as determined by the administrator, to relieve the hardship. Provided the larger easement is not needed for emergency access.

16. Future actions by the applicant successors in interest or other parties shall not diminish the usefulness or value of the public access provided.

17. Visual access shall be maintained, enhanced and preserved on shoreline street ends, public utilities and rights-of-way and within public view corridors as designated by the city.

24.40.050 Shoreline Vegetation Conservation

A. Applicability.

1. Vegetation conservation includes activities to protect and restore vegetation along or near marine and freshwater shorelines that contribute to the ecological functions of shoreline

areas. Vegetation conservation provisions include the prevention or restriction of plant clearing and earth grading, vegetation restoration, and the control of invasive weeds and nonnative species.

2. Unless otherwise stated, vegetation conservation does not include those activities covered under the Washington State Forest Practices Act, except for conversion to other uses and those other forest practice activities over which local governments have authority. Vegetation conservation provisions apply even to those shoreline uses and developments that are exempt from the requirement to obtain permit.

3. Where new developments and/or uses are proposed, native shoreline vegetation should be conserved to maintain shoreline ecological functions and/or processes and mitigate the direct, indirect and/or cumulative impacts of shoreline development, where feasible. Important functions of shoreline vegetation include, but are not limited to:

    a. Providing shade necessary to maintain water temperatures required by salmonids, forage fish, and other aquatic biota.

    b. Providing organic inputs critical for aquatic life.

    c. Providing food in the form of various insects and other benthic macroinvertebrates.

    d. Stabilizing banks, minimizing erosion, and reducing the occurrence of landslides.

    e. Reducing fine sediment input into the aquatic environment through stormwater best management practices.

    f. Filtering and vegetative uptake of nutrients and pollutants from ground water and surface runoff.

    g. Providing a source of large woody debris into the aquatic system.

    h. Regulation of microclimate in the stream-riparian and intertidal corridors.

    i. Providing habitat for wildlife, including connectivity for travel and migration corridors.

B. Regulations.

1. Alteration of native shoreline vegetation shall only be allowed as set forth below:

    a. Landscaping or maintenance associated with an existing legal use or new permitted shoreline use or development. The use of native plant species shall be encouraged.

b. Removal of noxious weeds as listed by the state in WAC 16-750, provided such activity shall be conducted in a manner consistent with best management practices and native vegetation is promptly reestablish in the disturbed area.

c. Modification of vegetation in association with a legal, nonconforming use provided that said modification is conducted in a manner consistent with this Master Program and results in no net loss to ecological functions or critical fish and wildlife conservation areas.

d. Restoration activities conducted in accordance with an approved plan designed to improve ecological functions and values.

2. The removal or disturbance of existing vegetation and the alteration of topography shall be limited to the minimum necessary to accommodate approved shoreline development.

3. Exposed soils shall be immediately developed or revegetated to prevent erosion.

4. Revegetation must be planted such that complete coverage of exposed soils is attained within one growing season.

5. In all cases where clearing is followed by revegetation, native plants shall be preferred.

24.40.060 Water Quality, Stormwater, and Nonpoint pollution

A. Applicability. The following provisions applies to all development and uses within shoreline jurisdiction that may affect water quality.

B. Regulations.

1. An erosion and sedimentation control plan shall be submitted with a permit application for activities that involve the removal of vegetation, stockpiling of earth or other materials, or any activity that could result in shoreline erosion or siltation. Said program shall conform to the City of Edmonds' stormwater code requirements, Engineering Design Standards and shall at a minimum, utilize Best management Practices (BMPs) to prevent shoreline erosion and siltation.

2. The bulk storage of oil, fuel, chemicals, or hazardous materials, on either a temporary or permanent basis, shall not occur in shoreline without adequate secondary containment and an emergency spill response plan in place.

3. All development approved under this Shoreline Master Program shall be designed and maintained consistent with the City's Stormwater Comprehensive Plan, all codes related to stormwater, and Engineering Design Standards.

4. New development is encouraged to employ Low Impact Development principles and practices such as setbacks, retaining land cover, and reducing impervious areas, and use special caution to avoid infiltration of stormwater in shoreline areas along marine bluffs.

24.40.070 Shoreline Development Table: User Guide

SDP	Listed shoreline development permitted as a Shoreline Substantial Development Permit and subject to the policies and regulations of this Master Program. Pursuant to WAC 173-27-040 and ECDC 24.80.010, certain shoreline uses and modifications may be exempt from the requirements of the substantial development permit process. These exemptions shall be construed narrowly and only those developments that meet the precise terms of one or more of the listed exemptions may be granted exemption from the substantial development permit process. Developments meeting the exemption from the requirements of the substantial development permit process are still subject to the policies and regulations of this Master Program.
SCUP	Listed shoreline development may be permitted as Shoreline Conditional Use Permit subject to the policies and regulations of this Master Program. Shoreline developments requiring Shoreline Conditional Use Permits are not subject to the exemptions in WAC 173-27-040 or ECDC 24.80.010.
X	Listed shoreline development is prohibited.
*	Prohibited shoreline development is subject to specific exceptions. See Shoreline Area Regulations section for the listed shoreline development.
+	Permitted shoreline development is subject to specific limitations on where and/or when development may be permitted. See Shoreline Area Regulations for the listed shoreline development.

24.40.080 Shoreline Development Table: Shoreline Development Permitted by Area Designation[1]

Shoreline Development	**Shoreline Area Designation**											
	Urban Railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
Aquaculture												
	X	SCUP	SCUP	X	SCUP	X	X	X	SCUP	SCUP	SCUP	SCUP
Artwork												
	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	X[*2]	X[*2]	SDP	SDP
Boating Facilities												
Launch Ramps	X	SDP	SDP	X	X	X	X	X	X	X	X	X
Marinas	X	SDP	SDP	X	X	X	X	X	X	X	X	X
Covered Over-water structures	X	X	X	X	X	X	X	X	X	X	X	X

Shoreline Development	Shoreline Area Designation											
	Urban Railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
Commercial and Light Industrial												
Water-oriented	X	SDP	SDP	SDP	SDP	X	X	X	X*	X*	X	X
Nonwater-oriented	X	SDP+	SDP+	SDP+	SDP	X	X	X	X*	X*	X	X
Dredging												
	SCUP	SCUP	SCUP	X*	X*	X*	X*	SCUP	SCUP	SCUP	SCUP	X*
Landfill												
	SCUP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SCUP	SCUP	SCUP	SCUP+
Moorage: Piers, Docks, and Floats												
Commercial	X	SDP	SDP	X	X	X	X	X	X	SDP	X	X
Private, Public, and Shared	X	SDP	SDP	X	X	SDP	SDP	SDP	SDP	SDP	SDP	X*
Aircraft	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*
Recreation												
	X	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP
Residential												
Detached Residential (Single-family)	X	X	X	SDP	X	SDP	SDP	SDP	X	X	X	X
Attached or stacked Residential (Multi-family)	X	X	X	SDP	X	X	X	X	X	X	X	X
Shoreline Stabilization												
Groins	SDP	SDP	SDP	X	X	X	X	X	SCUP	SCUP	SCUP	X*
Breakwaters and jetties	SDP	SDP	SDP	X	X	X	X	X	SCUP	SCUP	SCUP	X*
Bulkheads and similar structures	SDP	SDP	SDP	X	SCUP	X	X	SDP	X*	X*	SCUP	X*
Bioengineering	SDP	SDP	SDP	X	SDP	X	X	SDP	SDP+	SDP+	SDP	X*
Gabions	X	X	X	X	X	X	X	X	X	X	X	X

Shoreline Development	Shoreline Area Designation											
	Urban Railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
Signs												
	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP
Transportation												
Railroads	SDP	SDP	SDP	X	X	X	X	X	X*	X*	X	X
Ferry Terminals	SCUP	SDP	SDP	SDP	SDP	X	X	X	SCUP	SCUP	X	X
Parking – supporting associated water-dependent use	SDP	SDP	SDP	SDP	SDP	X	X	X	X	X	SCUP+	X
Parking – not supporting an associated water-dependent use	SDP	SCUP+	SCUP+	SDP	SDP	X	X	X	X	X	SCUP+	X
Other	SCUP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SCUP+	SCUP+
Utilities												
	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SDP	SCUP

[1]: In the event that there is a conflict between the development(s) identified in this Table 24.40.080 and the policies and/or regulations with the text of this Master Program, the policies and regulations within the text shall apply.
[2]: Artwork associate with a permitted use in the Aquatic I or Aquatic II designation may by permitted; otherwise it is a prohibited use.

24.40.090 Shoreline Bulk and Dimensional Standards

The following table establishes shoreline-specific development standards in the different shoreline environment designations. Setbacks represent minimum distances and may be larger if a critical area is present consistent with ECDC 24.40.020 and Title 23 ECDC.

Shoreline Development	**Shoreline Area Designation**											
	Urban Railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
Aquaculture – Over Water Structures												
Shore Setback[1] (waterward ordinary high)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Height above deck of overwater structure	3ft	3ft	3ft	3ft	3ft	N/A	N/A	N/A	3ft	3 ft.	N/A	3ft
Commercial and Light Industrial Development												
Water Dependent Commercial Use												
Shore Setback	N/A	0’	0’	0’	0’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Side Setback[15]	N/A	0’ [2]	0’ [2]	Varies	0’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Height[16]	N/A	30’	30’	25’	35’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Coverage	N/A	None	None	None	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Commercial and Light Industrial Development												
Shore Setback	N/A	15’	15’	50’	100/50[17,18]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Side Setback (commercial/ residential) [15]	N/A	0’/15’ [2, 3]	0’/15’ [2, 3]	Varies	0’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Height[16]	N/A	30’	30’	25’	35’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Coverage	N/A	None	None	None	Varies	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Shoreline Development	Shoreline Area Designation											
	Urban Railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
Recreation												
Shore Setback	N/A	15’	15’	15’	15’[17]	N/A	N/A	35’	N/A	N/A	50’	N/A[14]
Maximum Height[16]	N/A	30’	30’	25’	35’	25’	25’	25’	15’ [4]	15’ [4]	25’	25’
Maximum Coverage	N/A	None	None	None	None	35%	35%	35%	N/A	N/A	10% or 4,000 square feet	N/A
Maximum impervious	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20% or 10,000 square feet	N/A
Residential Development												
Shore Setback	N/A	N/A	N/A	50’[17]	100/50[18]	N/A	N/A	35’	N/A	N/A	N/A	N/A
Bluff Setback	N/A	N/A	N/A	N/A	N/A	50’[13]	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Height[16]	N/A	N/A	N/A	25’	35’	25’	25’	25’	N/A	N/A	N/A	N/A
Minimum Lot Area (Sq. Ft.)	N/A	N/A	N/A	N/A	N/A	Varies[11]	6,000 sq ft	12,000 sq ft	N/A	N/A	N/A	N/A
Maximum Density[6]	N/A	N/A	N/A	N/A	N/A	Varies[12]	7.3	3.7	N/A	N/A	N/A	N/A
Maximum Coverage	N/A	N/A	N/A	N/A	N/A	35%	35%	35%	N/A	N/A	N/A	N/A
Transportation and Parking												
Parking												
Uncovered Parking												
Shore Setback	60’	60’ [7]	60’[7]	50’[17]	100/50[18]	N/A	N/A	N/A	N/A	N/A	60’	N/A
Structured Parking												
Shore Setback	N/A	N/A	N/A	50’[17]	100/50[18]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Height[16]	N/A	N/A	N/A	25’	35’	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ferry Terminals												
Maximum Height [8]	30’	30’	30’	30’	30’	N/A	N/A	N/A	35’	35’	N/A	N/A
Railroads												
Maximum Height	25’ [9]	30’ [9]	30’ [9]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Property line	5’	5’	5’	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

setbacks												

Shoreline Development	**Shoreline Area Designation**											
	Urban railroad	Urban Mixed Use I	Urban Mixed Use II	Urban Mixed Use III	Urban Mixed Use IV	Shoreline Residential I	Shoreline Residential II	Shoreline Residential III	Aquatic I	Aquatic II	Conservancy	Natural
All Other Development												
Shore Setback	N/A	15’	15’	50’[17]	100/50[18]	N/A	N/A	35’	N/A	N/A	50’	N/A[14]
Maximum Height[16]	25’	30’	30’	25’	35’	25’	25’	25’	25’	35’/15’ [10]	25’	25’
Minimum Lot Area (Sq. Ft.)	N/A	None	None	None	None	Varies[11]	6,000 sq. ft.	12,000 sq. ft.	N/A	N/A	N/A	N/A
Maximum Density	N/A	N/A	N/A	N/A	N/A	Varies[12]	7.3	3.7	N/A	N/A	N/A	N/A
Maximum Coverage	None	None	None	None	Varies[19]	35%	35%	35%	N/A	N/A	10%	10%

[1]: Aquaculture pens shall be no closer to the shoreline than the identified distance.

[2]: See ECDC 24.40.040.B.11 for view corridor requirements.

[3]: No side setback is required from adjacent commercial property. A minimum 15-foot setback is required from lot line adjacent to shoreline residential environments. The area must be fully landscaped and include a minimum six-foot high fence or hedge.

[4]: Above ordinary high water mark.

[5]: Thirty-five feet total of both sides, 10 feet minimum on either side.

[6]: Density means “dwelling units per acre” determined by dividing the total lot area by the density allowed by the underlying zoning; the number of lots or units permitted shall be rounded down to the nearest whole number.

[7]: In the Urban Mixed Use I and II environment, the 60-foot setback for parking may be reduced by a maximum of 20 feet. See ECDC 24.60.080.D.2.c. and 24.60.080.D.3.c

[8]: Subject to exceptions, see ECDC 24.60.070.C.10.

[9]: Subject to exceptions, see ECDC 24.60.080.D.1.b.xiii.1 through ECDC 24.60.080.D.1.b.xiii.4.

[10]: Accessory structures for the sale of gas, oil and live bait, shall not exceed 15 feet above the height of the dock or pier.

[11]: Varies between 12,000 and 20,000 square feet per site depending on the underlying zoning.

[12]: Varies between 3.7 and 2.2 dwelling units per acre depending on the underlying zoning. Density means “dwelling units per acre” determined by dividing the total lot area by the density allowed by the underlying zoning; the number of lots or units permitted shall be rounded down to the nearest whole number.

[13]: May be reduced through the shoreline variance process pursuant to ECDC 24.40.020.C.3.

[14]: Three areas within the City of Edmonds have the natural environment designation: Edmonds Marsh, Shell Creek Wetland, and Perrinville Creek Wetland. All three areas are separated from the Puget Sound by the railroad right-of-way.

[15]: Side setback determined by the underlying zoning. No required side setback in the BD2, CG, or MP2 zones. Five foot side setback in the OR zone,

[16]: The maximum height limit shall be determined by the underlying comprehensive planning document and zoning designation. Height limits greater than 35 feet shall be supported by view analysis and structures designed to minimize impacts on public views.

[17]: Fences within the shore setback of the Urban Mixed Use ~~III~~ IV zone that create separate areas for public and private uses should not be allowed.

[18]: Setback for new development within the Urban Mixed-Use IV environment is 100 feet. New development activities within the Urban Mixed-Use IV environment require the establishment of a 50-foot vegetation buffer adjacent to the Edmonds Marsh where the vegetative buffer is absent.

[19]: Varies between 75% and no maximum coverage requirement per site depending on the underlying zoning.

Part V Specific Modification Policies & Regulations.

24.50.000 Applicability.

Shoreline modification activities are structures or actions that permanently change the physical configuration or quality of the shoreline, particularly at the point where land and water meet. Shoreline modifications include but are not limited to structures such as bulkheads and piers and actions such as clearing, grading and removing vegetation. Generally, shoreline modifications are undertaken to prepare for a shoreline use, to support and upland use, or to provide shoreline stabilization or defense from erosion.

24.50.010 General Modification Policies and Regulations

A. General Modification Policies.

1. Locate and design all new development in a manner that prevents or minimizes the need for shoreline modifications.

2. Ensure that shoreline modification, where permitted, are as compatible as possible with natural shoreline processes and character.

3. Regulate shoreline modifications to assure that modifications individually and cumulatively do not result in a net loss of ecological functions. Mitigation may be required to meet the no net loss standard.

4. Give preference to those types of shoreline modifications that have a less impact on ecological functions and require mitigation of identified impacts resulting from shoreline modifications.

5. Incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes in the placement and design of shoreline modifications. To avoid and reduce ecological impacts, the mitigation sequence in ECDC 24.40.020.E.3 shall be utilized.

B. General Shoreline Modification Regulations

1. Shoreline modification activities that do not support a permitted shoreline use are considered “speculative” and are prohibited by this Master Program, unless it can be demonstrated to the satisfaction of the Shoreline Administrator that such activities are in the public interest and necessary and for the maintenance of shoreline environmental resource values.

2. Structural shoreline modification measures shall be permitted only if nonstructural measures are unable to achieve the same purpose. Nonstructural measures considered shall include alternative site designs, increased setbacks, relocation, and bioengineering.

3. Shoreline modification activities, with the exception of restoration or enhancement efforts, are prohibited in wetlands, and undeveloped spits, hooks, bars, barrier beaches, or similar accretion terminals or accretion shore forms.

4. Proponents of shoreline modification projects shall obtain all applicable federal and state permits and shall meet all permit requirements.

5. Best Available Science. All reports prepared in support of a shoreline modification shall use scientifically valid methods and studies in the analysis of shoreline environment and field reconnaissance and reference the source of science used.

24.50.020 Shoreline stabilization

A. Applicability. Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures cause by natural processes, such as current, flood, tides, wind, or wave action. These actions include structural and nonstructural methods.

Nonstructural methods include building setbacks, relocation of the structure to be protected, ground water management, planning and regulatory measures to avoid the need for structural stabilization.

Structural methods can be “hard” or “soft”. “Hard” structural stabilization measures structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads. These are static structures traditionally constructed of rock, concrete, wood, metal, or other materials that deflect, rather than absorb, wave energy. “Soft” structural measures rely on softer materials, such as vegetation, drift logs, and gravel. They are intended to absorb wave energy, mimicking the function of a natural beach. The following methods of shoreline stabilization are organized from “soft” to “hard”:

“Soft”
- Vegetation enhancement;
- Upland drainage control;
- Biotechnical measures;
- Beach enhancement;
- Anchor tree; and
- Gravel placement;

“Hard”
- Rock revetments;
- Gabions;

- Groins;
- Retaining walls and bluff walls;
- Bulkheads; and
- Seawalls.

The following policies and regulations apply to all actions and developments that modify the shoreline for the purposes of preventing shore erosion.

B. Shoreline Stabilization Policies

1. Discourage new development requiring structural shoreline defense works.

2. Relocating existing structures out of harm's way is preferable to construction of structural defense works.

3. Allow structural stabilization methods only:

   a. After it is demonstrated that nonstructural solutions would not be able to reduce the potential damage sufficiently, and

   b. Where it has been demonstrated to be necessary to support or protect a new use consistent with this Master program, a legally established, inhabited structure or ongoing shoreline use that is in danger of loss or substantial damage or when necessary for reconfiguration of the shoreline for hazardous substance remediation or restoration of ecological functions.

   c. Structural stabilization will not be permitted for the indirect purpose of creating land by filling.

4. Encourage "soft" stabilization and protection works over "hard" structural means. Furthermore, designs that do not interrupt net drift or migration of anadromous fish are preferred (for example, open poling construction is preferable to sold walls, and floating breakwaters are preferable to solid landfills.)

5. Consider the effect that proposed shore defense works have on ecosystem-wide processes (e.g. sand movement) and functions (e.g. habitat). Make provisions to avoid and minimize impacts where feasible. Mitigation must be provided to achieve no net loss.

6. Give special attention to the effect these structures will have on aesthetic qualities of the shoreline, public access, and use of the water.

C. Shoreline Stabilization Regulations

1. For the purposes of this section, standards on shoreline stabilization, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately service its purpose. Addition to or

increases in size of existing shoreline stabilization measures shall be considered new structures.

2. Structural stabilization methods shall be permitted when necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.

3. New development that would require shoreline stabilization which causes significant negative impacts to adjacent or down-current properties and shoreline areas should not be allowed.

4. New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the normal, useful life of the structure, as demonstrated by a geotechnical analysis.

5. New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

    a. To protect existing primary structures:

        i. New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure is in danger from shoreline erosion caused by tidal action, currents, or waves. Normal sloughing, erosion of steep bluffs, 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 structural shoreline stabilization.

        ii. The erosion control structure will not result in a net loss of shoreline ecological functions.

    b. In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:

        i. The erosion is not being cause by upland conditions, such as the loss of vegetation and drainage.

        ii. Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

        iii. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as tidal action, currents, and waves.

        iv. The erosion control structure will not result in a net loss of shoreline ecological functions.

c. In support of water-dependent development when all of the conditions below apply:

i. The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

ii. Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

iii. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

iv. The erosion control structure will not result in a net loss of shoreline ecological functions.

d. To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when all of the conditions below apply:

i. Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

ii. The erosion control structure will not result in a net loss of shoreline ecological functions.

6. Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Thus, where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.

D. Shoreline Stabilization Siting and Design Regulations.

1. When any structural shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions.

a. Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall

be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.

b. Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions. Where feasible, incorporate ecological restoration and public access improvements into the project.

c. Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect beach sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to sediment conveyance systems.

2. Bulkheads and other shoreline protective structures may not be constructed within a marsh, bog, or swamp or between a marsh, bog or swamp and the primary body of water (Puget Sound or Lake Ballinger).

3. Bulkheads and other shoreline protective structures may not be placed waterward of the ordinary height water mark, unless:

   a. It is to stabilize a fill approved under ECDC 24.50.040*;* or

   b. There has been severe and unusual erosion within one year immediately preceding the application for the bulkhead or other similar protective structure. In this event, the city may allow the placement of the bulkhead or other similar protective structure to recover the dry land area lost by this erosion.

4. Bulkheads and other shoreline protect structures shall be located landward of the ordinary high water mark and generally parallel to the natural shoreline unless geotechnical evaluation demonstrates the necessity for alternative design. In addition:

   a. Where no other bulkheads are adjacent, the construction of a bulkhead shall be as close to the eroding bank as possible and in no case shall it be more than six (6) feet from the toe of the bank.

   b. A bulkhead for a permitted landfill shall be located at the toe of the fill.

   c. Where permitted, a bulkhead must tie in flush with existing bulkheads on adjoining properties, except where the adjoining bulkheads extend waterward of the ordinary high water mark.

5. An existing bulkhead or other shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.

a. The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.

b. Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residential structure to which it is appurtenant was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure may abut the existing shoreline stabilization structure.

c. Where a net loss of ecological functions associated with critical saltwater habitats would occur by leaving the existing structure, remove it as part of the replacement measure.

d. Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.

e. For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

6. Materials used in bulkhead construction shall meet the following standards:

a. Bulkheads shall utilize stable, non-erodable materials such as concrete, wood, and rock that are consistent with the preservation and protection of the ecological habitat.

b. Shore materials shall not be used for fill behind bulkheads, except clean dredge spoil from a permitted off-site dredge and fill operation.

c. The extent and nature of any backfill proposed landward of a bulkhead or other shoreline protective structure shall comply with adopted City standards.

7. If hard stabilization methods are employed the following design criteria shall be meet:

a. The size and quantity of the material shall be limited to that the minimum necessary to withstand the estimated energy intensity of the hydraulic system;

b. Filter cloth must be used to aid drainage and help prevent settling;

c. The toe reinforcement or protection must be adequate to prevent a collapse of the system wave action; and

d. Fish habitat components shall be considered in the design subject to Hydraulic Project Approval by the Washington Department of Fish and Wildlife.

8. When hard stabilization measures are required at a public access site, provision for safe pedestrian access to the water shall be incorporated into bulkhead design.

9. Stairs or other permitted structures may be built into a hard stabilization structure but shall not extend waterward of it.

E. Geotechnical Reports.

Geotechnical reports required pursuant to this section shall address the need for shoreline stabilization and shall include the following.

1. A scaled site plan showing:

   a. The location of existing and proposed shore stabilization, structures, fill, and vegetation, with dimensions indicated distances to the ordinary high water mark.

   b. Existing site topography with two foot contours.

2. A description of the processes affecting the site, and surrounding areas that influence or could be influenced by the site, including areas in which lake or marine geomorphic processes affect the site, including, but not limited to:

   a. Soil erosion, deposition, or accretion;

   b. Evidence of past or potential erosion due to tidal action and/or waves;

   c. Littoral drift; and

   d. An estimate of shoreline erosion rates.

3. A description and analysis of the urgency and risk associated with the specific site characteristics.

F. Shoreline Stabilization – Shoreline Area Regulations

1. Urban Railroad

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

2. Urban Mixed Use I

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

b. Gabions are prohibited.

3. Urban Mixed Use II

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

4. Urban Mixed Use III

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

5. Urban Mixed Use IV

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

6. Shoreline Residential I

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

7. Shoreline Residential II

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

8. Shoreline Residential III

   a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program.

   b. Gabions are prohibited.

9. Aquatic I

a. Bioengineering approaches are permitted on tidelands and shorelands when necessary to restore an eroding accretion shoreform or to retard erosion elsewhere subject to policies and regulations of this program.

b. Bulkheads or revetments are prohibited except for an approved water-dependent development subject to policies and regulations of this Program.

c. Gabions are prohibited.

10. Aquatic II

a. Bioengineering approaches are permitted on tidelands and shorelands when necessary to restore an eroding accretion shoreform or to retard erosion elsewhere subject to policies and regulations of this program.

b. Bulkheads or revetments are prohibited except for an approved water-dependent development subject to policies and regulations of this Program.

c. Gabions are prohibited.

11. Conservancy

a. Bulkheads, revetments, and bioengineering approaches are permitted subject to policies and regulations of this Program

b. Gabions are prohibited.

12. Natural: Shoreline stabilization is prohibited; except that, bioengineering approaches may be permitted as a conditional use when necessary to restore and eroding accretion shoreform or to retard erosion elsewhere.

24.50.030 Moorage: Piers, Docks, and Floats

A. Applicability

Docks are fixed structures floating upon water bodies. Piers are fixed, pile-supported structures. Floats are floating structures that are moored, anchored, or otherwise secured in the water that are not connected to the shoreline. Docks, piers, and floats that serve four or fewer boats regularly moored are reviewed a recreational facilities. Proposals for five or more boats are considered marinas and are regulated under ECDC 24.60.020, Boating Facilities.

B. Moorage: Piers, Docks, and Floats Policies

1. A dock associated with a single family residence is considered a water-dependent use provided that it is designed and intended as a facility for access to watercraft and otherwise complies with the provisions of this section.

2. New pier or dock construction, excluding docks accessory to single-family residences, should be permitted only when the applicant has demonstrated that a specific need exists to support the intended water-dependent use.

3. Shared pier and dock facilities are preferred over single-user moorage where feasible. New subdivisions of more than two (2) lots should provide joint shared moorage.

4. Piers and docks, including those accessory to single-family residences, shall be designed and constructed to avoid or to minimize and mitigate the impacts to ecological functions, critical areas resources such as eelgrass beds and fish habitats and processes such as currents and littoral drift.

C. Moorage: Piers, Docks, and Floats Regulations

1. The following piers, docks, and floating developments are prohibited in the shoreline jurisdiction:

   a. Aircraft moorage is prohibited, except that aircraft may be temporarily moored (not to exceed 36 hours) in the event of severe weather conditions.

   b. Covered moorage.

2. Size of Piers and Docks. Piers and docks may not be larger than is necessary to provide safe and reasonable moorage for the boats which can reasonably be expected to be moored. The city will specifically review the size and configuration or each proposed pier or dock to ensure that:

   a. The pier or dock does not extend waterward beyond the point necessary to provide reasonable draft for the boats to be moored and shall not extend beyond the outer harbor line; and

   b. The pier or dock is not larger than is necessary to moor the specified number of boats; and

   c. The pier or dock will not interfere with the public use and enjoyment of the water or create a hazard to navigation; and

   d. The pier or dock will not adversely affect nearby uses; and

e. The pier or dock will not have a significant long-term adverse effect on aquatic habitats.

3. In order to minimize impacts on nearshore areas and avoid reduction in ambient light level:

   a. The width of piers, docks and floats shall be the minimum necessary and shall not exceed 4 feet in width, except where specific information on use patterns justifies a greater width. Marine floats shall not exceed 8 feet in width not more than 40 feet in length and freshwater floats shall not exceed 6 feet in width and 20 feet in length unless authorized by a variance. Exceptionally large vessels or vessels that require a relatively deep draft may be required to use a buoy, other alternative mooring scheme, or to moor in a marina. Materials that will allow light to pass through the deck may be required where width exceeds 4 feet.

   b. Dock surfaces designed to allow maximum light penetration shall be used on walkways or gangplanks in nearshore areas.

   c. Piers, docks and floats shall be located along a north/south orientation to the maximum extent feasible.

   d. The surface of new piers, docks and floats shall provide at least 50% functional grating.

4. Waterward of the ordinary high water mark, pier and dock height may not exceed a height of five feet above water level, except that pilings may extend a reasonable amount above dock height to provide for tidal conditions.

5. Prohibited substances. No part of a pier, dock or other components that may come in contact with the water may be treated with or consist, in whole or in part, of creosote, oil based paints, toxic chemicals, or other substances that would be harmful to the aquatic environment, unless specifically permitted and authorized by appropriate state and federal regulatory agencies.

6. If the pier, dock or float will extend waterward of the inner harbor line, the applicant must obtain a lease from the Department of Natural Resources prior to proposing this use.

7. No structure regulated under this section, other than moorage structures and sheds associated with gas and oil sales for boats, may be waterward of the ordinary high water mark.

D. Moorage: Piers, Docks, and Floats - Shoreline Area Regulations

1. Urban Railroad: Moorage structures are prohibited.

2. Urban Mixed Use I:

a. Private, shared, public and commercial moorage structures are permitted subject to the policies and regulations of this Master Program.

b. Aircraft moorage is prohibited, except that aircraft may be temporarily moored (not to exceed 36 hours) in the event of severe weather conditions.

c. Moorage structures and facilities located may not be located waterward of public parks, public beaches, or public facilities, nor may they be located so as to obstruct waterward view from these public uses.

d. Permitted Accessory Uses:

   i. Boat and motor sales

   ii. Boat repair and service, including dry docks, boat yards and similar activities

   iii. Boat motor/engine repair and service; provided, that commercial boat motor/engine repair involving complete engine overhaul or rebuilding shall take place within a building or be screened from public view.

   iv. Pumping facilities to remove effluent from boat holding tanks

   v. Dry land boat storage; provided, however, that stacked storage shall not be permitted to exceed the maximum permitted height in the Urban Mixed Use I shoreline environment.

   vi. Meeting and special event rooms.

   vii. Gas and oil sales for boats, if;

      A. All storage tanks are underground and located upland of the ordinary high water mark; and

      B. The use has facilities to contain and clean up gas and oil spills.

      C. Gas and oil sales may be conducted with an Overwater shed that is not more than 150 square feet in area and 15 feet in height as measured from the top of the deck.

   viii. Waste oil storage tanks not to exceed 500 gallons may be located above ground. Hazardous waste may be stored temporarily above ground in not more than nine 55-gallon drums. Such drums shall have secondary containment. Waste oil and hazardous storage tanks for the temporary storage of wastes and hazardous substances which exceed these standards, shall be placed underground. No tank

of any kind intended for the permanent storage of waste or hazardous substances shall be permitted.

3. Urban Mixed Use II

   a. Private, shared, public and commercial moorage structures are permitted subject to the policies and regulations of this Master Program.

   b. Aircraft moorage, except that aircraft may be temporarily moored (not to exceed 36 hours) in the event of severe weather conditions.

   c. Moorage structures and facilities located may not be located waterward of public parks, public beaches, or public facilities, nor may they be located so as to obstruct waterward view from these public uses.

   d. Permitted Accessory Uses:

      i. Boat and motor sales

      ii. Boat repair and service, including dry docks, boat yards and similar activities

      iii. Boat motor/engine repair and service; provided, that commercial boat motor/engine repair involving complete engine overhaul or rebuilding shall take place within a building or be screened from public view.

      iv. Pumping facilities to remove effluent from boat holding tanks

      v. Dry land boat storage; provided, however, that stacked storage shall not be permitted to exceed the maximum permitted height in the Urban Mixed Use I shoreline environment.

      vi. Meeting and special event rooms.

      vii. Gas and oil sales for boats, if;

         A. All storage tanks are underground and located upland of the ordinary high water mark; and

         B. The use has facilities to contain and clean up gas and oil spills.

         C. Gas and oil sales may be conducted with an Overwater shed that is not more than 150 square feet in area and 15 feet in height as measured from the top of the deck.

      viii. Waste oil storage tanks not to exceed 500 gallons may be located above ground. Hazardous waste may be stored temporarily above ground in not more than nine

55-gallon drums. Such drums shall have secondary containment. Waste oil and hazardous storage tanks for the temporary storage of wastes and hazardous substances which exceed these standards, shall be placed underground. No tank of any kind intended for permanent storage of waste or hazardous substances shall be permitted.

4. Urban Mixed Use III: Moorage structures are prohibited.

5. Urban Mixed Use IV: Moorage structures are prohibited.

6. Shoreline Residential I: Moorage structures are prohibited.

7. Shoreline Residential II: Moorage structures are prohibited.

8. Shoreline Residential III

    a. Moorage structures and facilities may only be permitted and used accessory to detached dwelling units on waterfront lots. Use of the moorage structure and facilities is limited to the residents and guests of the waterfront lots to which the moorage is accessory. Moorage space may not be leased, rented, sold, or otherwise made available to other than the residents and guests of the waterfront lots to which the moorage is accessory.

    b. Accessory uses are not permitted in conjunction with moorage structure.

    c. Residential Moorage Structure Development Standards:

        i. Height. The height of a residential dock or pier shall not exceed five feet above the ordinary high water mark. The height of attendant pilings shall not exceed five feet above the ordinary high water mark or that height necessary to provide for temporary emergency protection of floating docks as determined in accord with generally accepted engineering practices.

        ii. Length. The length of any residential dock or pier shall not exceed the lesser of 35 feet or the average length of existing docks or piers within 300 feet of the subject dock or pier.

        iii. Width. The width of any residential dock or pier shall not exceed 25 percent of the lot width when measured parallel to the shoreline. A joint use dock located at the property line with another lot which shares the joint use dock may not exceed 25% the total of both lots.

        iv. Setbacks. All residential docks or piers shall observe a minimum 10-foot side yard setback from a property line or a storm drainage outfall. Joint use docks or piers may be located on the side property line; provided, that the abutting waterfront property owners shall file a joint use maintenance agreement with the

Snohomish County auditor in conjunction with, and as a condition of, the issuance of a building permit. Joint use docks or piers shall observe all other regulations of this subsection. If such joint maintenance agreement is terminated, the dock or pier shall be brought into compliance with the bulk and set back provisions of this Master Program.

v. Number. No lot shall have more than one dock or pier or portion thereof located on the lot.

vi. Size. No residential dock or pier shall exceed 400 square feet.

vii. Floats. Offshore recreational floats are prohibited.

viii. Covered Buildings. No covered building shall be allowed on any residential dock or pier.

9. Aquatic I

a. Private, shared, and public moorage structures are permitted subject to the policies and regulations of this Master Program.

b. If the subject property provides moorage for not more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 25 feet of a public park.

ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet for moorage structures, provided that joint or shared moorage facilities may be located within the setback from the lot with whom the facility is shared.

c. If the subject property provides moorage for more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 100 feet of a public park.

ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet.

10. Aquatic II

a. Private, shared, public and commercial moorage structures are permitted subject to the policies and regulations of this Master Program.

b. No moorage structure on private property may be within 100 feet of a public park.

c. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

d. The side property line setback is 10 feet.

11. Conservancy

a. Moorage structures and facilities may only be permitted and used accessory to detached dwelling units on waterfront lots. Use of the moorage structure and facilities is limited to the residents and guests of the waterfront lots to which the moorage is accessory. Moorage space may not be leased, rented, sold, or otherwise made available to other than the residents and guests of the waterfront lots to which the moorage is accessory.

b. Moorage structures and facilities may not provide moorage for more than two boats; provided, however, that waterfront lots are encourage to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility.

c. Accessory uses are not permitted in conjunction with moorage structure.

d. If the subject property provides moorage for not more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 25 feet of a public park.

ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet.

e. If the subject property provides moorage for more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 100 feet of a public park.

ii. No moorage structure may be with 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet for moorage structures, provided that joint or shared moorage facilities may be located within the setback from the lot with whom the facility is shared.

12. Natural. Moorage structures are prohibited.

24.50.040 Landfill

A. Applicability.

1. Landfill is the creation of or addition to the surface of the land by the filling, placement or depositing of sand, soil, or gravel, or other material on land covered by water, or in a wetland, march, bog, swamp, or similar water detention area. Landfill is normally done for and, in this Master Program, must be associated with a specific purpose or use such as the development of a commercial site, construction of roadways or a jetty.

2. When backfill of bulkhead involves over one cubic yard per lineal foot, such bulkheads shall be evaluated under both this section and ECDC 24.50.020, Shoreline stabilization.

B. Fill Policies

1. Landfill 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.

2. Allow landfills waterward of the ordinary high water mark, in those limited circumstances where permitted, only when necessary to facilitate water-dependent uses or ecological restoration projects that are consistent with this program and the City of Edmonds Comprehensive Plans. Where feasible, public access to the shoreline and the water should be incorporated into the design.

C. Landfill Regulations

1. Landfill water ward of the ordinary high water mark may be permitted as a conditional use in limited instances for the following purposes only, with due consideration given to specific site conditions, and only in conjunction with approved shoreline use and development activities that are consistent with this program:

a. Water-dependent use permitted under this Master Program.

b. To create public use or public recreation areas.

c. Cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan.

d. Disposal of dredged material considered suitable under, and conducted in accordance with the dredged material management program of the Department of Natural Resources.

e. Expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible.

f. Mitigation action, environmental restoration, beach nourishment or enhancement projects.

2. Landfills shall be permitted only where it is demonstrated that:

a. The project has been located, designed, and constructed in a manner that minimizes impacts to ecological processes and functions and where impacts cannot be avoided, mitigation is provided to achieve no net loss.

b. The fill will not result in erosion of the shoreline or undermine stability of neighboring properties.

c. The fill is the minimum necessary to reasonably accomplish the purpose for the fill under subsection C.1 of this section.

d. Where existing public access will be reduced, equivalent public access has been provided on or off site as part of the project.

e. Fill material consists only of soil, sand, rock, or gravel. The fill material must not contain organic or inorganic materials that would be detrimental to water quality or existing habitats.

f. Placement of landfill will be timed so as to minimize damage to water quality and aquatic life.

3. The applicant must stabilize exposed fill areas with vegetation.

4. Landfills, beach nourishment 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.

5. A temporary erosion and sediment control (TESC) plan shall be provided for all proposed landfill and excavation activities.

6. The fill shall be designed and supervised by a civil engineer or similarly qualified professional. The professional shall certify that the fill meets the following requirements:

a. The fill is designed and executed to minimize adverse impacts on neighboring properties and the environment, and is fully integrated into an otherwise approved facility.

b. The fill is designed and executed to provide permanent structural integrity for the fill and surrounding areas.

D. Applications for landfill projects shall include the following information:

1. Proposed use of the landfill area.

2. Analysis of the physical, chemical, and biological characteristics of the fill material demonstrating that the fill is of such quality that significant water quality, ecological impacts, and public health problems would not occur from its placement.

3. Fill must meet all state standards. Assessment of water quality impacts shall be included as an attachment.

4. Source of the landfill material.

5. Location of the landfill relating to natural or existing drainage patterns.

6. Location of the perimeter of the landfill relating to the ordinary high water mark and critical areas. The applicant should consult with the Department of Ecology in determining the location of the ordinary high water mark. For development proposals at or water ward of the ordinary high water mark, an OHWM field determination by a qualified professional shall be provided with the application. The field determination shall be consistent with guidance development by the Department of Ecology and is subject to verification by the city of Edmonds and the Department of Ecology.

7. Perimeter erosion control or stabilization means, and schedule for implementation.

8. Type of surfacing and run-off control and treatment devices.

E. Shoreline Area Regulations

1. Urban Railroad: Landfill may be allowed as a conditional use subject to the policies and regulations of this Program.

2. Urban Mixed Use I: Landfill is permitted subject to the policies and regulations of this program.

3. Urban Mixed Use II: Landfill is permitted subject to the policies and regulations of this program.

4. Urban Mixed Use III: Landfill is permitted subject to the policies and regulations of this program.

5. Urban Mixed Use IV: Landfill is permitted subject to the policies and regulations of this program.

6. Shoreline Residential I: Landfill is permitted subject to the policies and regulations of this program.

7. Shoreline Residential II: Landfill is permitted subject to the policies and regulations of this program.

8. Shoreline Residential III: Landfill is permitted subject to the policies and regulations of this program.

9. Aquatic I: Landfill may be allowed as a conditional use subject to the policies and regulations of this Program.

10. Aquatic II: Landfill may be allowed as a conditional use subject to the policies and regulations of this Program.

11. Conservancy: Landfill may be allowed as a conditional use subject to the policies and regulations of this Program.

12. Natural: Landfill may be allowed as a conditional use when necessary to protect or restore shoreline ecological functions subject to policies and regulations of this program.

24.50.050 Breakwaters, jetties, groins, and weirs

A. Applicability:

A breakwater is a protective structure usually built offshore to protect harbor areas, moorage, navigation or beaches from wave action. A jetty, groin or weir is a structure usually built singly or in pairs perpendicular to the shore to prevent shoaling or accretion of sediment drift. Projects the requiring fill must also meet the requirements of ECDC 24.50.040, Landfill.

B. Breakwaters, Jetties, Groins, and Weirs Policies

1. Breakwaters, jetties, groins, and weirs located waterward of the ordinary high water mark shall be allowed only where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose.

2. Open pile or floating breakwater designs are preferred.

3. Solid rock or fill-based weirs, groins and jetties should not be constructed unless it can be demonstrated that they are part of a larger system that will reduce the need for overall shoreline modification and that they are intended to prevent damage to existing structures. They should not be proposed to protect new structures.

C. Breakwaters, Jetties, Groins, and Weirs Regulations

1. Breakwaters, Jetties, Groins and Weirs may be allowed provided that:

   a. Jetties and breakwaters are permitted where they are an integral component of a professionally designed harbor, marina, or port. Where permitted, floating portable or submerged breakwater structures, or small discontinuous structures are preferred where physical conditions make such alternatives with less impact feasible.

   b. Groins are permitted as a component of a professionally designed community or public beach management program that encompasses an entire drift sector or reach for which alternatives are infeasible. Or where installed to protect or restore shoreline ecological functions.

   c. The breakwater is essential to the safe operation of a moorage facility.

   d. The city determines that the location, size, design and accessory components of the moorage facility to be protected by the breakwater provide a public benefit and are within the public interest.

   e. The breakwater, jetty, groin, or weir is designed to protect critical areas and where impacts are unavoidable, mitigation will be provided to ensure no net loss of ecological functions and processes.

2. Public Access:

   a. Where appropriate projects shall be required to maintain, replace or enhance existing public access opportunities by incorporating physical or visual access areas and/or facilities into the design of the project.

   b. Publicly financed or subsidized projects shall not restrict appropriate public access to the shoreline and shall provide new public access except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to shoreline ecological functions.

3. All breakwaters, jetties, groins, or weirs must be designed and constructed under the supervision of a civil engineer or similarly qualified professional. As part of the application, the engineer or other professional designing the project must certify that:

   a. The project is designed to meet the requirements of this Program and accomplish the purpose of the project using the best available science.

b. The project is designed to be the minimum necessary to accommodate the proposed purpose.

c. The project is designed to have the minimum feasible adverse impacts upon the environment, nearby waterfront properties, and navigation.

d. Any unavoidable impacts have been mitigated to ensure no net loss of ecological functions and processes.

D. Breakwaters, Jetties, Groins, and Weirs – Shoreline Area Regulations.

1. Urban Railroad: Breakwaters, jetties, groins, and weirs are permitted subject to the policies and regulations of this Program.

2. Urban Mixed Use I: Breakwaters, jetties, groins, and weirs are permitted subject to the policies and regulations of this Program.

3. Urban Mixed Use II: Breakwaters, jetties, groins, and weirs are permitted subject to the policies and regulations of this Program.

4. Urban Mixed Use III: Breakwaters, jetties, groins, and weirs are prohibited.

5. Urban Mixed Use IV: Breakwaters, jetties, groins, and weirs are permitted subject to the policies and regulations of this Program.

6. Shoreline Residential I: Breakwaters, jetties, groins, and weirs are prohibited.

7. Shoreline Residential II: Breakwaters, jetties, groins, and weirs are prohibited.

8. Shoreline Residential III:

   a. Bulkheads are permitted subject to the policies and regulations of this Program.

   b. Jetties, groins, and weirs are prohibited.

9. Aquatic I: Breakwaters, jetties, groins, and weirs may be permitted as a conditional use subject to the policies and regulations of this Program.

10. Aquatic II: Breakwaters, jetties, groins, and weirs may be permitted as a conditional use subject to the policies and regulations of this Program.

11. Conservancy:

    a. Breakwaters and jetties may be permitted as a conditional use if accessory to a water-dependent use and littoral sediment transport is not significantly disrupted.

b. Groins may be permitted as a conditional use when necessary to protect or restore shoreline ecological functions subject to policies and regulations of this program.

12. Natural: Breakwaters, jetties, groins, and weirs may be permitted as a conditional use when necessary to protect or restore shoreline ecological functions subject to policies and regulations of this program.

24.50.060 Dredging and dredge material disposal

A. Applicability.

Dredging is the removal or displacement of earth such as gravel, sand, mud, or silt from lands covered by water. Lands covered by water include tidelands, marinas, and wetlands. Dredging is normally done for, and in this Master Program must be associated with, a specific purpose or use such as maintaining navigation channels, developing/expanding marinas, constructing bridge footings, laying submarine cable and in some cases aquaculture (See Aquaculture Section ECDC 24.60.010).

Dredging to restore preexisting contours within a designated and authorized navigation channel, marina or basin is considered normal maintenance and is exempt from the requirement for a substantial development permit. Dredging is only maintenance where there is a designated and authorized facility such as a marina, federal navigation channel or berth authorized by permit. If an operation expands an existing the channel or basin, a permit is required even if the marina or similar project has been operation for years.

Dredge spoil is the material removed by dredging. Dredge spoil disposal is the depositing of dredge materials on land or into water bodies for the purpose of either creating new or additional lands or for disposing of the dredge material (See also, Landfill Section, ECDC 24.50.040).

B. Dredging and dredge material policies

1. Site and design new development to avoid or, if that is not possible, to minimize the need for new and maintenance dredging.

2. Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of ecological functions.

3. 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 Program.

4. Plan and conduct dredge and dredge disposal operations in a manner that avoids or minimizes interference with navigation and significant ecological impacts. Impacts which cannot be avoided should be mitigated in a manner that assures no net loss of shoreline ecological functions.

5. Minor dredging for fill materials as part of ecological restoration or enhancement, beach nourishment, public access or public recreation should be permitted if consistent with this Program.

C. Dredging and dredge material regulations

1. Dredging shall only be permitted for the following activities:

   a. Development of approved wet moorages, harbors, ports and water-dependent industries of economic importance to the region only when there are no feasible alternatives.

   b. Maintenance dredging for the purpose of restoring a lawfully established development.

   c. Establishing, expanding, relocating or reconfiguring navigation channels where necessary to assure safe and efficient accommodation of existing navigational uses. Maintenance dredging of established navigation channels and basins shall be restricted to maintaining previously dredge and/or existing authorized location, depth, and width.

   d. To remove silt or sediment deposited because of severe and unusual erosion or resulting from the existence of a bulkhead on nearby property.

   e. To provide sufficient draft for boat moorage.

   f. Restoration or enhancement of shoreline ecological functions and processes benefiting water quality and/or fish and wildlife habitat.

   g. Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high water mark. The project must be either associated with a MRCA or CERCLA habitat restoration project or, if approved through a shoreline conditional use permit, any other significant habitat enhancement project.

2. The existing physical alignment and ecological function and processes shall be maintained, except to improve hydraulic function, water quality, fish or wildlife habitat, or fish passage.

3. New development shall be sited and designed avoid or, if that is not possible, to minimize the need for new and/or maintenance dredging.

4. Dredge Spoils.

    a. Dredge spoil disposal in open waters may be approved only in accordance with the Puget Sound Dredged Disposal Analysis (PSDDA) evaluation procedures for managing in-water disposal of dredge material; when approved by applicable agencies, which may include the U.S. Army Corps of Engineers pursuant to section 109Rivers and harbors Act0 and Section 404 (Clean Water Act) permits, and Washington State Department of fish and Wildlife hydraulic Project approval (HPA); and when found to meet the following conditions.

        i. Land disposal is infeasible, less consistent with this Program, or prohibited by law.

        ii. Nearshore disposal as part of a program to restore or enhance shoreline ecological functions and processes is not feasible.

        iii. Offshore habitat will be protected, restored, or enhanced.

        iv. Adverse effects on water quality or biologic resources from contaminated materials will be mitigated.

        v. Shifting and dispersal of spoil will be minimal.

        vi. Water quality will not be adversely affected.

    b. Dredging spoils may be used as fill or landscape material for a development in the shoreline areas that is otherwise approved by the city under this Program (ECDC 24.50.040).

    c. The city may permit dredging spoils to be temporarily deposited in the shoreline area for transfer and removal to an approved disposal site. The dredging spoils may not be stored in the shoreline area longer than is reasonably necessary and must be stored in a manner that will protect the environment and neighboring properties from undesirable effect and adverse impacts.

    d. Dredge spoil disposal is prohibited on marine shorelines between the line of extreme low tide and the ordinary high water mark, and on Lake Ballinger shorelines or beds; except that, dredge spoil may be used in approved projects for the restoration or enhancement of shoreline ecological functions and processes, such as beach nourishment.

    e. The City may impose reasonable limitation on dredge disposal operating periods and hours and may require provision for buffer strips at land disposal sites.

5. Proposals for dredging and dredge spoil disposal, when permitted, shall:

    a. Be kept to the minimum necessary to accommodate the proposed use.

    b. Include all feasible mitigating measures to protect habitats and to minimize adverse impacts such as turbidity, release of nutrients, heavy metals, sulfides, organic materials, or toxic substances, depletion of oxygen, disruption of food chains, loss of benthic productivity, and disturbance of fish runs and important localized biological communities.

    c. Be scheduled so as to not materially interfere with the migratory movements of anadromous fish.

    d. Utilize techniques that cause minimum dispersal and broadcast of bottom material.

    e. Not interfere with geohydraulic processes.

    f. Be found, through analysis by qualified professional, to be nonpolluting or shall have no significant negative pollution impact.

    g. Meet all requirements of applicable regulatory agencies.

    h. Not result in erosion of the shoreline or undermine the stability of neighboring properties.

D. Dredging and Dredge Material Application. Applications for shoreline dredging and dredge spoil disposal shall provide, at a minimum, the following information:

1. A description of the purpose of the proposed dredging and an analysis of compliance with the policies and regulations of this Program.

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 depths based on Mean Lower Low Water (MLLW) and have data points at a minimum of 2-foot depth increments.

    b. A habitat survey must be conducted and WDFW must be contacted to ensure the survey is conducted according to the most recent WDFW eelgrass/macroalgae survey guidelines.

    c. Information on stability of bedlands adjacent to proposed dredging and spoils disposal areas.

3. A detailed description of the physical, chemical and biological characteristics of the dredge spoils to be removed, including:

    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.

    a. Dredging procedure: length of time it will take to complete dredging, method of dredging and amount of materials removed.

    b. Frequency and quantity of project maintenance dredging.

5. Detailed plans for dredge spoil disposal, including specific land disposal sites and relevant information on the disposal site, including but not limited to:

        a. Spoils disposal area:

            i. Physical characteristics including location, topography, existing drainage patterns, surface and ground water;

            ii. Size and capacity of disposal site;

            iii. Means of transportation to the disposal site;

            iv. Proposed dewatering and stabilization of spoils;

            v. Methods of controlling erosion and sedimentation; and

            vi. Future use of the site and conformance with land use policies and regulations.

        b. Total initial spoils volume.

        c. Plan for disposal of maintenance spoils.

6. Hydraulic modeling studies sufficient to identify existing geo-hydraulic patterns and probable effects of dredging.

E. Dredging and dredge material disposal – Shoreline Area Regulations

1. Urban Railroad: Dredging may be permitted as a conditional use subject to policies and regulations of this Program.

2. Urban Mixed Use I: Dredging may be permitted as a conditional use subject to policies and regulations of this Program.

3. Urban Mixed Use II: Dredging may be permitted as a conditional use subject to policies and regulations of this Program.

4. Urban Mixed Use III: Dredging is prohibited except that dredging is permitted as an essential element of an approved shore restoration or enhancement plan, subject to the policies and regulations of this Program.

5. Urban Mixed Use IV: Dredging is prohibited except that dredging is permitted as an essential element of an approved shore restoration or enhancement plan, subject to the policies and regulations of this Program.

6. Shoreline Residential I: Dredging is prohibited except that dredging is permitted as an essential element of an approved shore restoration or enhancement plan, subject to the policies and regulations of this Program.

7. Shoreline Residential II: Dredging is prohibited except that dredging is permitted as an essential element of an approved shore restoration or enhancement plan, subject to the policies and regulations of this Program.

8. Shoreline Residential III: Dredging may be permitted as a conditional use subject to policies and regulations of this Program.

9. Aquatic I: Dredging may be permitted as a conditional use subject to policies and regulations of this Program. Maintenance dredging pursuant to ECDC 24.50.060.C.1.b and .c is permitted subject to the policies and regulations of this Program without a conditional use permit provided the original constructed bottom contours have been established and documented in a prior shoreline permit authorization.

10. Aquatic II: Dredging may be permitted as a conditional use subject to policies and regulations of this Program. Maintenance dredging pursuant to ECDC 24.50.060.C.1.b and .c is permitted subject to the policies and regulations of this Program without a conditional use permit provided the original constructed bottom contours have been established and documented in a prior shoreline permit authorization.

11. Conservancy: Dredging may be permitted as a conditional use subject to the policies and regulations of this Program.

12. Natural: Dredging is prohibited except that dredging is permitted as an essential element of an approved shore restoration or enhancement plan, subject to the policies and regulations of this Program.

24.50.070 Shoreline habitat and natural systems restoration and enhancement projects

A. Applicability. Shoreline habitat and natural systems enhancement projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in shorelines.

B. Shoreline Habitat and Natural Systems Restoration and Enhancement Projects Policies

1. This program recognizes the importance of the restoration of shoreline ecological functions and processes and encourages cooperative restoration efforts and programs between local, state and federal agencies, tribes, non-profit organizations, and landowners to address shorelines with impaired ecological functions and/or processes.

2. Restoration and enhancement actions should restore shoreline ecological functions and processes as well as shoreline features and should be targeted towards meeting the needs of sensitive and/or locally important plant, fish and wildlife species.

3. Priority should be given to restoration and enhancement actions that:

a. Create dynamic and sustainable ecosystems.

b. Improve water quality.

c. Restore native vegetation and natural hydrologic functions of degraded and former wetlands.

d. Restore nearshore ecosystems processes, such as sediment transport and delivery and tidal currents that create and sustain habitat.

e. Restore freshwater, nearshore, and estuarine habitat and habitat-forming processes.

f. Mitigate erosive and associated impacts caused by stormwater runoff.

g. Protect and restore wildlife corridors.

h. Protect and restore native species of vegetation, fish, and wildlife.

C. Shoreline Habitat and Natural Systems Restoration and Enhancement Projects Regulations.

Restoration shall be carried out in accordance with the approved shoreline restoration plan and in accordance with the policies and regulation of this Program.

D. Shoreline Habitat and Natural Systems Restoration and Enhancement Projects – Shoreline Area Regulations

1. Urban Railroad: Restoration activities are permitted subject to policies and regulations of this Program.

2. Urban Mixed Use I: Restoration activities are permitted subject to policies and regulations of this Program.

3. Urban Mixed Use II: Restoration activities are permitted subject to policies and regulations of this Program.

4. Urban Mixed Use III: Restoration activities are permitted subject to policies and regulations of this Program.

5. Urban Mixed Use IV: Restoration activities are permitted subject to policies and regulations of this Program.

6. Shoreline Residential I: Restoration activities are permitted subject to policies and regulations of this Program.

7. Shoreline Residential II: Restoration activities are permitted subject to policies and regulations of this Program.

8. Shoreline Residential III: Restoration activities are permitted subject to policies and regulations of this Program.

9. Aquatic I: Restoration activities are permitted subject to policies and regulations of this Program.

10. Aquatic II: Restoration activities are permitted subject to policies and regulations of this Program.

11. Conservancy: Restoration activities are permitted subject to policies and regulations of this Program.

12. Natural: Restoration activities are permitted subject to policies and regulations of this Program.

Part VI Specific Use Policies & Regulations

24.60.000 Applicability

Shoreline use and development shall be classified by the Administrator and regulated under one or more of the following applicable sections of this Chapter. Unless otherwise stated, all use and

development shall also comply with all of the General Policy and Regulations in Part IV of this Program and all of the Specific Modification Policies and Regulations in Part V of this Program.

24.60.010 Aquaculture

A. Applicability

Aquaculture is the farming or culture of food fish, shellfish, or other aquatic plants or animals any may require development such as fish hatcheries, rearing pens and structures, and shellfish rafts, as well as use of natural spawning and rearing areas. Aquaculture does not include the harvest of free-swimming fish or the harvest of shellfish not artificially planted or maintained.

B. Aquaculture Policies

1. Aquaculture is a water-dependent use and, when consistent with control of pollution and avoidance of adverse impacts to the environment and preservation of habitat for resident native species, is a preferred use of the shoreline.

2. Potential locations for aquaculture activities are relatively restricted because of specific requirements related to water quality, temperature, oxygen content, currents, adjacent land use, wind protection, commercial navigation, and salinity. The technology associated with some forms of aquaculture is still experimental and in formative states. Therefore, some latitude should be given when implementing the regulations of this section, provided that potential impacts on existing uses and shoreline ecological functions and processes should be given due consideration.

3. Preference should be given to those forms of aquaculture that involve lesser environmental and visual impacts and lesser impacts to native plant and animal species. In general, projects that require no structures, submerged structures or intertidal structures are preferred over those that involve substantial floating structures. Projects the involve little or no substrate modification are preferred over those that involve substantial modification. Projects that involve little or no supplemental food sources, pesticides, herbicides or antibiotic application are preferred over those that involve such practices.

4. Aquaculture activities 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.

5. Aquaculture should not be permitted where it would resulting a net loss of shoreline ecological functions; adversely affect the quality or extent of habitat of native species including eelgrass, kelp, and other macroalgae; adversely impact other habitat conservation areas; or interfere with navigation or other water-dependent uses.

6. Aquaculture facilities should be designed and located so as not to spread disease to native aquatic life, establish new nonnative species which cause significant ecological impacts, or significantly impact the aesthetic qualities of the shoreline.

7. The City should actively seek substantive comment on any shoreline permit application for aquaculture form all appropriate Federal, State, and local agencies; affected tribes; and the general public regarding potential adverse impacts. Comments of nearby residents or property owners directly affected by a proposal should be considered and evaluated, especially in regard to use compatibility and aesthetics.

C. Aquaculture Regulations

1. Aquaculture that involves little or no substrate modification shall be given preference over those that involve substantial modification. The application/proponent shall demonstrate that the degree of proposed substrate modification is the minimum necessary for feasible aquaculture operations at the site.

2. The installation of submerged structures, intertidal structures, and floating structures shall be allowed only when the applicant/proponent demonstrates that no alternative method of operation is feasible.

3. Aquaculture proposals that involve substantial substrate modification or sedimentation through dredging, trenching, digging, mechanical harvesting, or other similar mechanisms, shall not be permitted in areas where the proposal would adversely impact existing kelp beds or other macroalgae, eelgrass beds or habitat conservation areas.

4. Aquaculture activities, which would have a significant adverse impact on natural dynamic shoreline processes or which would result in a net loss of shoreline ecological functions, shall be prohibited.

5. Aquaculture practices shall be designed to minimize use of artificial substances and shall use chemical compounds that are least persistent and have the least impact on plants and animals.

6. If uncertainty exists regarding potential impacts of a proposed aquaculture activity, and for all experimental aquaculture activities, baseline and periodic operational monitoring by a City-approved consultant (unless otherwise provided for) may be required, at the applicant's/proponent's expense, and shall continue until adequate information is available to determine the success of the project and/or the magnitude of any probable significant adverse environmental impacts. Permits for such activities shall include specific performance measures and provisions for adjustment or termination of the project at any time if monitoring indicates significant, adverse environmental impacts that cannot be adequately mitigated.

7. New aquatic species that have not previously been cultivated in Washington State shall not be introduced into City of Edmonds waters without prior written approval of the

Director of the Washington State Department of Fish and Wildlife and the Director of the Washington Department of Health.

8. For aquaculture projects using over-water structures, storage of necessary tools and apparatus waterward of the ordinary high water mark shall be limited to containers of not more than 3 feet in height, as measured from the surface of the raft or dock.

9. No processing of any aquaculture product, except for the sorting or culling of the cultured organism and the washing or removal of surface materials or organisms after harvest, shall occur in or over the water unless specifically approved by permit. All other processing and processing facilities shall be located on land and shall be subject to the policies and regulations of this Master Program.

10. Aquaculture wastes shall be disposed of in a manner that will ensure strict compliance with all applicable governmental waste disposal standards, including but not limited to the Federal Clean Water Act, Section 401, and the Washington State Water Pollution Control Act (RCW 90.480. No garbage, wastes or debris shall be allowed to accumulate at the site of any aquaculture operation.

11. Predator control shall not involve the killing or harassment of birds or mammals. Approved controls include, but are not limited to, double netting for seals, overhead netting for birds, and 3-foot high fencing or netting for otters. The use of other non-lethal, non-abusive predator control measures shall be contingent upon receipt of written approval form the National Marine Fisheries Service and/or the U.S. Fish and Wildlife Service, as required.

12. All floating and submerged aquaculture structures and facilities in navigable waters shall be marked in accordance with U.S. Coast Guard requirements.

D. Aquaculture Application Requirements

1. Applications for aquaculture use or development shall include in their applications all information necessary to conduct a thorough evaluation of the proposed aquaculture activity, including but not limited to the following:

    a. A site plan map including:

        i. The perimeter of the proposed aquaculture operations area.

        ii. Existing bathymetry depths based on Mean Lower Low Water (MLLW datum).

        iii. Adjacent upland use, vegetation, presence of structures, docks, bulkheads and other modifications. If there are shore stabilization structures, provide the beach elevation at the toe of the structure and the top of the structure (MLLW datum).

iv. Areas where specific substrate modification will take place or structures will be constructed or installed.

v. Access provisions for barges or track equipment.

vi. Location of storage or processing structures or facilities.

b. A baseline description of existing conditions, including best available information on;

i. Water quality.

ii. Tidal variations.

iii. Prevailing storm wind conditions.

iv. Current flows.

v. Flushing rates.

vi. Littoral drift.

vii. Areas of differing substrate composition.

viii. Areas of aquatic, intertidal, and upland vegetation complexes.

ix. Existing shoreline or water uses and structures.

x. Aquatic and benthic organisms.

xi. A vegetation habitat survey must be conducted. The WDFW must be contacted prior to the survey to ensure it is conducted according to the most current WDFW eelgrass/macroalgae survey guidelines.

xii. Further baseline studies including surveys and sampling may be required depending upon the adequacy of available information, existing conditions, and the nature of the proposal.

c. A detailed description of the project proposal including:

i. Species to be reared.

ii. Substrate modification or vegetation removal.

iii. Planting, harvest and processing location, method and timing, including work proposal and construction techniques proposed, type of work, frequency, and duration.

d. Anticipated use of any feed, pesticides, herbicides, antibiotics, vaccines, growth stimulants, antifouling agents, or other chemicals, and an assessment of predicted impacts. No such materials shall be used until approval is obtained from all appropriate State and Federal agencies, including but not limited to the U.S. Food and Drug Administration, and the Washington State Departments of Ecology, Fish and Wildlife, and Agriculture, as required, and proof thereof is submitted to the City. Compounds with the least persistence shall be used.

e. Number of employees/workers necessary for the project, including average and peak employment.

f. Methods of waste disposal and predator control.

g. Methods to address pollutant loading, including biological oxygen demand (BOD).

h. Assessment of potential impacts on shoreline ecological functions and processes addressing the baseline conditions identified, including but not limited to indirect cumulative effects.

i. For floating culture facilities or other structures, the City may require a visual impact analysis. Depending on the size and complexity of the proposal, such analysis may be prepared by the applicant/proponent, without professional assistance, provided that it includes an adequate assessment of impacts.

j. Information demonstrating that the site has natural potential for the type(s) of aquaculture proposed, due to necessary substrate or other conditions, as well as water quality suitable for the type(s) of aquaculture proposed.

k. Information demonstrating that the proposed aquaculture activities will not result in a net loss of shoreline ecological functions or processes or adversely affect habitat conservation areas.

l. Information demonstrating that the proposed aquaculture activities will not substantially and materially conflict with areas devoted to established uses of the aquatic environment. Such uses include but are not limited to navigation, moorage, sport or commercial fishing, log rafting, underwater utilities, and scientific research. Existing public opportunities for gather wild stock aquatic resources on public lands shall be address in any application for aquaculture on public tidelands or bedlands. Compensation for loss of public access to public aquatic resources may be required.

2. Application for aquaculture activities must demonstrate that the proposed activity will be compatible with surrounding existing and planned uses.

a. Aquaculture activates shall comply with all applicable noise, air, and water quality standards. All projects shall be designed, operated and maintained to minimize odor and noise.

b. Aquaculture activities shall be restricted to reasonable hours and/or days of operation when necessary to minimize substantial, adverse impact from noise, light, and/or glare on nearby residents, other sensitive uses or critical habitat.

c. Aquaculture facilities shall not introduce incompatible visual elements or substantially degrade the aesthetic qualities of the shoreline. Aquaculture structures and equipment, except navigation aids, shall be designed, operated and maintained to blend into their surroundings through the use of appropriate colors and materials.

E. Aquaculture – Shoreline Area Regulations

1. Urban Railroad: Aquaculture is prohibited.

2. Urban Mixed Use I: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

3. Urban Mixed Use II: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

4. Urban Mixed Use III: Aquaculture is prohibited.

5. Urban Mixed Use IV: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

6. Shoreline Residential I: Aquaculture is prohibited.

7. Shoreline Residential II: Aquaculture is prohibited.

8. Shoreline Residential III: Aquaculture is prohibited.

9. Aquatic I: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

10. Aquatic II: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

11. Conservancy: Aquaculture may be permitted as a conditional use subject to policies and regulations of this Program.

12. Natural: Aquaculture activities that do not require structures, facilities, or mechanized harvest practices, and that will not result in the alteration of natural systems or features may be permitted as a conditional use subject to policies and regulations of this Program.

24.60.020 Boating Facilities

A. Applicability

The section applies to facilities that provide launching, storage, supplies, moorage, and other services for five or more pleasure and/or commercial watercraft. Commercial development, not accessory to the operation of a marina, shall comply with ECDC 24.60.030, Commercial Development. For the purposes of this section, boating facilities excludes docks serving four or fewer single family residences which are subject to the policies and regulations of ECDC 24.50.030, Piers, Docks and Floats.

B. Boating Facilities Policies

1. Boating facilities, including marinas and launch ramps, are water-dependent uses and should be given priority for shoreline location. Boating facilities should contribute to public access and enjoyment of waters of the state.

2. Boating facilities should provide physical and visual public shoreline access and provide for multiple use, including water-related use, to the extent compatible with shoreline ecological functions and processes and adjacent shoreline use.

3. Accessory uses to boating facilities should be limited to water-oriented uses, or uses that provide physical or visual shoreline access for substantial number of the general public.

4. Boating facilities shall be located, designed, constructed and operated in a manner that will minimize damage to shoreline processes and functions. When impacts cannot be avoided, impacts must be mitigated to assure no net loss of ecological function necessary to sustain shoreline resources.

5. Boating facilities should be located, designed and operated so that other appropriate water-dependent uses are not adversely affected.

6. Location and design of boating facilities should not unduly obstruct navigable waters and should avoid adverse effects to recreation opportunities such as fishing, pleasure boating, commercial aquaculture, swimming, beach walking, picnicking and shoreline viewing.

7. Boating facilities should be located, designed, constructed and maintained to avoid adverse proximity impacts such as noise, light and glare; aesthetic impacts to adjacent land uses; impacts to public visual access to the shoreline.

C. Boating Facilities Regulations

1. The following moorage structures are prohibited in the shoreline jurisdiction:

a. Aircraft moorage, except that aircraft may be temporarily moored (not to exceed 36 hours) in the event of severe weather conditions.

b. Covered moorage.

2. Marinas or launch ramps shall not be permitted within the following marine shoreline habitats because of their scarcity, biological productivity and sensitivity unless no alternative location is feasible, the project would not result in a net loss of shoreline ecological functions, and the proposal is otherwise consistent with this Program.

   a. Marshes, estuaries and other wetlands;

   b. Tidal pools and rock shores;

   c. Kelp beds, eelgrass beds, spawning and holding areas for forage fish(such as herring, surf smelt and sand lance);

   d. Subsistence, commercial and recreational shellfish beds; and

   e. Other critical saltwater habitats

3. Boating facilities and accessory uses shall be designed so that lawfully existing or planned public shoreline access and/or navigation rights are not unnecessarily blocked, obstructed or made dangerous.

4. The boating facility shall be designed to avoid the need for maintenance dredging.

5. Boat Storage:

   a. Marinas shall provide dry upland boat storage with a launch mechanism to protect shoreline ecological functions and processes, efficient use shoreline space and minimize consumption of public water surface area unless:

      i. No suitable upland locations exist for such facilities; or

      ii. It can be demonstrated that wet moorage would result in fewer impacts to ecological functions and processes; or

      iii. It can be demonstrated that wet moorage would enhance public use of the shoreline.

   b. Dry moorage and other storage areas should be located away from the shoreline and be landscaped with native vegetation to provide a visual and noise buffer for adjoining uses.

6. Waste Disposal.

a. Marinas shall provide pump out, holding, and/or treatment facilities for sewage contained on boats or vessels.

b. Discharge of solid waste of sewage into a water body is prohibited. Marinas and boat launch ramps shall provide adequate restroom and sewage disposal facilities in compliance with applicable health regulations.

c. Garbage or litter receptacles shall be provided and maintained by the operator at several locations convenient to users.

d. Marina operators shall post all BMP's pertaining to handling, disposal and reporting of waste, sewage, fuel, oil or toxic materials where all users may easily read them.

7. Oil Product Handling, Spills, and Wastes. Fail safe facilities and procedures for receiving, storing, dispensing, and disposing of oil or hazardous projects, as well as a spill response plan for oil and other products, shall be required of new marinas and expansion or substantial alteration of existing marinas. Compliance with Federal or State law may fulfill this requirement. Handling of fuels, chemicals or other toxic materials must be in compliance with all applicable Federal and State water quality laws as well as health, safety and engineering requirements. Spill prevention and response, including report requirements, follow applicable Federal and State requirements.

8. Public Access. Marinas and boat launches shall provide public access for as many water-dependent recreational uses as possible, commensurate with the scale of the proposal. Features for such access could include but are not limited to docks and piers, pedestrian bridges to offshore structures, fishing platforms, artificial pocket beaches, and underwater diving and viewing platforms.

9. Prohibited substances. No part of a boating facility that may come in contact with the water may be treated with or consist of creosote, oil based paints, toxic chemicals, or other substances that would be harmful to the aquatic environment, unless specifically permitted and authorized by appropriate State and Federal regulatory agencies.

10. If the boating facility will extend waterward of the inner harbor line or extended mooring on waters of the state is proposed, the applicant must obtain a lease from the Department of Natural Resources prior to proposing this use.

11. No structure regulated under this section, other than moorage structures, boat gear storage lockers, and sheds associated with gas and oil sales for boats, may be waterward of the ordinary high water mark.

D. Boating Facilities – Shoreline Area Regulations

1. Urban Railroad: Boating facilities are prohibited.

2. Urban Mixed Use I

    a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

    b. Permitted Accessory Uses:

        i. Boat and motor sales

        ii. Boat repair and service, including dry docks, boat yards and similar activities

        iii. Boat motor/engine repair and service; provided, that commercial boat motor/engine repair involving complete engine overhaul or rebuilding shall take place within a building or be screened from public view.

        iv. Pumping facilities to remove effluent from boat holding tanks

        v. Dry land boat storage; provided, however, that stacked storage shall not be permitted to exceed the maximum permitted height in the Urban Mixed Use I shoreline environment.

        vi. Meeting and special event rooms.

        vii. Gas and oil sales for boats, if;

            A. All storage tanks are underground and located upland of the ordinary high water mark; and

            B. The use has facilities to contain and clean up gas and oil spills.

            C. Gas and oil sales may be conducted with an Overwater shed that is not more than 150 square feet in area and 15 feet in height as measured from the top of the deck.

        viii. Boat launch ramps that meet the following requirements:

            A. The ramp is paved with concrete.

            B. There is sufficient room on the subject property for maneuvering and parking so that traffic impact on the adjacent public right-of-way will not be significant.

            C. Access to the ramp is not directly from the adjacent public right-of-way.

            D. The design of the site is specifically approved by the city.

ix. Waste oil storage tanks not to exceed 500 gallons may be located above ground. Hazardous waste may be stored temporarily above ground in not more than nine 55-gallon drums. Such drums shall have secondary containment. Waste oil and hazardous storage tanks for the temporary storage of waste or hazardous substances which exceed these standards must be place underground. No tank of any kind intended for the permanent storage of waste or hazardous substances shall be permitted

3. Urban Mixed Use II

a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

b. Moorage structures and boating facilities may not be located waterward of public parks, public beaches, or public facilities, nor may they be located so as to obstruct waterward view from these public uses.

c. Permitted Accessory Uses:

i. Boat and motor sales

ii. Boat repair and service, including dry docks, boat yards and similar activities

iii. Boat motor/engine repair and service; provided, that commercial boat motor/engine repair involving complete engine overhaul or rebuilding shall take place within a building or be screened from public view.

iv. Pumping facilities to remove effluent from boat holding tanks

v. Meeting and special event rooms.

vi. Gas and oil sales for boats, if;

1. All storage tanks are underground and located upland of the ordinary high water mark; and

2. The use has facilities to contain and clean up gas and oil spills.

3. Gas and oil sales may be conducted with an Overwater shed that is not more than 150 square feet in area and 15 feet in height as measured from the top of the deck.

vii. Boat launch ramps that meet the following requirements:

1. The ramp is paved with concrete.

2. There is sufficient room on the subject property for maneuvering and parking so that traffic impact on the adjacent public right-of-way will not be significant.

3. Access to the ramp is not directly from the adjacent public right-of-way.

4. The design of the site is specifically approved by the city.

viii. Waste oil storage tanks not to exceed 500 gallons may be located above ground. Hazardous waste may be stored temporarily above ground in not more than nine 55-gallon drums. Such drums shall have secondary containment. Waste oil and hazardous storage tanks for the temporary storage of waste or hazardous substances which exceed these standards must be placed underground. No tank of any kind intended for the permanent storage of waste or hazardous substances shall be permitted.

4. Urban Mixed Use III: Boating facilities are prohibited.

5. Urban Mixed Use IV: Boating facilities are prohibited.

6. Shoreline Residential I. Boating facilities are prohibited.

7. Shoreline Residential II. Boating facilities are prohibited.

8. Shoreline Residential III

   a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

   b. Accessory uses are not permitted in conjunction with moorage structure.

   c. Moorage structures and boating facilities may only be developed and used accessory to detached dwelling units on waterfront lots. Use of the moorage structure and facilities is limited to the residents and guests of the waterfront lots to which the moorage is accessory. Moorage space may not be leased, rented, sold, or otherwise made available to other than the residents and guests of the waterfront lots to which the moorage is accessory.

9. Aquatic I

   a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

   b. If the subject property provides moorage for not more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 25 feet of a public park.

ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet, provided however that joint use moorage facilities may be located within the setback with the lot which shares the facility.

c. If the subject property provides moorage for more than two boats, the following setbacks apply:

i. No moorage structure on private property may be within 100 feet of a public park.

ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

iii. The side property line setback is 10 feet, provided however that joint use moorage facilities may be located within the setback with the lot which shares the facility.

d. Boat gear storage lockers shall not exceed 18 square feet in area and three feet in height as measured from the top of the deck. Only one storage locker is permitted per boat slip.

10. Aquatic II

a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

b. No moorage structure on private property may be within 100 feet of a public park.

c. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

d. The side property line setback is 10 feet, provided however that joint use moorage facilities may be located within the setback with the lot which shares the facility.

e. Boat gear storage lockers shall not exceed 18 square feet in area and three feet in height as measured from the top of the deck. Only one storage locker is permitted per boat slip. This provision does not apply to under covered moorage structures.

11. Conservancy

a. Boating facilities are permitted subject to the policies and regulations of this Master Program.

b. Accessory uses are not permitted in conjunction with boating facilities.

c. Moorage structures and boating facilities may only be developed and used accessory to detached dwelling units on waterfront lots. Use of the moorage structure and facilities is limited to the residents and guests of the waterfront lots to which the moorage is accessory. Moorage space may not be leased, rented, sold, or otherwise made available to other than the residents and guests of the waterfront lots to which the moorage is accessory.

d. Moorage structures and boating facilities may not provide moorage for more than two boats; provided, however, that waterfront lots are encourage to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility.

e. If the subject property provides moorage for not more than two boats, the following setbacks apply:

   i. No moorage structure on private property may be within 25 feet of a public park.

   ii. No moorage structure may be within 25 feet of another moorage structure not on the subject property.

   iii. The side property line setback is 10 feet, provided however that joint use moorage facilities may be located within the setback with the lot which shares the facility.

f. If the subject property provides moorage for more than two boats, the following setbacks apply:

   i. No moorage structure on private property may be within 100 feet of a public park.

   ii. No moorage structure may be with 25 feet of another moorage structure not on the subject property.

   iii. The side property line setback is 10 feet, provided however that joint use moorage facilities may be located within the setback with the lot which shares the facility.

12. Natural. Boating facilities are prohibited.

24.60.030 Commercial Development and Light Industrial

A. Applicability

Commercial development means those uses and facilities that are involved in wholesale or retail trade or business activities. Examples include but are not limited to restaurants, hotels, shops, offices, and recreation facilities. Industry applies to those businesses or uses involved in the production, processing, manufacturing, or fabrication of goods. Warehousing and

storage of materials or products is considered part of the industrial process. This is a broad category that mostly applies to the downtown Commercial Waterfront (CW) where development must also comply with ECDC 16.55. Uses and activities associate with commercial development that are identified as separate use activities in this Master Program, such as Boating Facilities, Piers and Docks, Utilities, etc. are subject to the regulations established for those uses in addition to the standards for commercial development.

The design, layout and operation of certain commercial uses directly affects their classification with regard to whether or not they qualify as water related or water enjoyment uses.

B. Commercial Development and Light Industrial Policies

1. In securing shoreline locations for commercial and light industrial use, preference should be given first to water-dependent commercial uses, then to water-related, water-enjoyment commercial uses.

2. Restoration of impaired shoreline ecological functions and processes should be encouraged as part of commercial and light industrial development.

3. Commercial and light industrial development should ensure visual compatibility with adjacent noncommercial properties.

4. Commercial and light industrial uses located in the shoreline should provide public access in accordance with constitutional or other legal limitations unless such improvements are demonstrated to be infeasible or present hazards to life and property.

5. Commercial and light industrial development should be encouraged to locate where environmental cleanup and restoration of the shoreline area can be incorporated.

C. Commercial Development and Light Industrial Regulations

1. Commercial and light industrial uses are allowed subject to the policies and regulations of ECDC 24.40.020 and the specific criteria below:

   a. Water-dependent commercial and light industrial uses shall be given preference over water-related and water-enjoyment commercial uses. Prior to approval of water dependent uses, the Administrator shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water-dependent use.

   b. Water-related commercial and light industrial uses may not be approved if the use displaces existing water-dependent uses. Prior to approval of water-related commercial uses, the Administrator shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water-related use.

c. Water-enjoyment commercial uses may not be approved if they displace existing water-dependent or water-related uses. Prior to approval of water-enjoyment uses, the Administrator shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water-enjoyment use.

d. Nonwater-oriented commercial and light industrial uses may be permitted where located on a site physically separated from the shoreline by another property in separate ownership or a public right-of-way such that access for water-oriented use is precluded. All other nonwater-oriented uses are prohibited in the shoreline unless the use provides significant public benefit with respect to the objectives of this Master Program and the Shoreline Management Act and is:

i. Part of a mixed use project that includes a water-oriented use; or

ii. Proposed on a site where navigability is severely limited.

2. Over-water construction of commercial and light industrial uses is prohibited except as follows:

a. Only those portions of water-dependent commercial and light industrial uses that require over-water facilities shall be permitted to locate waterward of the ordinary high-water mark.

b. Nonwater-dependent commercial and light industrial uses shall not be allowed over water except in limited instances where they are appurtenant to and necessary in support of water-dependent uses.

D. Commercial Development and Light Industrial– Shoreline Area Regulations

1. Urban Railroad: Commercial and light industrial use and development is prohibited.

2. Urban Mixed Use I:

a. Water-oriented commercial and light industrial use and development is permitted subject to the policies and regulations of this Master Program. Nonwater-oriented commercial use and development may be permitted subject to the criteria for such uses in ECDC 24.60.030.C.1.d.

b. A minimum of 15-foot setback is required from lot lines adjacent to shoreline residential environments. This area must be fully landscaped and include a minimum six-foot high fence or hedge.

3. Urban Mixed Use II:

a. Water-oriented commercial and light industrial use and development is permitted subject to the policies and regulations of this Master Program. Nonwater-oriented commercial use and development may be permitted subject to the criteria for such uses in ECDC 24.60.030.C.1.d.

b. A minimum of 15-foot setback is required from lot lines adjacent to shoreline residential environments. This area must be fully landscaped and include a minimum six-foot high fence or hedge.

4. Urban Mixed Use III: Commercial use is permitted subject to the policies and regulations of this Master Program. Nonwater-oriented commercial use and development shall be permitted.

5. Urban Mixed Use IV: Commercial and light industrial use is permitted subject to the policies and regulations of this Master Program. Nonwater-oriented commercial use and development shall be permitted.

6. Shoreline Residential I: Commercial and light industrial use and development is prohibited.

7. Shoreline Residential II: Commercial and light industrial use and development is prohibited.

8. Shoreline Residential III: Commercial and light industrial use and development is prohibited.

9. Aquatic I: Commercial and light industrial use and development is prohibited, except that water-dependent uses and appurtenant structures may be permitted subject to the use and development regulations of the abutting upland shoreline area designation.

10. Aquatic II: Commercial and light industrial use and development is prohibited, except that water-dependent uses and appurtenant structures may be permitted subject to the use and development regulations of the abutting upland shoreline area designation.

11. Conservancy: Commercial and light industrial use and development is prohibited.

12. Natural: Commercial and light industrial use and development is prohibited.

24.60.040 Forest Practices

A. For the purposes of this Master Program, preparatory work associated with the conversion of land to non-forestry uses and/or developments shall not be considered forest practices and shall be reviewed in accordance with the provisions for the proposed non-forestry use, the general provisions of this Master Program, including vegetation conservation, and shall be limited to the minimum necessary.

B. All forest practices undertaken on shorelines shall comply with the applicable policies and provisions of the Forest Practices Act, Chapter 76.09 RCW as amended, and any regulations adopted pursuant thereto (WAC 222), as administered by the Department of Natural Resources and local provisions contained in Title 20 ECDC.

24.60.050 In-stream Structures

A. Applicability.

"In-Stream structure" means a structure place by humans within a stream or river waterward of the ordinary high water mark that either causes or has the potential to cause water impoundment or the diversion, obstruction, or modification of water flow.

B. In-stream Structure Policies

1. In-stream structures should provide for the protection and preservation of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas.

C. In-stream Structure Regulations.

1. The location and planning of in-stream structures shall give due consideration to the full range of public interests, watershed functions and processes, and environmental concerns.

2. In-stream structures shall be constructed and maintained in a manner that does not degrade the quality of affected waters.

3. In-stream structures shall allow for normal ground water movement and surface runoff.

4. In-stream structures shall preserve valuable recreation resources and aesthetics values.

24.60.060 Recreational Development

A. Applicability

Recreational development provides opportunities for play, sports, relaxation, amusement, or contemplation. It includes facilities for passive recreational activities, such as hiking, photography, viewing, and fishing. It also includes facilities for active or more intensive uses such as parks, campgrounds, and golf courses. This section applies to both publicly and privately owned shoreline facilities intended for use by the public or a private club, group, association, or individual. Commercial recreational development must be consistent with he provisions of this section and the provisions of ECDC 24.60.030 for commercial uses.

This Master Program gives priority to recreational development that is primarily related to access to, enjoyment and use of the water and shorelines of the state.

B. Recreational Development Policies

1. Encourage the coordination of local, state, and federal recreation planning so as to mutually address recreational needs. Shoreline recreational development should be consistent with all adopted park, recreation, and open space plans.

2. Encourage the linkage of shoreline parks, recreation areas, and public access points in a linear system, such as hiking paths, bicycle paths, and scenic drives.

3. Locate and design recreational developments in a manner that preserves, enhances, or creates scenic views and vistas.

4. Locate and design recreational facilities to minimize adverse impacts including those related to stormwater runoff, water quality, visual qualities, public access, and vegetation and habitat maintenance.

5. Encourage physical and visual access to shorelines and surface waters.

6. Locate golf courses outside of the shoreline area.

7. Prohibit use of recreational off-road vehicles within the shoreline area, except by public agencies for maintenance operations and emergency services.

C. Recreational Development Regulations

Where significant adverse impacts are adequately mitigated resulting in no net loss of ecological processes or functions, recreational development is a priority use for shoreline location, subject to the following:

1. The following recreational uses and developments are prohibited:

   a. Golf courses;

   b. Use of recreational off-road vehicles is prohibited within the shoreline, except by public agencies for maintenance operations and emergency services;

   c. Campgrounds; and

   d. Overnight recreational spaces or sites located within the shoreline.

2. Recreational facilities shall make adequate provisions for:

   a. Vehicular and pedestrian access, both on-site and off-site;

b. Vehicular traffic, both inside and outside the facility;

c. Vehicular parking;

d. Water supply, sewage disposal, and garbage collection;

e. The prevention of overflows and trespasses onto adjacent properties;

f. Screening, buffer strips, fences, and signs to prevent park overflow and to protect the value and enjoyment of adjacent or nearby private or public properties;

g. Security; and

h. Maintenance.

3. Valuable shoreline resources and fragile or unique areas, such as wetlands and accretion shore forms, shall be used only for non-intensive recreation activities.

4. Encourage recreational facilities to provide signage and enforce regulations that prohibit tree cutting and limit the taking of marine life, driftwood, and the like.

5. Signs associated with recreational facilities shall be kept to a minimum in number and size and shall be erected as informational or directional aids only.

6. Stairways and landings shall be located upland of existing bulkheads, banks, and the ordinary high water mark unless integral to a water-dependent use or Overwater structure permitted by this Master Program.

D. Recreational Development – Shoreline Area Regulations

1. Urban Railroad: Recreational development prohibited.

2. Urban Mixed Use I: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

3. Urban Mixed Use II: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

4. Urban Mixed Use III: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

5. Urban Mixed Use IV: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

6. Shoreline Residential I: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

7. Shoreline Residential II: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

8. Shoreline Residential III: Water-oriented recreational use and development is permitted subject to the policies and regulations of this Master Program.

9. Aquatic I: Water-oriented recreational use and development is permitted, subject to the use and development regulations of the abutting upland shoreline area designation; provided that, underwater parks may be permitted as a conditional use.

10. Aquatic II: Water-oriented recreational use and development is permitted, subject to the use and development regulations of the abutting upland shoreline area designation; provided that, underwater parks may be permitted as a conditional use.

11. Conservancy: Low intensity water-oriented recreational use and development is permitted subject to the policies and regulations of the Master Program and the following criteria:

    a. Structures will not result in more than ten percent (10%) building coverage or 4,000 square feet, whichever is greater and total impervious surface will not exceed twenty percent (20%), or 10,000 square feet, whichever is greater.

    b. Alteration of topography shall be limited to the minimum necessary to accommodate allowed development.

    c. Use of areas or facilities will not result in use patterns that lead to degradation of shoreline ecological functions and processes.

12. Natural: Low intensity water-oriented recreational use and development consisting of primitive trails may be permitted as a conditional use subject to the policies and regulations of this Master Program and the following criteria:

    a. Essential minor structures such as trails, boardwalks, piers, stairs, small picnic areas, viewpoints, restrooms, interpretive facilities, or development that will not result in a net loss of shoreline ecological functions and processes are permitted, subject to the policies and regulations of this Master Program.

    b. Any necessary landscaping shall use native or similar self-maintaining vegetation.

    c. Recreational development requiring extensive structures or substantial alterations to topography or native vegetation is prohibited.

24.60.070 Residential Development

A. Applicability

Residential development refers to one of more buildings, structures, lots, parcels, or portions of parcels that are used or intended to be used to provide a dwelling for human beings. Residential development includes single-family residences, duplexes, other detached dwellings, multifamily residences, apartments, townhouses, mobile home parks, group housing, condominiums, subdivisions, planned unit developments, and short subdivisions. Residential development also includes accessory uses and structures such as garages, sheds, tennis courts, swimming pools, driveways, parking areas, fences, cabanas, saunas, and guest cottages, when allowed by the underlying zoning. Single-family residential development is identified as a priority use the shoreline area when developed in a manner consistent with control of pollution and prevention of damage to the natural environment.

A Substantial Development Permit is not required for construction of a single-family residence by an owner, lessee, or contract purchaser for his own use of the use of his family. However, such construction and all normal appurtenant structures must otherwise conform to this Master Program. In addition, when applicable, all residential development is subject to the variance and conditional use requirements of this Master Program.

Uses and facilities associate with residential development, which are identified as separate use activities or modifications in this Master Program, such as clearing, grading and landfill are subject to the regulations established for those uses in this Master Program.

B. Residential Development Policies

1. Discourage residential structures or accessory structures in areas waterward of the ordinary high water mark, within nearshore management areas, or within wetlands, habitat conservation areas, flood hazard areas or their respective buffers.

2. Allowable density of new residential development should comply with applicable comprehensive plan goals and policies, zoning restrictions, and shoreline area designation standards. The density of development should be appropriate to the local natural and cultural features.

3. Structures or development for uses accessory to residential use should preserve shoreline open space, be visually and physically compatible with adjacent shoreline features, be reasonable in size and purpose, and result in no net loss of shoreline ecological functions and processes.

4. New residential development should be planned and built in accordance with the policies and regulations in ECDC 24.50.020 and to minimize the need for shoreline stabilization and flood hazard reduction measures.

5. Measures to conserve native vegetation along shorelines should be required for all residential development. Vegetation conservation may include avoidance or minimization of clearing or grading, restoration of areas of native vegetation, and/or control of invasive species.

6. Consider additional design features for new Planned Residential Developments, subdivisions and short subdivisions that:

    a. Cluster dwelling units in order to preserve natural features, minimize physical impacts, and provide for public access to the shoreline.

    b. Maintain usable waterfront areas for the common use of all property owners with the development.

7. Encourage joint use of shoreline facilities, including access stairs.

C. Residential Development Regulations

1. Clearing and grading associated with a single-family residence may be exempted from the shoreline substantial development permit requirement, provided the following conditions are met:

    a. The clearing and grading activity is confined to the construction site; and

    b. Grading does not exceed 250 cubic yards.

2. New over-water residences, including floating homes, are prohibited.

3. Residential development shall be:

    a. Located and designed to avoid the need for structural shore defense and flood protection works in the foreseeable future.

    b. Designed to minimize potential conflicts with the use of adjacent public lands and areas of public access. This may include providing a physical separation to reinforce the distinction between public and private space, achieved by providing adequate space, through screening with landscape planting or fences, or other means.

4. Subdivisions:

    a. Shall comply with local plans, codes, and ordinances.

    b. Shall be designed to exemplify the definition and policy of the applicable shoreline designation as well as the environmental and physical capabilities of the subject site.

c. Shall be designed, configured and developed in a manner that assures no net loss of ecological functions results from the plat or subdivision at full build-out of all lots.

d. Shall be prohibited if flood control or shoreline protection measures are necessary to create a residential lot or site area.

e. Shall provide a community recreation and/or open space area for the benefit of all residents or property owners in the development; provided that such provisions shall not apply to lot line adjustments or lot consolidation.

f. Public access for the subdivision of a property into 4 or more lots shall be considered in accordance with ECDC 24.40.040 Public Access and Views.

g. May be required to cluster residential units and structures to avoid wetlands, habitat conservation areas or landslide hazards that are located on the development site.

h. Shall be designed to minimize potential conflicts with the use of adjacent public lands and areas of public access. This may include providing a physical separation to reinforce the distinction between public and private space, achieved by providing adequate space, through screening with landscape planting or fences, or other means.

i. Shall comply with the applicable policies and performance standards of this Master Program, with regard to roads, utilities, and other improvements.

5. New multifamily residential development should provide community and/or public access in accordance with ECDC 24.40.040 Public Access and Views.

D. Residential Development – Shoreline Area Regulations

1. Urban Railroad: Residential development is prohibited.

2. Urban Mixed Use I: Residential development is prohibited.

3. Urban Mixed Use II: Residential development is prohibited.

4. Urban Mixed Use III: Single family and multifamily residential development is permitted subject to the policies and regulations of this Master Program.

5. Urban Mixed Use IV: Residential development is prohibited.

6. Shoreline Residential I: Single family residential development is permitted subject to the policies and regulations of this Master Program.

7. Shoreline Residential II: Single family residential development is permitted subject to the policies and regulations of this Master Program.

8. Shoreline Residential III: Single family residential development is permitted subject to the policies and regulations of this Master Program.

9. Aquatic I: Residential development is prohibited.

10. Aquatic II: Residential development is prohibited.

11. Conservancy: Residential development is prohibited.

12. Natural: Residential development is prohibited.

24.60.080 Transportation and Parking

A. Applicability

Transportation facilities are those structures and developments that aid in land and water surface movement of people, goods, and services. They include roads and highways, bridges and causeways, bikeways, trails, railroad facilities, ferry terminals, float plane terminals, airports, heliports, and other related facilities.

B. Transportation and Parking Policies

1. New or expanded public transportation facility route selection and development should be coordinated with related local and state government land use and circulation planning.

2. Transportation system plans and transportation projects within shorelines should provide safe travel ways for non-motorized traffic such as pedestrians and bicyclists. Space for such uses should be required along roads on shorelines, where appropriate, and should be considered when rights-of-way are being vacated.

3. Transportation system route planning, acquisition, and design within the shoreline should provide, where possible, for compatible uses such as utility lines, pedestrian shore access or view points, or recreational trails.

4. Avoid unnecessary duplication or roads by making use of existing roads where practicable.

5. Public transportation routes, particularly arterial highways and railways, should be located, designed, and maintained to permit safe enjoyment of adjacent shore areas and properties by other appropriate uses such as recreation or residences. Vegetative screening or other buffering should be considered.

6. Parking is not a preferred use in shorelines and should only be allowed to support authorized uses where no feasible alternatives exist.

C. Transportation and Parking Regulations

1. Transportation and parking facilities shall be planned, located, and designed so that 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.

2. Roads shall be located to avoid critical areas. Landfills for transportation facility development are prohibited in water bodies, wetlands, and on accretion beaches, except when all structural and upland alternatives have been proven infeasible and the transportation facilities are necessary to support uses consistent with this program. Such landfill may be permit as a Conditional Use Permit and must comply with the provisions of ECDC 24.50.040. Where impacts cannot be avoided, impacts must be mitigated to assure no net loss of ecological function necessary to sustain shoreline resources.

3. Culverts, bridges and similar devices shall be designed to pass water, sediment, and debris loads anticipated under appropriate hydraulic analysis.

4. All roads and drainage systems shall be maintained to prevent erosion and/or water quality degradation.

5. Road routes shall make provisions for pedestrian, bicycle, and other non-motorized modes of travel whenever feasible.

6. Parking facilities are not a water-dependent use and shall only be permitted within the shoreline to support an authorized use where it can be demonstrated that there are no feasible alternative locations away from the shoreline.

7. All uses must provide sufficient off-street parking spaces in order to accommodate the reasonably anticipated number of vehicles that will be coming to the subject property. Specific parking standards for uses are identified in the ECDC 17.50, as now or hereafter mended.

8. Parking layouts must be designed efficiently to use the minimum amount of space necessary to provide the required parking and safe and reasonable access. Parking should not be located between the building(s) on the subject property and the shoreline. Exterior parking areas, other than for detached dwelling units, must be attractively landscaped with vegetation that will not obstruct view of the shoreline from adjacent public areas or adjacent public rights-of-way.

9. Transportation facilities shall be constructed of materials that will preclude or minimize adverse affects on water quality or aquatic plants and animals over the long term. Elements within or over water shall be constructed of materials approved by applicable state agencies for use in water for both submerged portions and other components to avoid discharge of pollutants from splash, rain or runoff. No part of a transportation facility that may come in contact with the water may be treated with or consist, in whole or in part, of creosote, oil based paints, toxic chemicals or other substances that would be

harmful to the aquatic environment, unless specifically permitted and authorized by appropriate state and federal regulatory agencies.

10. Maintenance activity including vegetation control and erosion control shall be carried out consistent with this Master Program. Necessary minor resurfacing of existing roadways and replacement of culverts that improve shoreline ecological functions may be exempt from substantial development permit requirements as provided by ECDC 24.80.010.

11. Ferry Terminals:

    a. The maximum permitted height of structures waterward of the ordinary high water mark shall not exceed 35 above the OHWM, except as provided below:

        i. Structures related to the loading of pedestrian passengers shall be permitted to exceed the maximum permitted height limit when necessary to perform the intended function.

        ii. Buildings and structures which house pedestrian passengers, employees and equipment storage shall be permitted to be 20 feet above the height of the ferry loading dock.

        iii. View analysis shall be conducted for ferry structures exceeding 35 feet above the OHWM and structures designed to minimize impacts on view corridors.

    b. The maximum permitted height of structures landward of the ordinary high water mark shall not exceed 30 feet above the average grade level except that bridge and overpasses may exceed the maximum height limit when necessary to perform their intended function.

12. Railroads:

    a. Overwater Structures are prohibited.

    b. Accessory buildings shall be located on the landward side of the railroad tracks and a minimum of five feet from the property line.

    c. The size and configuration of structures shall conform to this program unless federal safety standards require a different size or configuration.

D. Transportation and Parking – Shoreline Area Regulations

1. Urban Railroad

    a. The principal use permitted in this shoreline area is the use of the subject property by the railroad for its tracks (i.e., single main track, double main tracks and team tracks), yards and buildings.

b. The following accessory uses structures and facilities are permitted subject to the policies and regulations of this Master Program:

i. Subgrade and road bed;

ii. Railroad track/road crossing signals;

iii. Slide fences;

iv. Railroad signals;

v. Bridges (i.e. pedestrian overpass bridges, vehicular overpass bridges and pipeline overpass bridges);

vi. Railroad signage (i.e., speed, track, whistle, etc.);

vii. Drainage facilities, including culverts;

viii. Railroad crossings;

ix. Buildings for housing of maintenance people not to exceed 600 square feet in area;

x. Storage of items for maintaining the area;

xi. Railway loading platforms;

xii. Underpasses; and

xiii. Pedestrian safety fencing provided it does not exceed six feet in height above grade and is not constructed of solid sight-obscuring material. If the proposed fence is to exceed either six feet in height, or is constructed of solid sight obscuring material, then a shoreline conditional use permit is required.

xiv. The Maximum permitted height of structures is 25 feet above grade level, except as specified below:

1. Accessory buildings shall not exceed 15 feet in height above average grade level.

2. Bridges and overpasses may exceed the maximum height limit when necessary to perform their intended function.

3. Slide fences shall not exceed fix feet in height.

4. Signal devices and signage shall be determined on a case-by-case basis according to the goals and policies of this Shoreline Master Program and the Shoreline Management Act and when required by federal law or regulation.

c. Ferry terminals may be permitted as a conditional use subject to the policies and regulations of this Master Program.

2. Urban Mixed Use I:

a. Railroads are permitted subject to the policies and regulations of this Master Program consistent with ECDC 24.60.070.D.1, except that the maximum permitted height of structures is 30 feet, subjects to the same exception listed in ECDC 24.60.070.D.1.b.xiii.1 through ECDC 24.60.070.D.1.b.xiii.4.

b. Transportation facilities (including ferry terminals and railroads) are permitted subject to the policies and regulations of this Master Program. Parking areas not serving a specific approved water dependent use may be permitted as a conditional use, provided there is no feasible location outside of the shoreline.

c. Parking facilities. In the Urban Mixed Use I environment, the 60-foot setback for parking established in ECDC 24.40.090 may be reduced by a maximum of 20 feet if a public walkway or publicly accessible open space is provided waterward of the bulkhead. The parking setback may be reduced by one foot for every one foot of public walkway or publicly accessible open space that is provided waterward of the OHWM, to a maximum of 20 feet. The minimum setback for parking facilities shall be no less than 40 feet from the bulkhead.

3. Urban Mixed Use II:

a. Railroads are permitted subject to the policies and regulations of this Master Program consistent with ECDC 24.60.070.D.1, except that the maximum permitted height of structures is 30 feet, subjects to the same exception listed in ECDC 24.60.070.D.1.b.xiii.1 through ECDC 24.60.070.D.1.b.xiii.4.

b. Transportation facilities (including ferry terminals and railroads) are permitted subject to the policies and regulations of this Master Program. Parking areas not serving specific approved water dependent uses may be permitted as a conditional use, provided there is no feasible location outside of the shoreline.

c. Parking facilities. In the Urban Mixed Use II environment, the 60-foot setback for parking established in ECDC 24.40.090 may be reduced by a maximum of 20 feet if a public walkway or publicly accessible open space is provided waterward of the bulkhead. The parking setback may be reduced by one foot for every one foot of public walkway or publicly accessible open space that is provided waterward of the OHWM, to a maximum of 20 feet. The minimum setback for parking facilities shall be no less than 40 feet from the bulkhead.

4. Urban Mixed Use III:

    a. Unless permitted as an essential public facility, the following transportation facilities are prohibited in this shoreline area designation:

        i. Railroads.

    b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

5. Urban Mixed Use IV:

    a. Unless permitted as an essential public facility, the following transportation facilities are prohibited in this shoreline area designation:

        i. Railroads.

    b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

6. Shoreline Residential I

    a. Unless permitted as an essential public facility, the following transportation facilities are prohibited in this shoreline area designation:

        i. Railroads;

        ii. Ferry Terminals; and

        iii. Parking.

    b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

7. Shoreline Residential II

    a. The following transportation facilities are prohibited in this shoreline area designation:

        i. Railroads;

        ii. Ferry Terminals; and

iii. Parking.

b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

8. Shoreline Residential III

a. The following transportation facilities are prohibited in this shoreline area designation:

i. Railroads;

ii. Ferry Terminals; and

iii. Parking.

b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

9. Aquatic I

a. The following transportation facilities are prohibited in this shoreline area designation:

i. Parking.

b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

c. Ferry terminals may be permitted as a conditional use subject to the policies and regulations of this Master Program.

d. Transportation facilities of statewide significance currently located on the shoreline may be expanded or altered as a conditional use upon demonstration that alternatives to expanding in or alteration of the Aquatic I environment are not feasible.

10. Aquatic II

a. The following transportation facilities are prohibited in this shoreline area designation:

i. Parking.

b. Transportation facilities not specifically prohibited above are permitted subject to the policies and regulations of this Master Program.

c. Ferry terminals may be permitted as a conditional use subject to the policies and regulations of this Master Program.

d. Transportation facilities of statewide significance currently located on the shoreline may be expanded or altered as a conditional use upon demonstration that alternatives to expanding in or alteration of the Aquatic II environment are not feasible.

11. Conservancy

a. The following transportation facilities are prohibited in this shoreline area designation:

i. Railroads; and

ii. Ferry terminals.

b. Transportation facilities not specifically prohibited above may be permitted as a conditional use subject to the policies and regulations of this Master Program, provided there is no feasible location outside of the shoreline.

c. Parking facilities may be permitted as a conditional use subject to the policies and regulations of this Master Program.

12. Natural

a. The following transportation facilities are prohibited in this shoreline area designation:

i. Railroads;

ii. Ferry terminals; and

iii. Parking.

b. Transportation facilities not specifically prohibited above are may be permitted as a conditional use subject to the policies and regulations of this Master Program, provided there is no feasible location outside of the shoreline.

24.60.090 Utilities

A. Applicability

Utilities are services and facilities that produce, convey, store, or process power, gas, sewage, communications, oil, waste, and the like. On-site utility features serving a primary use, such as a water, sewer or gas line to a residence, are "accessory utilities" and shall be considered a part of the primary use.

B. Utilities Policies

1. Solid waste disposal activities and facilities are prohibited in shoreline areas.

2. New public or private utilities should be located inland from the land/water interface, preferably out of the shoreline jurisdiction, unless this location is reasonably necessary for the efficient operation of the utility facility or service.

3. Utilities should be located and designed to avoid negative impacts to public recreation and public access areas and significant natural, historic, archaeological or cultural resources.

4. Utilities should be located such that shoreline defense works will not be required for the life of the project.

5. All utility development should be consistent with and coordinated with all local government and state planning, including comprehensive plans and single purpose plans to meet the needs of future populations in areas planned to accommodate growth. Site planning and rights-of-way for utility development should provide for compatible multiple uses such as shore access, trails, and recreation or other appropriate use whenever possible; utility right-of-way acquisition should also be coordinated with transportation and recreation planning.

6. Utilities should be located in existing rights-of-way and corridors whenever feasible.

7. Utilities serving new development should be located underground, wherever feasible.

8. Development of pipelines and cables on aquatic lands and tidelands, particularly those running roughly parallel to the shoreline and development of facilities that may require periodic maintenance which would disrupt shoreline ecological functions should be discourage except where no other feasible alternative exists. When permitted, provisions shall assure that the facilities do not result in a net loss of shoreline ecological functions or significant impacts to other shoreline resources and values.

9. Utilities should be designed and development to preserve scenic views and aesthetic qualities of the shoreline area.

C. Utilities Regulations

1. Prohibited Pipelines. Except for gas or oil pipelines, city-approved sanitary sewer, stormwater outfall lines, or other conveyance systems for on-site drainage collection

systems for approved boat wash-down to special on-site treatment facilities otherwise permitted in this section, no pipeline for the transmission of any substance that would be hazardous to the aquatic environment may be constructed within the shoreline area.

2. Except where infeasible, all utility lines, pipes, conduits, meters, vaults and similar infrastructures and appurtenances must be placed underground consistent with the standards of the serving utility.

3. Utilities may not be located waterward of the ordinary high water mark unless no practicable alternative exists and this location is essential to the operation of the utility.

4. Utilities shall be located adjacent to or within existing utility or circulation easements or rights-of-way whenever feasible. Joint use of rights-of-way and corridors is encouraged.

5. Utility production and processing facilities, such as power plants and sewage treatment plants, or parts of those facilities, that are not water-dependent shall be located outside of shoreline jurisdiction unless alternative locations are demonstrated to be infeasible and it is demonstrated that the facilities do not result in a net loss of shoreline ecological functions and processes or significant adverse impact to other shoreline resources and values such as parks and recreation facilities, public access and aesthetic resources.

6. Outfall pipelines and diffusers are water-dependent, but should be located only where there will be no net loss in shoreline ecological functions and processes or adverse impacts upon shoreline resources and values.

7. Facilities for processing, storage and disposal of solid waste are not normally water-dependent. Components that are not water-dependent shall not be permitted in shoreline jurisdiction.

8. Temporary storage of solid waste in suitable receptacles is permitted as an accessory use to a primary permitted use, or for litter control.

9. When feasible, utility development shall include public access to the shoreline, trail systems, and other forms of recreation, providing such uses will not unduly interfere with utility operations, endanger the public health, safety, and welfare, or create a significant and disproportionate liability for the owner.

10. Utility developments shall be located and designed so as to avoid, to the extent practicable, the need for any structural or artificial shoreline modification works for the life of the project.

D. Utilities Application Requirements

Applications for new or expanded shall be accompanied by adequate documentation that the proposal meets the policies and regulations of this Master Program, including but not limited to:

1. Description of the proposed facilities;

2. Reasons why the utility facility requires a shoreline location;

3. Alternative locations considered and reasons for their elimination;

4. Location of other utility facilities in the vicinity of the proposed project and any plans to include the other types of utilities in the project;

5. Plans for reclamation of areas disturbed both during construction and following decommissioning and/or completion of the useful life of the utility;

6. Plans for control or erosion and turbidity during construction and operation; and

7. Identification of any possibility for locating the proposed facility at another existing utility facility sire or within an existing utility right-of-way.

E. Utilities – Shoreline Area Regulations

1. Urban Railroad: Utility development is permitted subject to the policies and regulations of this Master Program.

2. Urban Mixed Use I: Utility development is permitted subject to the policies and regulations of this Master Program.

3. Urban Mixed Use II: Utility development is permitted subject to the policies and regulations of this Master Program.

4. Urban Mixed Use III: Utility development is permitted subject to the policies and regulations of this Master Program.

5. Urban Mixed Use IV: Utility development is permitted subject to the policies and regulations of this Master Program.

6. Shoreline Residential I: Utility development is permitted subject to the policies and regulations of this Master Program.

7. Shoreline Residential II: Utility development is permitted subject to the policies and regulations of this Master Program.

8. Shoreline Residential III: Utility development is permitted subject to the policies and regulations of this Master Program.

9. Aquatic I: Utility development is permitted subject to the policies and regulations of this Master Program.

10. Aquatic II: Utility development is permitted subject to the policies and regulations of this Master Program.

11. Conservancy: Utility development is permitted subject to the policies and regulations of this Master Program.

12. Natural: Utility development may be permitted as a conditional use subject to the policies and regulations of this Master Program.

Part VII Nonconforming Development

24.70.000 Purpose

The purpose of this section is to allow certain nonconforming uses, buildings, signs and lots within shoreline jurisdiction to continue while limiting the continuation of certain aspects of nonconformity. Other nonconforming uses, buildings, signs and lots, which are declared to be nuisances, are required to be eliminated.

24.70.010 Nonconforming Uses

A. Nonconforming uses are shoreline uses which were lawfully established prior to the effective date of the Shoreline Management Act or this Master Program, or amendments thereto, but which do not conform to present regulations or standards of this Master Program or policies of the act.

B. A use which is listed as a conditional use but which existed prior to adoption of this Master Program or any relevant amendment and for which a conditional use permit has not been obtained shall be considered a nonconforming use. A use which is listed as a conditional use but which existed prior to the applicability of this Master Program to the site and for which a conditional use permit has not been obtained shall be considered a nonconforming use.

C. A nonconforming use may continue, unless required to be abated by subsection (D) of this section, but it may not be expanded in any way, including additional lot areas, floor area, height, number of employees, equipment, or hours of operation, except as otherwise provided in ECDC 24.70.050.

D. Lapse of Time.

1. If a nonconforming use is discontinued for 6 consecutive months or for 12 months during any two-year period, any subsequent use shall be conforming. It shall not be necessary to show that the owner of the property intends to abandon such nonconforming use in order for the nonconforming rights to expire. Uses such as agricultural or aquiculture, which

vary seasonally, shall be deemed abandoned if the seasonal use is not utilized during one full season consistent with the traditional use.

2. If a nonconforming uses ceases because its building is damaged in excess of 75 percent of its replacement cost, the use may be reestablished if, but only if, an application for a building permit which vests as provided in ECDC 19.00.015, et seq., is filed within six months of the date such damage occurred. After the application has been filed, only one 180-day extension may be granted.

3. The right of reestablishment of use described in subsection D.2 of this section shall not apply if:

   a. The building or structure was damaged or destroyed due to the unlawful act of the owner or the owner's agent; or

   b. The building is damaged or destroyed due to the ongoing neglect or gross negligence of the owner or the owner's agent.

   c. In the event that subsection D.3.a or .b of this section apply, the nonconforming use shall be abated if damage exceeds 25 percent of replacement cost. "Replacement cost" shall be determined as proved in ECDC 24.70.020.

E. A nonconforming use shall not be changed to another nonconforming use, regardless of the conforming or nonconforming status of the building or structure in which it is housed.

24.70.020 Nonconforming development, building and/or structure

A. Nonconforming development means a shoreline development which was lawfully constructed or established prior to the effective date of the Shoreline Management Act or this Master Program, or amendments thereto, but which does not conform to present regulations or standards of the program.

B. A nonconforming building is one which once met bulk zoning standards and the site development standards applicable to its construction, but which no longer conforms to such standards due to the enactment or amendment of the zoning ordinance of the city of Edmonds or the application of such ordinance in the case of a structure annexed to the city. Subject to the other provisions of this section, an accessory building that is not an accessory dwelling unit shall be presumptively nonconforming if photographic or other substantial evidence conclusively demonstrates that the accessory building existed on or before January 1, 1981. In the case of a property that was annexed after January 1, 1981, then the date shall be that of the effective date of the annexation of the city of Edmonds. Such presumption may be overcome only by clear and convincing evidence.

C. A structure for which a variance has been issued shall be considered a legal nonconforming structure and the requirements of this section shall apply as they apply to preexisting nonconformities.

D. A nonconforming development, building and/or structure which is moved any distance must be brought into conformance with this Master Program.

E. Nonconforming development, building and/or structure may be maintained and continued, unless required to be abated elsewhere in this chapter or section; provided, that it is not enlarged, intensified, increased, or altered in any way which increases its nonconformity except as expressly provided in subsection F though L of this section.

F. Historic Buildings and Structures. Nothing in this section shall prevent the full restoration by reconstruction of a building or structure which is either listed on the National Register of Historic Places, the Washington State Register of Historic Places, the Washington State Cultural Resource Inventory, or the Edmonds Register of Historic Places, or is listed in a council-approved historical survey meeting the standards of the State Department of Archaeology and Historic Preservation. “Restoration” means reconstruction of the historic building or structure with as nearly the same visual design appearance and materials as is consistent with full compliance with the State Building Code and consistent with the requirements of Chapter 20.45 ECDC, Edmonds Register of Historic Places. The reconstruction of all such historic buildings and structures shall comply with the life safety provisions of the State Building Code.

G. If a nonconforming development, building and/or structure is destroyed or damaged to an extent not exceeding 75 percent replacement cost at the time of destruction, it may be restored to its former size, shape and lot location as existing immediately prior to the time the structure was damaged, so long as restoration is either:

    1. Completed within one year of the date of damage; or

    2. Completed within one year of the date of issuance of all required permits, so long as applications for such permits are vested within six months of the date of damage and are pursued in a timely manner.

H. Determination of replacement costs and the level of destruction shall be made by the building official and shall be appealable as Type II staff decision under the provisions of Chapter 20.06 ECDC.

I. The right of restoration described in subsection E of this section shall not apply if:

    1. The development, building and/or structure was damaged or destroyed due to the unlawful act of the owner or the owner’s agent; or

    2. The development, building and/r structure is damaged or destroyed due to the ongoing neglect or gross negligence of the owner or the owner’s agents.

J. Residential Buildings in Commercial Zones. Existing nonconforming buildings in commercial zones in use solely for residential purposes, or structures attendant to such residential use, may be remodeled or reconstructed without regard to the limitations of subsections D, E and G of this section, if, but only if, the following conditions are met:

1. The remodel or reconstruction takes place within the footprint of the original building or structure. “Footprint” shall mean an area equal to the smallest rectangular area in a plane parallel to the ground in which the existing building could be placed, exclusive of uncovered decks, steps, porches, and similar features; and provided, that the new footprint of the building or structure shall not be expanded by more than 10 percent and is found by the city staff to be substantially similar to the original style and construction after complying with current codes.

2. All provisions of the State Building and Electrical Codes can be complied with entirely on the site. No nonconforming residential building may be remodeled or reconstructed if, by so doing, the full use under state law or city ordinance of a conforming neighboring lot or building would be limited by such remodel or reconstruction.

3. These provisions shall apply only to the primary residential use on site and shall not apply to nonconforming accessory buildings or structures.

4. A nonconforming residential single-family building may be rebuilt within the defined building envelope if it is rebuilt with materials and design which are substantially similar to the original style and structure after complying with current codes. “Substantial compliance” shall be determined by the city as a Type II staff decision, except that any appeal of the staff decision shall be to the ADB rather than the hearing examiner. The decision of the ADB shall be final and appealable only as provided in ECDC 20.07.006.

K. Subject to the other provisions of this section, an accessory building that is not an accessory dwelling unit shall be presumptively nonconforming if photographic or other substantial evidence conclusively demonstrates that the accessory building existed on or before January 1, 1981. In the case of a property that was annexed after January 1, 1981, then the date shall be that of the effective date of the annexation to the city of Edmonds. Such presumption may be overcome only by clear and convincing evidence.

L. BD5 Zone. The BD5 zone was created in part to encourage the adoption and reuse of existing residential structures for live/work and commercial use as set forth in ECDC 16.43.030.B.5. In the BD5 zone, conforming and nonconforming buildings may be converted to commercial or other uses permitted by ECDC 16.43.020 and this Master Program without being required to come into compliance with the ground floor elevation requirements of ECDC 16.43.030.B.

24.70.030 Nonconforming Lots

A. A nonconforming lot is one which met applicable zoning ordinance standards as to size, width, depth and other dimensional regulations at the date on which it was created but which, due to the passage of a zoning ordinance, the amendment thereof or the annexation of property to the city, no longer conforms to the current provisions of the zoning ordinance. A lot which was not legally created in accordance with the laws of the local governmental entity in which it was located at the date of the creation is an illegal lot and will not be recognized for development.

B. Continuation. A nonconforming lot may be developed for any use allowed by the zoning district in which it is located, so long as such development conforms to other requirements of this Master Program, the Shoreline Management Act, and all other applicable site use and development standards are met or a variance from such site use or development standards has been obtained. In order to be developed a nonconforming lot must meet minimum lot size standards established by the provisions of this code, subject to the provisions of subsection D of this section.

C. Combination. If, since the date on which it became nonconforming due to its failure to meet minimum lot size or width criteria, an undeveloped nonconforming lot has been in the same ownership as a contiguous lot or lots, the nonconforming lot is to be and shall be deemed to have been combined with such contiguous lot or lots to the extent necessary to create a conforming lot and thereafter may only be used in accordance with the provisions of this Master Program, the Shoreline Management Act, and the Edmonds Community Development Code, except as specifically provided in subsection D of this section.

D. Exception for Single-Family Dwelling Units. An applicant may build on single-family residence consisting of no more than one dwelling unit on a lot or parcel regardless of the size of the lot or parcel if, but only if, one of the following exceptions applies:

1. In a Shoreline Residential environment, such nonconforming lot may be sold or otherwise developed as any other nonconforming lot pursuant to the following conditions and standards:

    a. The lot area of the nonconforming lot is not less than the minimum lot areas specified in the table below for the zoning district in which the subject property is located; and

    b. Community facilities, public utilities and roads required to serve the nonconforming lot are available concurrently with the proposed development; and

    c. Existing housing stock will not be destroyed in order to create a new buildable lot.

Lot Area Table			
	Zone	% Needed for Legal Lot	Lot Size Needed for legal lot
(1)	RS-20	60%	12,000

(2)	RS-12	70%	8,400
(3)	RS-10	75%	7,500
(4)	RS-8	80%	6,400
(5)	RS-6	90%	5,400

2. An applicant applies for necessary permits to construct the unit within five years of the date the lot or parcel was annexed into the city and the lot or parcel was lawfully created under provisions of Snohomish County subdivision and zoning laws as well as the laws of the state of Washington; or

3. An applicant may remodel or rebuild on residence on a nonconforming lot without regard to the 75 percent destruction requirement of ECDC 24.70.020.G if a fully completed building permit application is vested within six months of the destruction of the residence and all other development requirements of this Master Program, the Shoreline Management Act, and the Edmonds Community Development Code are complied with; or

4. The lot lines defining the lot or parcel were recorded in the Snohomish county recorder's office prior to December 31, 1972, and the lot or parcel has not at any time been simultaneously owned by the owner of a contiguous lot or parcel which fronts on the same access right-of-way subsequent to December 31, 1972, and the lot or parcel has access to an access right-of-way which meets the minimum requirements established by the Edmonds Community Development Code.

24.70.040 Nonconforming Signs

Nonconforming signs are injurious to health, safety and welfare and destructive of the aesthetic and environmental living conditions which this Master Program and zoning ordinances are intended to preserve and enhance. Nonconforming signs shall be brought in to compliance with the provisions of Chapter 20.60 ECDC under the following terms and conditions:

A. No nonconforming sign shall be expanded, extended, rebuilt, reconstructed or altered in any way, except as provided below. The following acts are specifically permitted and shall not in and of themselves require conformance with the provisions of this Master Program of Chapter 20.60 ECDC

   1. Normal maintenance of the sign;

   2. A change in the name of the business designated on the sign; or

   3. Any action necessary to preserve the public safety in the event of damage to the sign brought about by an accident an act of God.

B. Any nonconforming sign shall be brought into immediate compliance with the code in the event that it is expanded in violation of subsection A of this section.

C. None of the forgoing provisions relating to permitted maintenance, name change or preservation of the sing under subsection A of this section shall be construed so as to permit the continuation or preservation of any nonconforming off-premises sign.

24.70.050 Nonconforming local public facilities

Existing legal nonconforming local public facility uses, buildings, and/or signs, owned and/or operated by local, state, or federal governmental entities, public service corporations, or common carriers (including agencies, districts, governmental corporations, public utilities, or similar entities) may be expanded, enlarged, altered, or modified, subject to the policies and provisions of this Master Program and review under Chapter 20.16 ECDC, Essential Public Facilities.

Part VIII Administration – Shoreline Permits

24.80.000 Purpose

This chapter establishes the permit review procedure for shoreline permits, in accordance with the Shorelines Management Act, Chapter 90.58 RCW and Chapter 173-27 WAC. All proposed uses and development occurring within shoreline jurisdiction must conform to Chapter 90.58 RCW, the Shoreline Management Act, and this Master Program, regardless of whether a shoreline permit, statement of exemption, shoreline variance, or shoreline conditional use permit is required.

24.80.010 Exemptions from Shoreline Substantial Development Permit Process

A. Application and interpretation

1. 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 substantial development permit process.

2. An exemption from the substantial development permit process is not an exemption from compliance with the Shoreline Management Act or the City of Edmonds' Shoreline Master Program, or from any other regulatory requirements. To be authorized, all uses and developments must be consistent with the policies and provisions of this Master Program and the Shoreline Management Act.

3. When a development or use is proposed that does not comply with the bulk, dimensional and performance standards of the master program, such development or use can only be authorized by approval of a variance.

4. A development or use that is listed as a conditional use pursuant to this Master Program or is an unlisted use, must obtain a conditional use permit even though the development or use does not require a substantial development permit.

5. The burden of proof that a development or use is exempt from the permit process is on the applicant.

6. If any part of a proposed development is not eligible for exemption, then a substantial development permit is required for the entire proposed development project.

7. The City of Edmonds may attach conditions to the approval of exempted developments and/or uses as necessary to assure consistency of the project with the Shoreline Management Act and this Master Program.

B. Exemptions Listed. The following developments shall not require substantial development permits:

1. Any development of which the total cost or fair market value, whichever is higher, does not exceed five thousand seven hundred eighteen dollars ($5718), if such development does not materially interfere with the normal public use of the water or shorelines of the state. The dollar threshold established in this subsection must be adjusted for inflation every five years consistent with WAC 173-27-040(2)(a). 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.

2. 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.

3. 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.

4. 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.

5. Construction or modification of navigational aids such as channel markers and anchor buoys.

6. 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 twenty-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 as defined in 24.90.010.F. Construction authorized under this exemption shall be located landward of the ordinary high water mark.

7. Construction of a dock, including a community dock, designed for pleasure craft only, for the private noncommercial use of the owner, lessee, or contract purchaser of single-family and multiple-family residences. A dock is a landing and moorage facility for watercraft and does not include recreational decks, storage facilities or other appurtenances. This exception applies if either:

    a. In salt waters (Puget Sound), the fair market value of the dock does not exceed two thousand five hundred dollars; or

b. In fresh waters (Lake Ballinger) the fair market value of the dock does not exceed ten thousand dollars, but if subsequent construction having a fair market value exceeding two thousand five hundred dollars occurs within five years of completion of the prior construction, the subsequent construction shall be considered a substantial development for the purpose of this chapter.

8. 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 ground water from the irrigation of lands.

9. 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.

10. Operation and maintenance of any system of dikes, ditches, drains, or other similar drainage or utility facilities existing on September 8, 1975, which were created, developed or utilized primarily as a part of an agricultural drainage or diking system.

11. Any project with a certification from the governor pursuant to chapter 80.50 RCW.

12. Site exploration and investigation activities that are prerequisite to preparation of an application for development authorization under this chapter, if:

    a. The activity does not interfere with the normal public use of the surface waters;

    b. The activity will have no significant adverse impact on the environment including but not limited to fish, wildlife, fish or wildlife habitat, water quality, and aesthetic values;

    c. The activity does not involve the installation of any structure, and upon completion of the activity the vegetation and land configuration of the site are restored to conditions existing before the activity;

    d. A private entity seeking development authorization under this section first posts a performance bond or provides other evidence of financial responsibility to the local jurisdiction to ensure that the site is restored to preexisting conditions; and

    e. The activity is not subject to the permit requirements of RCW 90.58.550.

13. The process of removing or controlling aquatic noxious weeds, as defined in RCW 17.26.020, through the use of an herbicide or other treatment methods applicable to weed control that are recommended by a final environmental impact statement published by the department of agriculture or the department of ecology jointly with other state agencies under chapter 43.21C RCW.

14. Watershed restoration projects as defined in WAC 173-27-040(2)(o). The administrator shall review the projects for consistency with the shoreline master program in an expeditious manner and shall issue its decision along with any conditions within forty-five days of receiving all materials necessary to review the request for exemption from the applicant. No fee may be charged for accepting and processing requests for exemption for watershed restoration projects as used in this section.

15. A public or private project that is designed to improve fish or wildlife habitat or fish passage, when all of the following apply:

    a. The project has been approved in writing by the department of fish and wildlife; ;

    b. The project has received hydraulic project approval by the department of fish and wildlife pursuant to chapter 77.55 RCW; and ;

    c. The City has determined that the project is substantially consistent with the local shoreline master program. The City shall make such determination that in a timely manner and provide it by letter to the project proponent. .

24.80.020 Letter of Exemption

A. The Administrator is hereby authorized to grant or deny requests for letters of exemption from the shoreline substantial development permit requirement for uses and developments with shorelines that are specifically listed in ECDC 24.80.010.B. The letter of exemption shall indicate the specific exemption of this Program that is being applied to the development, and shall provide a summary of the Administrator's analysis of the consistency of the project with this Master Program and the Shoreline Management Act. As appropriate, such letters of exemption may contain conditions and/or mitigating measures of approval to achieve consistency and compliance with the provisions of this Master Program and the Shoreline Management Act. A denial of an exemption shall be in writing and shall identify the reason(s) for the denial. The Administrator's actions on the issuance of a letter of exemption or a denial are subject to appeal pursuant to ECDC 24.80.110.C.

B. A letter of exemption shall be prepared addressed to the applicant/proponent and the Washington State Department of Ecology, pursuant to the requirement of WAC 173-27-050 when the project is subject to one or more of the following Federal permitting requirements:

    1. A U.S. Army Corps of Engineers section 10 permit under the Rivers and Harbors Act of 1899; (The provisions of section 10 of the Rivers and Harbors Act generally apply to any project occurring on or over navigable waters. Specific applicability information should be obtained from the Corps of Engineers.); or

    2. A section 404 permit under the Federal Water Pollution Control Act of 1972. (The provisions of section 404 of the Federal Water Pollution Control Act generally apply to any project which may involve discharge of dredge or fill material to any water or

wetland area. Specific applicability information should be obtained from the Corps of Engineers.)

C. Apart from the activities listed in ECDC 24.80.020.B, no letter of exemption shall be required for other uses or developments exempt pursuant to ECDC 24.80.010 unless the Administrator has cause to believe a substantial question exists as to qualification of the specific use or development for the exemption, an applicant requests a letter of exemption, or the Administrator determines there is a likelihood of adverse impacts to shoreline ecological functions.

24.80.030 Review Criteria for All Development

No authorization to undertake use or development on shorelines of the state shall be granted unless upon review the use or development is determined to be consistent with the policy and provisions of the Shoreline Management Act and the City of Edmonds Shoreline Master Program.

24.80.040 Substantial Development Permit Criteria

A. A substantial development permit shall be required for all proposed use and development of shorelines unless the proposal is specifically exempt pursuant to ECDC 24.80.010.

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

1. All regulations of the City of Edmonds Shoreline Master Program appropriate to the shoreline designation and the type of use or development proposed shall be met, except those bulk and dimensional standards that have been modified by an approval of a shoreline variance under ECDC 24.80.060.

2. All policies of the City of Edmonds Shoreline Master Program appropriate to the shoreline designation and the type of use or development proposed shall be considered and substantial compliance demonstrated.

24.80.050 Conditional Use Permit Criteria

A. The purpose of a conditional use permit is to provide greater flexibility in the administering of use regulations of this Master Program in a manner consistent with the policies of RCW 90.58.020. In authorizing a conditional use, special conditions may be attached to the permit by the City or the Department of Ecology to prevent undesirable effects of the proposed use and/or to assure consistency of the project with the Shoreline Management Act and this Master Program.

B. Uses specifically classified or set forth in the Master Program as conditional uses may be authorized provided that the applicant demonstrates all of the following:

1. That the proposed use is consistent with the policies of RCW 90.58.020 and the master program;

2. That the proposed use will not interfere with the normal public use of public shorelines;

3. That the proposed use of the site and design of the project is compatible with other authorized uses within the area and with uses planned for the area under the comprehensive plan and shoreline master program;

4. That the proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and

5. That the public interest suffers no substantial detrimental effect.

C. Uses which are not specifically identified as an allowed use or uses which are specifically prohibited by this Master Program may not be authorized pursuant to either subsection B of this section.

D. 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.

24.80.060 Variance Permit Criteria

A. The purpose of a variance permit is strictly limited to granting relief from specific bulk, dimensional or performance standards set forth in this Master Program where there are extraordinary circumstances relating to the physical character or configuration of property such that the strict implementation of this Master Program will impose unnecessary hardships on the applicant or thwart the policies set forth in RCW 90.58.020. Variances from the use regulations of this Master Program are prohibited.

B. Variances will be granted in circumstances where the 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 that the public interest shall suffer no substantial detrimental effect.

C. Variance permits for development and/or uses that will be located landward of the ordinary high water mark (OHWM) may be authorized provided the applicant can demonstrate all of the following:

1. That the strict application of the bulk, dimensional or performance standards set forth in the applicable master program precludes, or significantly interferes with lawful, reasonable use of the property;

2. That the hardship described in 1 of this subsection is specifically related to the property, and is the result of unique conditions such as irregular lot shape, size, or natural features and the application of this Master Program, and not, for example, from deed restrictions or the applicant's own actions or those of a predecessor in title;

3. That the design of the project is 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 not cause adverse impacts to the shoreline environment;

4. That the variance will not constitute a grant of special privilege not enjoyed by the other properties in the area;

5. That the variance requested is the minimum necessary to afford relief; and

6. That the public interest will suffer no substantial detrimental effect.

D. Variance permits for development and/or uses that will be located waterward of the ordinary high water mark (OHWM) may be authorized provided the applicant can demonstrate all of the following:

1. That the strict application of the bulk, dimensional or performance standards set forth in the applicable master program precludes all reasonable use of the property;

2. That the proposal is consistent with the criteria established under subsection ECDC 24.80.060.C.1 through 6 of this section; and

3. That the public rights of navigation and use of the shorelines will not be adversely affected.

E. In the granting of all 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.

24.80.070 Minimum Application Requirements

A complete application for substantial development, conditional use, or variance permit shall contain as a minimum, the following information:

A. The name, address and phone number of the applicant. The applicant should be the owner of the property or the primary proponent of the project and not the representative of the owner or primary proponent.

B. The name, address and phone number of the applicant's representative if other than the applicant.

C. The name, address and phone number of the property owner, if other than the applicant.

D. Location of the property. This shall, at a minimum, include the property address and identification of the section, township and range to the nearest quarter, quarter section or latitude and longitude to the nearest minute. All applications for projects located in open water areas away from land shall provide a longitude and latitude location.

E. Identification of the name of the shoreline (water body) that the site of the proposal is associated with. This should be the water body from which jurisdiction of the act over the project is derived.

F. A general description of the proposed project that includes the proposed use or uses and the activities necessary to accomplish the project.

G. A general description of the property as it now exists including its physical characteristics and improvements and structures.

H. A general description of the vicinity of the proposed project including identification of the adjacent uses, structures and improvements, intensity of development and physical characteristics.

I. A site development plan consisting of maps and elevation drawings, drawn to an appropriate scale to depict clearly all required information, photographs and text which shall include:

    1. The boundary of the parcel(s) of land upon which the development is proposed.

    2. The ordinary high water mark of all water bodies located adjacent to or within the boundary of the project. This may be an approximate location provided, that for any development where a determination of consistency with the applicable regulations requires a precise location of the ordinary high water mark the mark shall be located precisely and the biological and hydrological basis for the location as indicated on the plans shall be included in the development plan. Where the ordinary high water mark is neither adjacent to or within the boundary of the project, the plan shall indicate the distance and direction to the nearest ordinary high water mark of a shoreline. The precise location of the ordinary high water mark shall be field verified by the City of Edmonds and/or the Department of Ecology.

    3. Existing and proposed land contours. The contours shall be at intervals sufficient to accurately determine the existing character of the property and the extent of proposed

change to the land that is necessary for the development. Areas within the boundary that will not be altered by the development may be indicated as such and contours approximated for that area.

4. Existing critical areas as together with any supporting information consistent with the reporting requirements of ECDC 23.40.090.

5. A general indication of the character of vegetation found on the site.

6. The dimensions and locations of all existing and proposed structures and improvements including but not limited to; buildings, paved or graveled areas, roads, utilities, septic tanks and drainfields, material stockpiles or surcharge, and stormwater management facilities.

7. Where applicable, a landscaping plan for the project.

8. Where applicable, plans for development of areas on or off the site as mitigation for impacts associated with the proposed project shall be included and contain information consistent with the requirements of this section.

9. Quantity, source and composition of any fill material that is placed on the site whether temporary or permanent.

10. Quantity, composition and destination of any excavated or dredged material.

11. A vicinity map showing the relationship of the property and proposed development or use to roads, utilities, existing developments and uses on adjacent properties.

12. Where applicable, a depiction of the impacts to views from existing residential uses and public areas.

13. On all variance applications the plans shall clearly indicate where development could occur without approval of a variance, the physical features and circumstances on the property that provide a basis for the request, and the location of adjacent structures and uses.

24.80.080 Notice of Application

A. Upon receipt of a fully completed shoreline substantial development permit, shoreline conditional use permit, or shoreline variance application, the City shall issue a Notice of Application in the manner set forth in ECDC 20.90.010.E.

B. The public comment period for a shoreline substantial development permit, shoreline conditional use permit, or shoreline variance shall be thirty (30) days following the date of notice of application. Public comments may be submitted at any time prior to the closing of

the record of an open record predecision hearing or, if no open record public hearing is required, prior to the decision on the project permit.

C. If an open record predecision hearing, as define in RCW 36.70B.020, is required for the requested project permits, the notice of application shall be provided at least fifteen (15) days prior to the open record hearing. The public hearing shall not be closed to the receipt of written comments prior to thirty (30) days following the date of the notice.

24.80.090 Special Procedures for Limited Utility Extensions and Bulkheads

A. An application for a substantial development permit for a limited utility extension or for the construction of a bulkhead or other measures to protect a single-family residence and its appurtenant structures from shoreline erosion shall be subject to all of the requirements of this chapter except that the following time periods and procedures shall be used:

   1. The public comment period shall be twenty days. The notice provided shall state the manner in which the public may obtain a copy of the local government decision on the application no later than two days following its issuance;

   2. The local government shall issue its decision to grant or deny the permit within twenty-one days of the last day of the comment period specified in subsection (2)(a) of this section; and

   3. If there is an appeal of the decision to grant or deny the permit to the local government legislative authority, the appeal shall be finally determined by the legislative authority within thirty days.

B. For purposes of this section, a limited utility extension means the extension of a utility service that:

   1. Is categorically exempt under chapter 43.21C RCW for one or more of the following: Natural gas, electricity, telephone, water, or sewer;

   2. Will serve an existing use in compliance with this chapter; and

   3. Will not extend more than two thousand five hundred linear feet within the shorelines of the state.

24.80.100 Public Hearings

A. The Administrator shall determine whether an application requires a public hearing pursuant to the criteria below no later than fifteen (15) days after the minimum public comment period provided by ECDC 24.80.080.B. An open record public hearing shall be required for all of the following:

   1. One or more interested persons has submitted to the administrator, with 15 days of the final publication notice of the application, a written request for such a hearing together with a statement of the reasons for the request; or

   2. The proposal is determined to have a significant adverse impact on the environment and an Environmental Impact Statement is required in accordance with the State Environmental Policy Act; or

3. The proposal requires a variance and/or conditional use approval pursuant to this Master Program; or

4. The use or development requires an open record public hearing for other City of Edmonds approvals or permits.

24.80.110 Notice of Decision, Reconsideration, and Appeals

A. Notice of Decision

1. Within five days of a decision for action on a shoreline substantial development permit, shoreline conditional use permit, or shoreline variance, the Administrator shall mail or hand deliver a copy of the final decision to the following:

    a. The applicant/proponent;

    b. Any person(s) who have filed a written request for a copy of the decision;

    c. All persons who submitted substantive written comments on the application.; and

    d. The Department of Ecology.

2. The notice of decision to ECDC 24.80.110.A.1.a through c shall include findings and conclusions, and a statement of the SEPA threshold determination and the procedures for an appeal (if any) of the permit decision or recommendation.

3. Decisions filed with the Department of Ecology shall contain the following information:

    1. A copy of the complete application;

    2. Findings and conclusions that establish the basis for the decision including but not limited to identification of shoreline environment designation(s), applicable Master Program policies and regulations and the consistency of the project with appropriate review criteria for the type of permit(s).

    3. The final decision of reached by the City of Edmonds on the proposal;

    4. A completed permit data sheet in the form provided in WAC 173-27-990 or hereafter amended.

    5. Where applicable, the City of Edmonds shall also file the applicable documents required by SEPA, or in lieu thereof, a statement summarizing the actions and dates of such actions taken under RCW 43.21C.

B. Reconsideration. The applicant/proponent or any party of record may request reconsideration of any final action by the decision maker within (10) days of the decision. Grounds for reconsideration must be based upon the content of the written decision. The decision maker is not required to proved a written response or modify his/her original decision. He/she may initiate such action as he/she deems appropriate. The procedure of reconsideration shall not pre-empt or extend the appeal period for a permit or affect the date of filing with the Department of Ecology, unless the applicant/proponent requests the abeyance of said permit appeal period in writing with ten (10) days of a final action.

C. Appeals

1. Local appeals of decision by the Shoreline Administrator or the Hearing Examiner shall be pursuant to the procedure and timelines of ECDC 20.01, ECDC 20.06, and ECDC 20.07..

2. Appeals of a final decision of the City of Edmonds or the Department of Ecology shall be filed within 21 days of the date of filing of the final permit and shall be heard by the Shorelines Hearings Board pursuant to the procedures and timelines of RCW 90.58.180.

24.80.120 Initiation of Development

A. Development pursuant to a shoreline substantial development permit, shoreline conditional use permit, or shoreline variance shall not begin and shall not be authorized unit twenty-one (21) days after the "date of filing" or until all review proceeding before the Shoreline Hearings Board have terminated.

B. Date of filing:

1. "Date of filing" of a substantial development permit is the date of actual receipt of the decision by the Department of Ecology.

2. The "date of filing" for a shoreline conditional use permit or a shoreline variance shall mean the date the permit decision rendered by the Department of Ecology is transmitted by the Department to the City of Edmonds and the applicant/proponent.

24.80.130 Revisions

A. A revision is required when an applicant proposes substantive changes to the design, terms, or conditions of an approved 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 Master Program, or the Shoreline Management Act. Changes, which the Administrator determines are not substantive, do not require approval of a revision.

B. When a permit revision is required, the applicant shall submit detailed plans and text describing the proposed changes. If the Administrator determines that the revisions proposed

are within the scope and intent of the original permit, the Administrator may approve the revision as a Type II decision.

C. "Within the scope and intent of the original permit" means all of the following:

1. No additional over water construction is involved except that pier, dock, or float construction may be increased by five hundred square feet (500) or ten percent (10%) from the provisions of the original permit, whichever is less;

2. Ground area coverage and height may be increased a maximum of ten percent (10%) from the provisions of the original permit;

3. The revised permit does not authorize development to exceed height, lot coverage, setback, or any other requirements of the applicable master program except as authorized under a variance granted as the original permit or a part thereof;

4. Additional or revised landscaping is consistent with any conditions attached to the original permit and with the applicable master program;

5. The use authorized pursuant to the original permit is not changed; and

6. No adverse environmental impact will be caused by the project revision.

D. If the sum of the proposed revision and any previously approved revisions do not meet the criteria in ECDC 24.80.130.C, an application for a new Shoreline Permit must be submitted.

E. If the revision involves a Shoreline Conditional Use Permit or Shoreline Variance, which was conditioned by the Department of Ecology, the revision also must be reviewed and approved by the Department of Ecology. Under the requirements of WAC 173-27-110(6), the Department of Ecology shall render and transmit to the City of Edmonds and the applicant its final decision with fifteen (15) days of the date of the department's receipt of the submittal from the City of Edmonds. The City of Edmonds shall notify parties of record of the department's final decision.

F. Revision approvals, including the revised site plans, a detailed description of the authorized changes, and the final ruling on consistency with this section shall be filed with the Department of Ecology. In addition, the City of Edmonds shall notify parties of record of the revision.

G. Revisions to shoreline permits may be authorized after the original authorization has expired. Revisions made after the expiration of the original permit shall be limited to changes that are consistent with this Master Program and that would not require a permit under this Master Program. If the proposed change is a substantial development as defined by this Master Program, then a new permit is required. The provisions of this paragraph shall not be used to extend the time requirements or to authorize substantial development beyond the time limits or scope of the original permit.

H. Appeals on revisions shall be in accordance with RCW 90.58.180 and shall be filed within twenty-one days from the date of receipt of the City of Edmonds' action by the Department of Ecology or, when appropriate under subsection E of this section, the date the Department of Ecology's final decision is transmitted to local government and the applicant. Appeals shall be based only upon contentions of noncompliance with the provisions of subsection C of this section. 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. 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.

24.80.140 Time requirements of Shoreline Permits

A. The following time requirements shall apply to all substantial development permits and to any development authorized pursuant to a shoreline conditional use permit or shoreline variance:

1. Construction activities shall be commenced or, where no construction activities are involved, the use or activity shall be commenced within two (2) years of the effective date of a substantial development permit. However, the City of Edmonds may authorize a single extension for a period not to exceed one (1) year based on reasonable factors, if a request for extension has been filed before the expiration date and notice of the proposed extension is given to parties of record on the substantial development permit and to the Department of Ecology

2. Authorization to conduct development activities shall terminate five (5) years after the effective date of a substantial development permit. However, the City of Edmonds may authorize a single extension for a period not to exceed one (1) year based on reasonable factors, if a request for extension has been filed before the expiration date and notice of the proposed extension is given to parties of record and to the Department of Ecology.

3. The effective date of a substantial development permit shall be the date of filing as provided in ECDC 24.80.120.B. The permit time periods in subsections 1 and 2 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.

4. Authorization to conduct development activities pursuant to a shoreline permit issued by the City of Edmonds shall expire five (5) years after the date of issuance provided the activity was not pursued due to the pendency of administrative appeals or legal action. However, the City of Edmonds may authorize a single extension for a period not to exceed one (1) year based on reasonable factors.

B. Notwithstanding the time limits established in ECDC 24.80.140.A.1 and .2, upon finding of good cause based on the requirements and circumstances of the proposed project and consistent with the policies and provisions of this Master Program and the Shoreline Management Act, the Administrator or Hearing Examiner as appropriate may set different time limits for a particular substantial development permit as part of the action to approve the permit. The Hearing Examiner may also set different time limits on specific conditional use permits or variances with the approval of the Department of Ecology. The different time limits may be longer or shorter than those established in ECDC 24.80.140.A.1 and .2 but shall be appropriate to the shoreline development or used under review. "Good cause based on the requirements and circumstances of the proposed project" shall mean that the time limits established for the project are reasonably related to the time actually necessary to perform the development on the ground and complete the project that is being permitted, and/or are necessary for the protection of shoreline resources.

C. The Administrator or Hearing Examiner as appropriate shall notify the Department of Ecology in writing of any change to the effective date of a permit with an explanation of the basis for approval of the change. Any change to the time limits of a permit other than those authorized ECDC 24.80.150.A and .B shall require a new permit application.

24.80.150 Administrative Authority and Responsibility

A. Shoreline Administrator

The Shoreline Administrator shall be the planning manager or his/her designee and is vested with the following authority and responsibility to:

1. Have overall administrative responsibility for this Master Program;

2. Determine if a public hearing should be held on a shoreline permit application by the Hearing Examiner pursuant to ECDC 24.80.100;

3. Grant or deny written Permit Exemptions from shoreline Substantial Development Permit requirements of this Master Program;

4. Authorize, approve or deny shoreline Substantial Development Permits, except for those for which a public hearing is required pursuant to ECDC 24.80.100;

5. Make written recommendation to the Hearing Examiner or City Council as appropriate and insofar as possible, in order to assure that all relevant information, testimony, and questions regarding a specific matter are made available during their respective reviews of such matter.

6. Review and evaluate the records of project review actions (permits and exemptions) in shoreline areas and report on the cumulative effects of authorized development of shoreline conditions at a minimum every seven years when this Master Program is updated. The administrator shall coordinate such review with the Washington State

Department of Ecology, Washington State Department of Fish and Wildlife, and other interested parties.

7. Advise interested citizens and project proponents of the goals, policies, regulations and procedures of this Master Program; and

8. Make administrative decisions and interpretations of the policies and regulations of this Master Programs and the Shoreline Management Act.

B. Hearing Examiner

The Hearing Examiner is vested with the following authority:

1. To grant or deny shoreline Substantial Development Permits requiring public hearings pursuant to ECDC 24.80.100;

2. To grant or deny shoreline Conditional Use Permits under this Master Program;

3. To grant or deny variances form this Master Program; and

4. To decide on appeals of administrative decisions issued by the Administrator of this Master Program in accord with procedures set forth in Title 20 of this code.

C. City Council

1. The Edmonds City Council is vested with the authority to hear closed record appeals of determinations of the Hearing Examiner and approve any revisions or amendments to this Master Program in accordance with the applicable requirements of the Shoreline Management Act and the Washington Administrative Code.

2. To become effective any amendment to this Master Program must be reviewed and adopted by the Department of Ecology pursuant to RCW 90.58.190 and Chapter 173-26 WAC.

24.80.160 Compliance

Failure to comply with the conditions of approval associated with a shoreline permit shall cause the permit to immediately become void and any continuation of the use activity shall be considered a violation of this Master Program and a public nuisance subject to enforcement proceedings.

24.80.170 Enforcement

Procedures for investigation and notice of violation, compliance, and the imposition of penalties for the violation of any requirements of this Master Program shall be consistent with provisions in ECDC 20.110.040, Part II 173-27 WAC, RCW 90.58.210, and RCW 90.58.220.

Part IX Definitions

24.90.000 General Information

A. For the purpose of this Master Program, certain terms and their derivations shall be construed as specified in this section. Some terms used in this Master Program may have a different definition and application under other City of Edmonds regulations. Words in the singular include the plural, the plural the singular. The words “shall”, “will” and “must” are mandatory; the word “may” is permissive. "Should" means that the particular action is required unless there is a demonstrated, compelling reason, based on policy of the Shoreline Management Act and this Master Program, against taking the action. Additional definitions applicable to this master Program and adopted by reference herein, are found in RCW 90.58 and Chapters 173-26 and 173-27 WAC. The following definitions apply throughout this Program, unless otherwise indicated.

B. If a definition is not included here, the city shall rely on definitions found in applicable citations in the Revised Code of Washington (RCW), Washington Administrative Code (WAC), the Edmonds Community Development Code (ECDC), and finally a standard dictionary, in that order. In case of conflict with the ECDC, the definition within the RCW, WAC, and/or this Master Program shall prevail.

24.90.010 Definitions: A to B

A. “Abandoned” means knowing relinquishment of right or claim to the subject property or structure on that property.

B. “Accessory” means a use, activity, structure or part of a structure which is demonstrably subordinate and incidental to the main activity or structure on the subject property.

C. “Accessory building” means one which is subordinate to the main building, and is incidental to the use of the main building on the same lot.

D. “Alteration(s)” means a change or rearrangement of the structural parts of existing facilities or an enlargement by extending the sides or increasing the height or depth or the moving from one location to another.

E. “Applicant” means a person who applies for any permit or approval to do anything governed by this code and who is either the owner of the subject property, the authorized agent of the owner, or the city.

F. "Appurtenance" means a structure or development which is necessarily connected to the use and enjoyment of a single-family residence and is located landward of the ordinary high water mark and also of the perimeter of any marsh, bog, or swamp. See also "Normal appurtenances."

G. "Aquaculture" means the farming or culture of food fish, shellfish, or other aquatic plants or animals any may require development such as fish hatcheries, rearing pens and structures, and shellfish rafts, as well as use of natural spawning and rearing areas. Aquaculture does not include the harvest of free-swimming fish or the harvest of shellfish not artificially planted or maintained.

H. "Aquaculture practices" means any activity directly pertaining to growing, handling, or harvesting or aquaculture produce, including, but not limited to, propagation, stocking, feeding, disease treatment, waste disposal, water use, development of habitat and structures. Excluded from this definition are related commercial or industrial uses such as wholesale and retail sales, or final processing and freezing.

I. "Average grade level" means 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.

J. "Average parcel depth" means the average of the distances from the ordinary high water mark to the street providing direct access to the subject property as measured along the side property lines or the extension of those lines where the water frontage of the subject property ends, the center of the ordinary high water mark of the subject property and the quarter points of the ordinary high water mark of the subject property.

K. "Average parcel width" means the average of the distances between side property lines as measured along the ordinary high water mark and the front property line.

L. "Backfill" means material placed into an excavated area, pit, trench or behind a constructed retaining wall, rockery or foundation.

M. "Boat launch or ramp" means graded slopes, slabs, pads, planks, or rails used for launching boats by means of a trailer, hand, or mechanical device.

N. "Buoy" means a floating object anchored to the bottom of a water body.

O. "Breakwater" means an offshore structure generally aligned parallel to shore, sometimes shore-connected, that provides protection from waves.

P. "Buffer" means the area adjacent to a critical area and/or shoreline that is required for the continued maintenance, function, and/or structural stability of the critical area and/or

shoreline. Buffer widths vary depending on the relative quality and sensitivity of the area being protected. Unlike zoning or shore setbacks, buffer areas are intended to be left undisturbed, or may need to be enhanced to support natural processes, functions and values.

Q. "Building" means any structure having a roof, excluding all forms of vehicles even though immobilized.

R. "Bulkhead" means a retaining wall whose primary purpose is to hold or prevent the backfill from sliding while providing protection against light-to-moderate wave action.

24.90.020 Definitions: C to F

A. "City" means the City of Edmonds, a municipal corporation.

B. "Commercial use" means an activity with goods, merchandise, or services offered for sale or rent.

C. "Comprehensive plan" means the comprehensive Plan of the City of Edmonds and all elements thereof as amended or, if repealed, its successor document, listing the goals and policies regarding land use within the city.

D. "Contour line" means a line on a map or on the earth representing a specific elevation above sea level or an elevation relative to a specific datum point.

E. "Coverage" means the total ground coverage of all buildings or structures on a site measured from the outside of external walls or supporting members or from a point two and one-half feet in from the outside edge of a cantilevered roof, whichever covers the greatest area.

F. "Critical areas" include the following areas and ecosystems: (a) wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas designated through the Edmonds Critical Area Ordinance.

G. "Cross-section (drawing)" means a visual representation of a vertical cut through a structure or any other three-dimensional form.

H. "Dedication" means the deliberate granting of an interest in land by an owner for public use or purpose, reserving no other rights than those that are compatible with the full exercise and enjoyment of the public use or purpose to which the property has been devoted.

I. "Development" means a use consisting of the construction or exterior alteration of structures; dredging; drilling; dumping; grading; filling; removal of any sand, gravel, or minerals; bulk heading; 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 overlying lands subject to the act at any stage of water level.

J. “Development permit” means any permit or approval under this code or the ECDC that must be issued before initiating a use or development activity.

K. “Dock” means a structure designed to protrude overwater or float upon the water, and which is attached to the shoreline and is used for moorage or other water-related activity such as swimming or diving.

L. “Dredging” means removal of earth and other materials from the bottom of a body of water or from a wetland.

M. “Dredging spoils” means the earth and other materials removed from the floor of a body of water or wetland by the dredging process.

N. “Drift cell,” “drift sector,” or “littoral cell” means a particular reach of marine shore in which littoral drift may occur without significant interruption and which contains any natural sources of such drift and also accretion shore forms created by such drift.

O. “Dry land” means the area of the subject property landward of the ordinary high water mark.

P. “Dwelling unit” means a building providing complete housekeeping facilities for one family. Dwelling unit does not include recreational vehicles or mobile homes.

Q. “Dwelling unit, attached” means a dwelling unit that has one or more vertical walls in common with or attached to one or more other dwelling units or other uses and does not have other dwelling units or uses above or below it, excluding lawfully permitted accessory dwelling units.

R. “Dwelling unit, detached” means a dwelling unit that is not attached or physically connected to any other dwelling unit or other use.

S. “Dwelling unit, stacked” means a dwelling unit that has one or more horizontal walls in common with or adjacent to one or more other dwelling units or other uses and may have one or more vertical walls in common with or adjacent to one or more other dwelling units or other uses, excluding lawfully permitted accessory dwelling units.

T. “ECDC” means the “Edmonds Community Development Code.”

U. “Easement” means land which has specific air, surface or subsurface rights conveyed for use by an entity other than the owner of the subject property or to benefit some property other than the subject property.

V. "Ecological functions" or "shoreline functions" means 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. See WAC 173-26-200 (2)(c).

W. “Edmonds Community Development Code (ECDC)” means Ordinance 2182 as amended or, if repealed, its successor document.

X. “Enhancement” means alteration of an existing resource to improve or increase its characteristics and processes without degrading other existing functions. Enhancements are to be distinguished from resource creation or restoration projects.

Y. “Environmentally sensitive areas” means an area designated and mapped by a city under WAC 197-11-908, as now or hereafter amended. Certain categorical exemptions do not apply within environmentally sensitive areas (WAC 197-11-305 and 197-11-908, as now or hereafter amended).

Z. “Erosion and deposition” means the removal of soils and the placement of these removed soils elsewhere by natural forces such as wind or water.

AA. “Excavate(tion)” means the mechanical removal of soils and/or underlying strata.

BB. “Feasible” means, for the purpose of this chapter, that an action, such as a development project, mitigation, or preservation requirement, meets all of the following conditions:

1. The action can be accomplished with technologies and methods that have been used in the past in similar circumstances, or studies or test have demonstrated in similar circumstances that such approaches are currently available and likely to achieve the intended results;

2. The action provides a reasonable likelihood of achieving its intended purpose; and

3. The action does not physically preclude achieve the project’s primary intended legal use.

In cases where this Master Program requires certain actions unless they are infeasible, the burden of proving infeasibility is on the applicant.

In determining an action’s infeasibility, the City of Edmonds may weigh the action’s relative public costs and public benefits, considered in the short- and long-term time frames.

CC. “Ferry terminal” means a combination of waterward and upland improvements providing the interface between public/private waterborne transportation and public/private ground transportation.

DD. “Fill” means the addition of soil, sand, rock, gravel, sediment, earth retaining structure, or other material (excluding solid waste) to an area waterward of the OHWM, in wetlands, or on shoreland in a manner that raises the elevation or creates dry land.

EE. “Fill material” means dirt, structural rock or gravel, broken concrete and similar structural substances customarily used to raise the level of the ground, but excluding topsoil, bark, ornamental rocks or gravel placed on the surface of the ground.

FF. “Float, recreational” means an offshore platform/buoy used for water-dependent activities such as, but not limited to, swimming and diving.

24.90.030 Definitions: G to O

A. “Gabions” means structures composed of masses of rocks, rubble or masonry held tightly together, usually by wire mesh, so as to form blocks or walls; sometimes used on heavy erosion areas to retard wave action or as foundations for breakwaters or jetties.

B. “Geotechnical report” or “geotechnical analysis” means 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, an 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 geological and hydrological impacts of the proposed development; including the potential adverse impacts to adjacent and down-current properties. Geotechnical reports shall conform to accepted technical standards an must be prepared by qualified professional engineers or geologists who have professional expertise in both regional and local shoreline geology and processes.

C. “Government facility” means 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.

D. “Grading” means 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.

E. “Haines Wharf” means Lots 7 through 11 in the plat of Meadowdale Tidelands.

F. “Hotel” means any building containing five or more separately occupied rooms that are rented out for sleeping purposes. A central kitchen and dining room and interior accessory shops and services catering to the general public can be provided. Not included are institutions housing persons under legal restraint or requiring medical attention or care.

G. “Improvement” means any structure or manmade feature.

H. “Inner harbor line” means the line designated as such by the State Harbor Line Commission pursuant to Article XV, Washington State Constitution.

I. “Land surface modification” means the clearing or removal of trees, shrubs, ground cover and other vegetation, and all grading, excavation and filling of materials. The removal of

overhanging vegetation and fire hazards as specified in ECDC 18.45.030(E) shall not be deemed to be land surface modifications.

J. “Landscaping” means the planting, removal and maintenance of vegetation along with the movement and displacement of earth, topsoil, rock, bark and similar substances done in conjunction with the planting, removal and maintenance of vegetation.

K. “Landward” means upland from the ordinary high water mark.

L. “Lot” means a single tract of land legally created as a separate building site with frontage on a street or access easement. For purposes of this code the area of the lot used to calculate lot area shall be the area of the lot which is upland of the OHWM and adjoining lots under common ownership which were created without subdivision or short subdivision approval from applicable city or county governments. This lot area shall be considered as one lot and subject to the regulations contained herein. The terms of this section shall apply regardless of whether the individual adjoining lots meet current zoning requirements.

M. “Low Impact Development (LID)” means a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

N. “LID Principles” means land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

O. “Low impact development best management practices” means distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, vegetated roofs, minimum excavation foundations, and water re-use.

P. “Marine launcher” means a mechanical device that can hoist vessels off trailers and transport them into the water and often is associated with dry land moorage facilities.

Q. “Master plan” means a complete development plan for the subject property showing placement, dimensions and uses of all structures as well as streets and other areas used for vehicular circulation.

R. “Mean sea level” means the level of Puget Sound at zero tide as established by the U.S. Army Corps of Engineers.

S. “Minor appurtenant building” means minor buildings associated with overwater structures including but not limited to the following: storage buildings less than 150 square feet in area, ferry terminal passenger shelter, covered moorage, etc.

T. “Mixed-use developments” are shoreline developments which combine more than one separate but related activity into a coordinated package. Activities usually include one or more water-dependent uses with non-water-dependent uses. Drive-in businesses are not permitted.

U. “Modification” means an action undertaken in support of or in preparation for a shoreline use that modifies the physical configuration or qualities of the shoreline area.

V. “Moorage” means a place to tie up or to anchor a waterborne craft.

W. “Mooring buoy” means a floating object anchored to the bottom of a water body that provides tie up capabilities for waterborne craft.

X. “Moorage facility” means a pier, dock, dolphin, buoy or other structure providing docking or moorage space for waterborne craft.

Y. “Motel” means a building containing units which are used as individual sleeping units having their own private toilet facilities and sometimes their own kitchen facilities, designed primarily for the accommodation of transient automobile travelers. Accommodations for trailers are not included. This term includes tourist court, motor lodge, auto court, cabin court, motor hotel, motor inn and similar names.

Z. “Multimodal terminal (facility)” means a terminal (facility) designed for the co-location of transportation loading and unloading by multiple forms of transportation including land, water or rail.

AA. “Nonconformance” means any use, structure, lot, condition, activity, or any other feature or element of private property or the use or utilization of private property that does not conform to any of the provisions of this code or that was not approved by the city through the appropriate decision-making process required under this code and/or was established prior to the original Edmonds shoreline master program.

BB. “Normal appurtenances” 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.

CC. “Office (use)” means a place of employment in a building or separately defined space within a building providing services other than production, distribution or sale or repair of goods or commodities. The following is a nonexclusive list of office uses: accounting, architectural, engineering, consulting or other similar professional services; management, administrative, secretarial, marketing, advertising, personnel or other similar personnel services; sales offices where no inventories or goods are available on the premises; real

estate, insurance, travel agent, brokerage or other similar services. The following uses are specifically excluded from the definition of office: medical, dental, or other health care; veterinary; banks, loan companies and similar financial institutions.

DD. "Off-street parking" means motor vehicle parking facilities within the lot area of a private lot or public lot established for that purpose.

EE. "Official newspaper of the city" means the publication designated by ordinance or resolution to contain official newspaper publications for the city government.

FF. "Official notification boards of the city" means the bulletin boards in the public areas of the city of Edmonds Community Services Building, the Edmonds Main Post Office Branch, and the Edmonds Public Library.

GG. "OHWM" means ordinary high water mark (see ECDC 24.90.030.FF).

HH. "Open space" means land not covered by buildings, roadways, parking areas or other surfaces through which water cannot percolate into the underlying soils.

II. "Ordinary high water mark" on all lakes, streams, and tidal water is 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 existing on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by the City of Edmonds or the Department of Ecology; PROVIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water.

JJ. "Oriented" means facing or directed toward.

KK. "Outer harbor line" means the line designated as such by the State Harbor Line Commission pursuant to Article XV, Washington State

24.90.040 Definitions: P to R

A. "Parking area" means any area designed and/or used for parking of vehicles.

B. "Parking space" means an area which is improved, maintained and used for the sole purpose of temporarily accommodating a motor vehicle that is not in use.

C. "Pedestrian orientation" pertains to facilities which encourage pedestrian movement and are designed and oriented toward use by pedestrians.

D. “Pier” means a fixed structure which abuts the shoreline and is used for moorage or other water-related activities such as fishing, swimming and diving.

E. “Planning division” means the planning division of the community services department of the City of Edmonds.

F. “Planning manager” means the manager of the planning division of the City of Edmonds or the acting manager of that division.

G. “Planning official” means the manager of the planning division or his/her designee.

H. “Port” means a special purpose unit of local government created for the purpose of managing port-related lands, facilities and activities. For the purposes of this document, “port” refers to the port of Edmonds and its facilities and operation.

I. “Property line” means those lines enclosing a lot, its developable area and those lines defining a recorded vehicular access easement. The following are categories of property lines:

1. “Front property line” is any property line that is adjacent to a street or easement more than 20 feet in width, except that the Burlington Northern right-of-way shall not be considered a front property line.

2. “Rear property line” is any property line that is farthest from and essentially parallel to a front property line except on a lot which contains two or more front property lines.

3. “Side property line” is any property line other than a front property line or a rear property line.

J. “Public access” is the physical ability of the general public to reach and touch the water's edge and/or the ability to have a view of the water and the shoreline from upland locations. There are a variety of types of public access including picnic areas, pathways and trails (including disabled), floats and docks, promenades, viewing towers, bridges, boat launches, street ends, ingress and egress, parking and other similar facilities or locations.

K. “Public access pier or boardwalk” means an elevated structure or floating structure which is constructed waterward of the ordinary high water mark and intended for public use.

L. “Public park” means an area provided by a unit of government to meet the active or passive recreational needs of people in the water and on the upland shoreline.

M. “Public right-of-way” means land dedicated to the movement of vehicles and pedestrians and providing for primary access to adjacent parcels and or public waterborne transportation. Secondarily, the land provides space for utility lines and appurtenances and other publicly owned devices.

N. “Public use area” means a portion of private property that is dedicated to public use and which contains one or more of the following elements: benches, tables, lawns, gardens, piers, exercise or play equipment or similar improvements or features. These elements are to provide the public with recreational opportunities in addition to the right to traverse or stand in this area.

O. “Public utility” means a private business organization such as a public service corporation, including physical plant facilities, performing some public service and subject to special governmental regulations, or a governmental agency performing similar public services, the services by either of which are paid for directly by the recipients thereof. Such services shall include but are not limited to: water supply, waste water treatment, stormwater treatment, electric power, telephone, cablevision, gas, and transportation for persons and freight.

P. “Railroad right-of-way” means the land occupied by a railroad for its tracks, yard, buildings, and related structures.

Q. “Restaurant” means a building where food is sold to the public for on-premises consumption or to go. It may include alcoholic beverage service only pursuant to a Class “C,” “D,” or “H” state liquor license.

R. “Restore,” restoration” or “ecological restoration” means the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal o intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.

S. “Retail establishment” means a commercial enterprise which provides goods or services directly to the consumer and whose goods are available for immediate purchase and removal from the premises by the purchaser or whose services are traditionally not permitted within an office use.

24.90.050 Definitions: S to T

A. “Shore setback” means the minimum distance between a structure or use and the shoreline ordinary high water mark.

B. “Shoreline areas” and “shoreline jurisdiction” means all “shorelines of the state” and “shorelands” as defined in RCW 90.58.030.

C. “Shoreline conditional use” means a use or development which is specifically listed by this master program as a conditional use within a particular shoreline environment or a use which is not addressed by this master program within any shoreline environment.

D. “Shoreline Management Act (SMA)” means Chapter 90.58 RCW as now or hereafter amended.

E. “Shoreline master program (SMP)” means the ordinance of the City of Edmonds adopted under authority of Chapter 90.58 RCW.

F. “Shoreline modifications” means 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, pier, weir, dredged basin, fill, bulkhead, or other shoreline structure. They can include other actions, such as clearing, grading, or application of chemicals.

G. “Shoreline variance” means a procedure to grant relief from the specific bulk, dimensional or performance standards set forth in this master program, and not a means to allow a use not otherwise permitted within a shoreline environment.

H. “Silt or sediment” means the soil particles mobilized and deposited by the processes of erosion and deposition.

I. “Street” means the public or private right-of-way or access easement which provides vehicular access to more than three lots.

J. “Structure” means anything which is built or constructed; an edifice or building of any kind, or any piece of work artificially built-up or composed of parts joined together in some definite manner. Not included are fences less than six feet in height, retaining wall, rockeries, and similar improvements of a minor character less than three feet in height.

K. “Structural alterations” means any change in a supporting member of a building or structure.

L. “Subject property” means the entire lot, series of lots or parcels on which a development or use is or will locate and that is otherwise subject to the provisions of this code. For the purposes of this chapter, land leased from the Department of Natural Resources, which is contiguous to the applicant's property, shall also be considered the “subject property.”

24.90.060 Definitions: U to Z

A. “Use, development and/or activity” means “development” as that term is defined in Chapter 90.58 RCW. “Use” also means the nature of the activities taking place on private property or within structures thereon.

B. “Vehicle holding area” means any area designated by the city or state for holding vehicles prior to loading onto a ferry.

C. “Water-dependent use” means a use or a portion of a use which is dependent on the water by reason of the intrinsic nature of its operations and can not exist in any other location. Examples of water-dependent uses may include ferry and passenger terminals, marinas and sewer outfalls.

D. “Water-enjoyment use” means a recreational use, or other use facilitating 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 the location, design and operation assures 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, piers, scuba diving facilities and other improvements facilitating public access to shorelines of the state; and general water-enjoyment uses may include but are not limited to, restaurants, museums, aquariums, scientific/ecological reserves, resorts and mixed-use commercial; provided, that such uses conform to the above water-enjoyment specifications and the provisions of the master program.

E. “Water-oriented use” refers to any combination of water-dependent, water-related, and/or water-enjoyment uses and serves as an all-encompassing definition for priority under the SMA. “Non-water-oriented” serves to describe those uses which have little or no relationship to the shoreline and are not considered priority uses under the SMA. Examples include professional offices, automobile sales or repair shops, mini-storage facilities, multifamily residential development, department stores and gas stations.

F. “Water-related use” means a use or a portion of a use which is not intrinsically dependent on a waterfront location but whose economic viability is dependent upon a waterfront location because:

1. Of 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

2. The use provides a necessary service supportive of the water-dependent commercial activities and that the proximity of the use to its customers makes its services less expensive and/or more convenient.

G. “Waterward” means toward the body of water on the waterside of the ordinary high water mark.

H. “Wetlands” means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland 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.

Part X Appendices

24.100.000 Appendix A - Maps of Shoreline Environments and Jurisdictions

24.100.010 Appendix B – Shoreline Master Program Version of Edmonds Critical Area Regulations

Lake Ballinger Inset

City of Lynwood
Sewage Treatment Area

Legend

SMP Designations

- Aquatic I
- Aquatic II
- Conservancy
- Natural
- Shoreline Residential I
- Shoreline Residential II
- Shoreline Residential III
- Urban Mixed Use I
- Urban Mixed Use II
- Urban Mixed Use III
- Urban Mixed Use IV
- Urban Railroad
- Planning Segement Break
- OHW
- Edmonds City Limits
- Railroad
- Stream

City of Edmonds

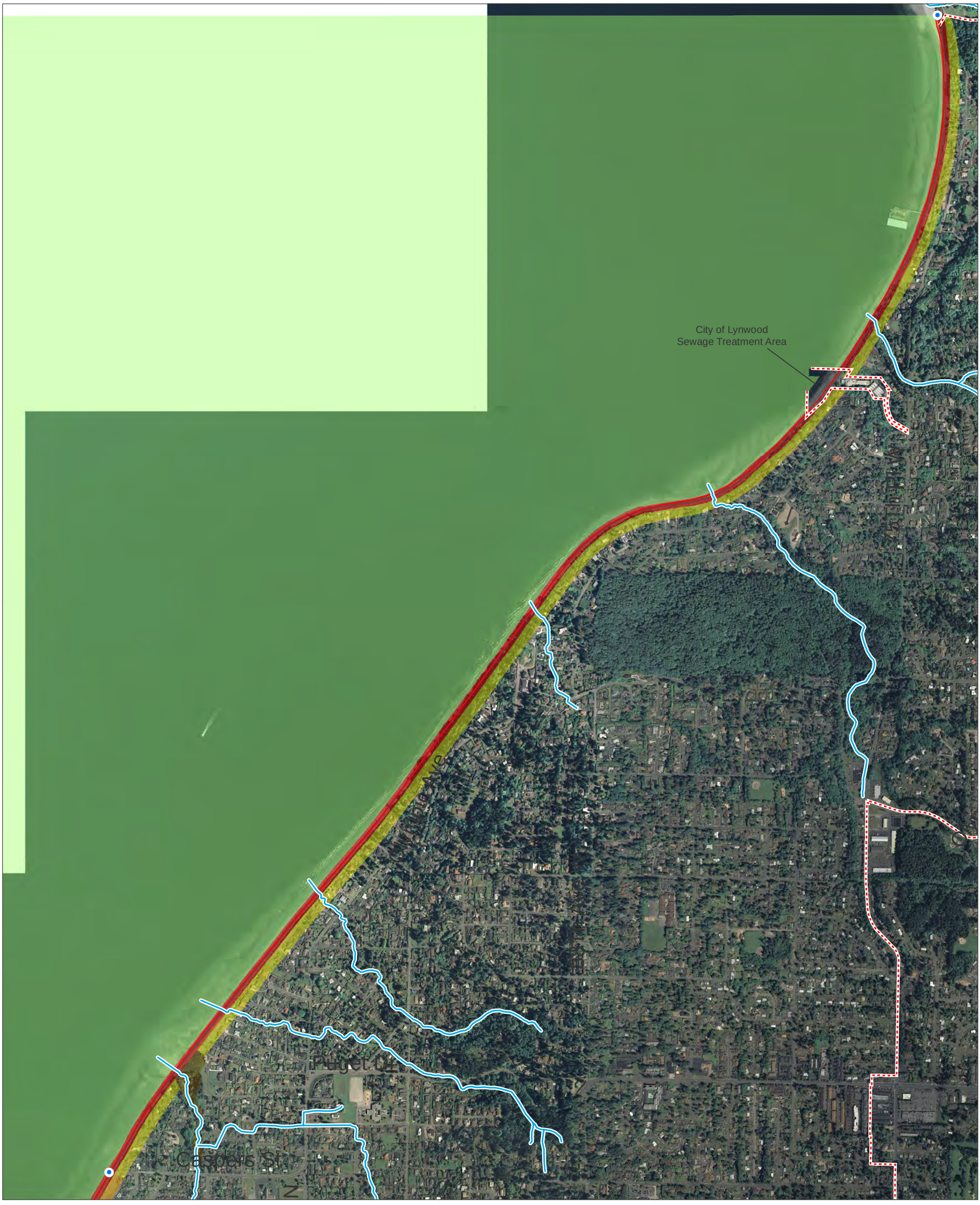
Shoreline Master Program Update

Environmental Designations: City-Wide

Figure 1

Date of Last Revision: 08-25-2014

Figure X-X



Legend

SMP Designations

- Aquatic I
- Aquatic II
- Conservancy
- Natural
- Shoreline Residential I
- Shoreline Residential II
- Shoreline Residential III
- Urban Mixed Use I
- Urban Mixed Use II
- Urban Mixed Use III
- Urban Mixed Use IV
- Urban Railroad
- Planning Segement Break
- OHW
- Edmonds City Limits
- Railroad
- Stream

City of Edmonds

Shoreline Master Program Update

Environmental Designations: Marine Shoreline (North)

Figure 2

Date of Last Revision: 08-25-2014

Legend

SMP Designations

- Aquatic I
- Aquatic II
- Conservancy
- Natural
- Shoreline Residential I
- Shoreline Residential II
- Shoreline Residential III
- Urban Mixed Use I
- Urban Mixed Use II
- Urban Mixed Use III
- Urban Mixed Use IV
- Urban Railroad
- Planning Segement Break
- OHW
- Edmonds City Limits
- Railroad
- Stream

City of Edmonds

Shoreline Master Program Update

Environmental Designations: Marine Shoreline (South)

Figure 3

Date of Last Revision: 08-25-2014

Legend

SMP Designations

- Aquatic I
- Aquatic II
- Conservancy
- Natural
- Shoreline Residential I
- Shoreline Residential II
- Shoreline Residential III
- Urban Mixed Use I
- Urban Mixed Use II
- Urban Mixed Use III
- Urban Mixed Use IV
- Urban Railroad

- Planning Segement Break
- OHW
- Edmonds City Limits
- Railroad
- Stream

City of Edmonds

Shoreline Master Program Update

Environmental Designations: Lake Ballinger

Figure 4

Date of Last Revision: 08-25-2014

City of Edmonds

Shoreline Master Program Update

Shoreline Inventory & Characterization

SMA Grant Agreement No. 60600108

November 2007

Prepared for:

City of Edmonds

by:

Sea-Run Consulting

TetraTech, Inc.

Reid Middleton, Inc.

Pentec

Table of Contents

Tables

Acronyms and Definitions

BA	Biological Assessment
BEACH	Washington's Beach Environmental Assessment, Communication and Health Program
BETX	Benzene, Ethylbenzene, Toluene, or Total Xylenes
BNSF	Burlington Northern Santa Fe
CAO	Critical Areas Ordinance
CARAs	Critical Aquifer Recharge Areas
CWA	Clean Water Act
DMMP	Dredged Material Management Program
DNR	Department of Natural Resources
DOE	Department of Ecology
ECDC	Edmonds Community Development Code
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Inpact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FS	Feasibility Study
GIS	Geographic Information Systems
GMA	Growth Management Act
GPS	Global Positioning System
HDPE	High-Density Polyethylene
HPA	Hydraulic Project Approval
JARPA	Joint Aquatic Resource Permit Application
LUST	Leaking Underground Storage Unit
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
MSA	Magnuson-Stevens Fisheries Conservation and Management Act
MSL	Mean Sea Level
MTCA	Model Toxics Control Act
MW	Monitoring Well
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System ()
NWSSC	Northwest Salmon and Steelheaders Council
OHW	Ordinary High Water
OHWM	Ordinary High Water Mark

PAH	Polycyclic Aromatic Hydrocarbon
PCBs	Polychlorinated biphenyls
PSAMP	Puget Sound Ambient Monitoring Program
PSDDA	Puget Sound Dredge Disposal Analysis
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RI	Remedial Investigation
SMA	Shoreline Management Act
SMP	Shoreline Master Plan
SQG	Small Quantity Generators
SQS	Sediment Quality Standards
SVOCs	Semivolatile Organic Compounds
SWM	Surface Water Management
TMDL	Total Daily Maximum Load
TPH	Total Petroleum Hydrocarbons
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
UST	Underground Storage Tanks
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WISAARD	Washington Information System for Architectural and Archaeological Records Data)
WRIA	Water Resources Inventory Area
WSF	Washington State Ferries

1. Introduction

1.1 Background and Purpose

The purpose of the Shoreline Inventory and Characterization Report is to document baseline environmental conditions in the shoreline jurisdiction of the City of Edmonds (City), Washington. This inventory and characterization provides a basis for updating the City's Shoreline Master Program to comply with the Shoreline Management Act (SMA), Revised Code of Washington (RCW) 90.58, and its implementing guidelines, Washington Administrative Code (WAC) 173-26. The inventory and characterization will help the City evaluate ecological functions and values of natural resources in its shoreline jurisdiction, and explore opportunities for conservation and restoration.

This report provides a framework of information that will support future updates to the City's shoreline environment designations, shoreline management policies, and regulations.

1.2 Shoreline Jurisdiction and Study Area Boundary

Under the SMA, the shoreline jurisdiction includes areas that are 200 feet landward of the ordinary high water mark (OHWM) of waters that have been designated as "shorelines of statewide significance" or "shorelines of the state." These designations were established in 1972 and are described in WAC 173-18. Generally, "shorelines of statewide significance" include portions of Puget Sound and other marine water bodies, rivers west of the Cascade Range that have a mean annual flow of 1,000 cubic feet per second (cfs) or greater, rivers east of the Cascade Range that have a mean annual flow of 200 cfs or greater, and freshwater lakes with a surface area of 1,000 acres or more. "Shorelines of the state" are generally described as all marine shorelines and shorelines of all other streams or rivers having a mean annual flow of 20 cfs or greater and lakes with a surface area greater than 20 acres. For this inventory, OHWM was defined as an elevation equivalent to mean higher high water (MHHW), to be consistent with interpretations by state agencies (e.g., Washington Department of Ecology).

This characterization focuses on the approximately 5.2 miles of Puget Sound marine shoreline within the city limits of the City of Edmonds (Figure 1). The shoreline of Puget Sound, including the shoreline within the City limits, is defined as a "shoreline of statewide significance" waterward of the line of extreme low tide [RCW 90.58.030(2)(e)(iii)], extending waterward (in Edmonds) to the offshore city limit (see Figure 1). Although there are other areas in Puget Sound with additional characteristics that are designated as "shorelines of statewide significance," none is present in the Edmonds vicinity. Lake Ballinger, with a surface area of about 100 acres, qualifies as a "shoreline of the state" but is too small to be a "shoreline of statewide significance." No streams within the City qualify as either a "shoreline of the state" or a "shoreline of statewide significance."

Under the SMA, the shoreline area to be regulated under the City's Shoreline Master Program must also include adjacent "shorelands," which are defined as the upland area within 200 feet of OHWM, as well as any associated wetlands (RCW 90.58.030). "Associated wetlands," means those wetlands that are in proximity to and either influence or are influenced by tidal waters or a lake or stream subject to the SMA (WAC 173-22-030 (1)). These are typically identified as wetlands that physically extend into the shoreline jurisdiction, or wetlands that are functionally related to the shoreline jurisdiction through a surface water connection and/or other factors. Specific language from the RCW describes the limits of shoreline jurisdiction as follows:

"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 associated wetlands and river deltas" (RCW 90.58.030(2)(f)).

For this inventory, we included all wetlands and creeks that are directly hydraulically connected to shorelands as part of the Edmonds' shoreline jurisdictional boundary. The approximate area of the shorelands is shown with a dashed line on some of the figures in this document; this line is not a surveyed line. It is a representation of the approximate location of the setback 200 feet from the OHWM jurisdiction.

1.3 Methodology

Information collected and reviewed to create this inventory and characterization was obtained from many sources, including the City, Snohomish County, and state and federal agencies. Some of the primary sources of data for the inventory's geographic information systems (GIS) database are:

- City of Edmonds Community Development Code (2005);
- Snohomish County Marine Shore Inventory and Database (2001);
- City of Edmonds records and files;
- Washington State ShoreZone Inventory (2001);
- Coastal Zone Atlas of Washington (2001);
- Washington State Department of Fish and Wildlife Priority Habitats and Species, Priority Resident and Anadromous Fish Presence, Wildlife Heritage Points, Seabird Colonies, and Sea Lion Haulout Site reports (2006);
- Final Environmental Impact Statement for the Brightwater Regional Wastewater Treatment System (2003).

Numerous other data sources, including local and state databases and reports, were reviewed for best available science and information to inventory and characterize the Edmonds shoreline. These sources are cited in the document and References section. Data gaps are identified in Appendix A.

1.4 Shoreline Planning Segments

For the shoreline ecological inventory, the City's shoreline jurisdiction was divided into nine segments (A through I), based on biological and physical features and ecological functions described in a recent Shoreline Habitat Assessment (Pentec Environmental 2001). The inventory segmentation focused on the aquatic environment and the adjacent shoreline features that directly

influence it. The subsequent characterization and analysis required that the segments be considered in conjunction with existing land uses and zoning designations, using a broader-scale assessment of ecological differences and similarities observable along the shoreline to develop four shoreline planning reaches that are consistent with Edmonds' Comprehensive Plan and the Critical Areas Ordinance. Shoreline segments are described in Table 1 and depicted on Figure 2. Detailed segment descriptions are provided in Section 7. Shoreline planning reaches, which combine similar shoreline segments, are described in Table 2 and depicted on Figure 2.

Table 1. Shoreline Segments

Segment	General Boundaries	Approx. Length (feet)[1]	Approx. Percentage of City's Shoreline Jurisdiction
A	Lund's Gulch to Perrinville Creek	7,100	23%
B	Perrinville Creek to Southwest County Park	2,100	7%
C	Southwest County Park to Fruitdale Creek	5,300	17%
D	Fruitdale Creek to Shell Creek	3,300	11%
E	Shell Creek to Edmonds Underwater Park	3,300	11%
F	Edmonds Underwater Park to Port of Edmonds	1,850	6%
G	Port of Edmonds Marina (including Edmonds Marsh and Shellabarger Creek)	3,200	10%
H	Port of Edmonds Marina to Point Edwards	900	3%
I	Lake Ballinger	4000	12%

1 - Does not include the length of constructed piers, jetties, breakwaters, or piers that extend waterward from shore.

Table 2. Shoreline Planning Reaches

Reach	General Boundaries	Segment	Approx. Length (feet)[1]	Approx. Percentage of City's Shoreline Jurisdiction
1	Lund's Gulch to Caspers Street	A, B, C, D, north half of E	19,351	64%
2	Caspers Street to Main Street	South half of E, north half of F	2,253	7%
3	Main Street to Point Edwards	South half of F, G, H	4,716	16%
4	Lake Ballinger	I	3,947	13%

1 - Does not include the length of constructed piers, jetties, breakwaters, or piers that extend waterward from shore.

2. Current Regulatory Framework Summary

2.1 City of Edmonds Plans and Regulations

2.1.1 Current Shoreline Management Act Compliance

The City of Edmonds first adopted a shoreline master program in the 1970s consistent with the SMA of 1971. Over the years, the City of Edmonds made minor amendments to its Shoreline Master Program (SMP). In 1996, the City began an update of the SMP. This effort resulted in a revised SMP adopted by Edmonds City Council in 2000 in Ordinance 3318, Section 3. The adopted SMP is found in Edmonds Community Development Code (ECDC) Chapter 23.10. The SMP was adopted as both a policy plan and a regulatory program. It was developed to be consistent with the City of Edmonds Comprehensive plan and its component elements (ECDC 23.10.030.)

This chapter is divided into the following five parts, consistent with the material to be included within a master program as established in Chapter 173-26 WAC: Part I, contains basic and general information regarding the shoreline master program. Part II, contains the City's goals and policies with respect to the seven program elements established in Chapter 173-16 WAC. Part III contains information regarding the different shoreline environments to be found within the City. Part IV contains regulations that apply to the various uses, developments, and activities that are regulated under the shoreline master program. Part V contains appendices pertaining to the shoreline master program.

Part III of the Edmonds SMP establishes the environmental designations for various shoreline areas of the state. The different environment designations are intended to provide a way to regulate shoreline use developments and activities in the different areas of the City's shoreline. Specific use regulations found in the Edmonds SMP apply to the different environment designations. The current Edmonds SMP contains five different environment designations: Conservancy, Natural, Suburban Residential, Urban Mixed Use, and Urban Railroad. The SMP provides boundary descriptions for each of the environments. The official map of the City designating the various shoreline environments is adopted by reference in ECDC 23.10.110.

In December 2003, the state of Washington adopted new guidelines consistent with RCW 90.58.020 for development of local shoreline master programs. The 2003 legislature adopted a schedule for updating local shoreline master programs (SSB 6012). The City of Edmonds is required to adopt an amended SMP consistent with the new Guidelines by 2011. However, all jurisdictions may amend their SMP at any time before the scheduled date. Edmonds has chosen to begin its update in 2006. It applied for and was awarded a grant to complete this work by the Washington State Department of Ecology (Ecology).

2.1.2 Comprehensive Plan, Zoning, and Other City Regulations

2.1.2.1 City of Edmonds Comprehensive Plan

The City of Edmonds amended its comprehensive plan in 2004 in compliance with the Growth Management Act (GMA) (RCW 36.70A.) The comprehensive plan has the following purposes:

A. To serve as the basis for municipal policy on development and to provide guiding principles and objectives for the development of regulations.

B. To promote the public health, safety, order, convenience, prosperity, and the general welfare and values of the community.

C. To anticipate and influence the orderly and coordinated development of land and building use of the City and its environs and conserve and restore natural beauty and other natural resources.

D. To encourage coordinated development and discourage piecemeal, spot or strip zoning, and inharmonious subdividing.

E. To facilitate adequate provisions for public services (such as transportation, police and fire protection, water supply, sewage treatment, and parks).

The comprehensive plan contains land use types and compatible zoning classifications. Along the Edmonds shorelines, land is designated as Single Family, Park and Open Space, and Master Plan Development. The City designations for land use are important to the shoreline to establish the general land use pattern and provide the policy guidance for development of shoreline environment designations within the Edmonds SMP.

The Edmonds comprehensive plan contains a land use element specific to the downtown waterfront area titled Downtown Waterfront Activity Center. This element of the comprehensive plan incorporates a number of other planning efforts for the Edmonds waterfront, including the 1994 Downtown Waterfront Plan. This section of the Edmonds comprehensive plan provides policy guidance for the shoreline master program. It contains descriptions of the different waterfront areas and waterfront area policies.

2.1.2.2 City of Edmonds Zoning Code

City of Edmonds Community Development Code, Titles 16 and 17, contain the zoning ordinance for Edmonds. Title 16 contains the designations and accompanying regulations for the City of Edmonds. These designations are consistent with the Edmonds Comprehensive Plan. Title 16 contains the designations, their purposes and development standards. Title 17 contains general zoning regulations applicable to all zoning districts (Figure 3).

2.1.2.3 City of Edmonds Environmentally Critical Areas Code

Title 23.40 of the Edmonds Community Development Code (ECDC) contains the environmentally critical areas code for the City of Edmonds. This title implements the goals, policies, guidelines, and requirements of the comprehensive plan and the Washington State GMA requirements to protect critical areas of the City. These regulations are intended to protect critical areas through the application of the best available science, as determined by WAC 365-195-900 through 365-195-925 and RCW 36.70A.172. The regulations were adopted by Ordinance 3527, Section 2 in 2004. The regulations contain a critical area review process,

including mitigation planning, requirements and sequencing, allowed activities, exemptions, noncompliance penalties, and protective measures. Specific natural resources addressed in the Edmonds Community Development Code are as follow: Wetlands, ECDC 23.50; Critical Aquifer Recharge Areas (CARA), ECDC 23.60; Frequently Flooded Areas, ECDC 23.70; Geologically Hazardous Areas, ECDC 23.80; and Fish and Wildlife Habitat Conservation Areas, ECDC 23.90. These environmentally critical areas (Figure 4) apply to the City's shoreline jurisdiction.

2.2 State and Federal Shoreline Regulations

Development in or above federally or state-designated waters generally requires permits from local, state and federal agencies. Project review and authorization, in the form of permit-applications, are usually required when changes to federally navigable waters, state waters, or fish and wildlife habitat are anticipated.

For tidal waters, construction activities are regulated by the local jurisdiction (in this case, Edmonds), Washington Department of Ecology, and the Washington State Department of Fish and Wildlife (WDFW), U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA). In addition, the National Oceanic and Atmospheric Administration's National Marina Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (USFWS) must concur that any project requiring federal approvals (a USACE permit, for example) is consistent with the Endangered Species Act (ESA). These agencies will require that proposed projects avoid or offset project impacts on certain fish and wildlife species through design and/or environmental controls and/or restoration activities.

Each agency defines its in-water jurisdiction based on an established water elevation, which extends landward from the water to extreme high water, mean higher high water (MHHW), mean high water, or ordinary high water (OHW), depending on the agency. Permits and approvals that are typically required by agencies with regulatory authority in shoreline/shoreland areas are described below.

2.2.1 Shoreline Substantial Development Permits

The City of Edmonds is the local permit authority for construction activities waterward of OHW and within 200 feet of the OHWM for uplands. All shoreline permits are processed by the City of Edmonds pursuant to Edmonds Municipal Code, 23.10.035. The City is also responsible for State Environmental Policy Act (SEPA) compliance of a project. Following the local government decision on all permit applications, applications are sent to Ecology. Ecology must approve, approve with conditions, or deny each conditional use permits and variances. Ecology does not have direct approval authority over the more common Shoreline Substantial Development Permits (SDP) if they are found inconsistent with the local SMP and the SMA, Ecology may file an appeal with the Shorelines Hearings Board.

2.2.2 WDFW Hydraulic Project Approval (HPA)

Any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any freshwater or saltwater of the state requires an HPA from WDFW. The purpose of the HPA is to address potential project impacts, through construction and operation, on state-managed fish and wildlife species in fresh and marine waters. Saltwater activities requiring an HPA include construction of bulkheads, fills, boat launches, piers, dry docks, artificial reefs, dock floats, marinas, placement of utility lines, pile driving, and dredging. The state jurisdiction for an HPA

is defined as proposed construction or work waterward of the MHHW line in saltwater and OHW in fresh water (See *Chapter 220-110 WAC*), for all lakes, streams, and marine waters in Edmonds.

A Joint Aquatic Resource Permit Application (JARPA) is a Washington State-designed project information form and notification document used for preparing a permit application for an HPA. Drawings of the proposed project are submitted along with the JARPA form to WDFW for review and permit issuance. The JARPA form is also submitted to other local, state, and federal agencies for their reviews and approvals.

2.2.3 Ecology Section 401 Water Quality Certification

The Federal Water Pollution Control Act (commonly referred to as the Clean Water Act [CWA]) regulates discharges of pollutants into federally designated waters, which include Lake Ballinger, Edmonds Marsh, and the marine waters along the Edmonds shoreline. Under the CWA, Ecology is authorized by USEPA to regulate and administer water quality discharge permits through the Section 401 Water Quality Certification. The Water Quality Certification includes construction-generated water discharges, including site stormwater runoff, into federally/state-designated waters. Water Quality Certification is typically issued in conjunction with the Section 404 permit process administered by USACE and described below. Upland projects outside of the shoreline jurisdiction that affect groundwater or involve discharges of sewage or stormwater, also require water quality permits from Ecology under Section 401 authorization if they discharge into waters of the state. Outfall construction for discharges within the shoreline jurisdiction also requires Section 401 Water Quality Certification.

2.2.4 USACE Clean Water Act Section 404 and Rivers and Harbors Act Section 10

USACE administers Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Permit compliance for both acts is triggered by construction in "navigable waters," including rivers, harbors, and marine nearshore areas designated by the federal government; a Section 404 permit is issued for dredging or filling navigable waters, including wetlands. Typical shoreline construction projects in marine waters, such as construction or maintenance of bulkheads, piers, and docks, are subject to both Sections 10 and 404 approvals and typically require individual permit applications and extensive reviews and negotiation to obtain USACE approvals; however, simple repair and maintenance activities of such structures may be allowed under a Nationwide Permit. Nationwide Permits are part of an expedited permit process that allows USACE to authorize work that falls under certain thresholds of disturbance.

The project permit application for USACE authorization consists of a JARPA (same as the one submitted for an HPA) and a set of project drawings (same as the one submitted for an HPA).

Before USACE can issue permit approvals for a project, it must obtain project review and concurrence under the ESA Section 7 for all federally designated threatened or endangered species in the project area. Section 7 and other relevant sections of the ESA are administered by the USFWS and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), referred to as NOAA Fisheries.

2.2.5 NOAA Fisheries and USFWS Endangered Species Act (ESA) Section 7

NOAA Fisheries and USFWS administered the ESA for all federally permitted, funded, or authorized projects located in areas where a federally designated threatened or endangered species is known to occur. All federal agencies, including USACE, must coordinate their construction-related authorizations with NOAA Fisheries and/or USFWS (depending on the species present in the area) to protect threatened and endangered species. Potential project effects on federally designated threatened or endangered species are addressed through a Biological Assessment (BA), following specific analytical guidelines that are described in the Endangered Species Consultation Handbook and subsequent memoranda issued by NMFS (now NOAA Fisheries). In addition, other agencies, including USACE and the Washington Department of Transportation, have interpreted and developed their own guidance requirements for making a biological evaluation. Ultimately, NOAA Fisheries and USFWS are responsible for reviewing the BA and providing a Biological Opinion that describes the conditions under which a project may proceed. They do not issue permits—they provide written authorization, so that other permits may be issued without violating provisions of the ESA.

NOAA Fisheries also requires compliance with the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) for federally permitted, funded, or authorized projects in areas with designated habitat for commercial fisheries species. In Washington nearshore areas, habitat for commercial fish species often overlaps with habitat for threatened and endangered fish species protected under the ESA. An analysis of potential project effects, similar to a BA, is required for MSA commercial fisheries and designated habitat. This is called an Essential Fish Habitat (EFH) assessment. Often NOAA Fisheries will prepare the EFH assessment and provide it with a letter of concurrence or a Biological Opinion for ESA-listed species.

Numerous federally designated threatened and endangered species protected under the ESA may be found within Edmonds shoreline and shoreland areas. As of 2006, some ESA-listed species within Edmonds marine shorelines include Chinook salmon and bull trout. These species must also be evaluated if their habitat extends into fresh water streams and wetlands; however, they have no formally designated presence/habitat in Edmonds Marsh, Lake Ballinger, or other city streams and drainages. Because Chinook salmon is also a commercial fish species protected under the MSA, it would also be considered in an EFH assessment. Bald eagle may be present along freshwater, brackish, or marine shorelines in Edmonds, so a project-specific analysis is necessary to determine if ESA compliance would be triggered. Other species are proposed for listing or added to the list over time, so it is necessary for each proposed project to address the most current listing of all threatened and endangered species. The current status of every federally designated species is recorded in the Federal Register and available online.

3. Watershed Characterization

A watershed is naturally determined by topography, rainfall, vegetation, soils, and geologic conditions but is significantly affected by land use activities, including earth moving and filling, vegetation clearing, water extraction and diversion, drainage channelization and impounding, and paving. The City of Edmonds lies within multiple small watersheds and one large one. For purposes of this report, the Edmonds Watershed is defined as the small streams that flow directly to Puget Sound and discharge into the shoreline jurisdiction of the City of Edmonds. These include Lund's Gulch Creek, Perrinville Creek, Fruitdale Creek, Northstream Creek, Unnamed Creek, Shell Creek, and Shellabarger/Willow Creek. The southeast corner of Edmonds that drains into Lake Ballinger is part of the Lake Washington watershed, identified by the state as Water Resources Inventory Area (WRIA) 8. About 13 percent of the City (808 acres) drains into WRIA 8 via Lake Ballinger and McAleer Creek.

The Edmonds Watershed consists of a series of relatively short and deeply incised drainages that have cut through the high marine bluff that characterizes much of the Central Sound western shore between Everett and Seattle. Each drainage consists of a narrow ravine, flanked by a narrow corridor of shrubs and mixed coniferous and deciduous trees, surrounded by moderate to dense residential development. The largest drainage area, occupied by the oldest part of the City, includes two convergent creeks (Willow and Shellabarger) and a broad estuarine wetland (Edmonds Marsh) that has been largely filled and channeled by decades of industrial and commercial development.

The Lake Washington watershed includes Lake Ballinger, part of which drains the southeast corner of the City. The surrounding subbasin consists of dense residential development surrounding the lake, and a narrow strip of commercial development along the I-5 corridor.

3.1 Ecosystem-wide Processes

Puget Sound is a deep, glacially carved fjord-like estuary that connects to the Strait of Juan de Fuca through Admiralty Inlet and Deception Pass. It extends approximately 140 miles in a north-south direction, reaches a maximum depth of greater than 850 feet, and is characterized by a series of relatively deep basins separated by shallower sills. The Strait of Juan de Fuca opens into the North Pacific Ocean between Washington State and Vancouver Island in Canada. The tidal pattern of Puget Sound is dominated by a mixed semidiurnal tidal cycle, characterized by two unequal high tides and two unequal low tides each day, with a large tidal exchange averaging between 12 and 14 feet. The City of Edmonds lies in the northern portion of Puget Sound's Central Basin. This area of Puget Sound is called the Triple Junction region. In the Triple junction region, Admiralty Inlet and Possession Sound join the Central Basin at the southern end of Whidbey Island (KC DNR WTD 2003).

3.1.1 Climate

The Puget Lowland has a maritime climate with cool winters, dry summers, and a distinct rainy season. The City of Edmonds receives an average of 37.2 inches of precipitation per year, mostly as rain. Temperatures range from a mean of 40.1 degrees in January to a mean of 65.2 degrees in July, with an average high temperature of 75.2 degrees and an average low of 35.2 degrees (City of Edmonds 2005). During the latter half of the summer and early fall, the lower valleys are sometimes filled with fog or low clouds until noon, while at the same time, the higher elevations are sunny. Winds are generally from the southwest during the rainy season (early October through mid-April) and from the northwest during the dry summer months (WRCC 2006).

3.1.2 Topography

Edmonds is located in the central part of the Puget Lowland, which is bounded on the east by the Cascade Range and on the west by the Olympic Mountains. The Puget Lowland is characterized by north-south trending valleys and hills in low relief, with intervening elongated saltwater and freshwater bodies.

The City itself occupies a gently sculpted upland that ranges from 300 to 500 feet above mean sea level (MSL), with west-facing slopes that descend to Puget Sound. This area has been termed the Intercity Plateau. Creeks drain westward off of the upland into Puget Sound. A small area in the eastern part of the City is drained by heavily dissected south-flowing streams that drain directly or indirectly into Lake Washington (KC DNR WTD 2003).

The westward-flowing drainages (e.g., Lund's Gulch Creek) typically consist of narrow, deeply incised V-shaped ravines with steep walls composed largely of glacial soils. Perennial streams drain the basins, each descending approximately 500 vertical feet over horizontal distances ranging from 0.8 to 1.5 miles (Snohomish County SWM 2002).

3.1.3 Geology and Soils

Geology and soils determine many physical characteristics of a shoreline and influence the nearshore processes that continually re-shape the shore. A shoreline's substrate and slope are the result of geologic processes that created the underlying landforms and provide the overlying material that weathers into soils and beach substrates. In unstable, steep areas with easily eroded soils, a combination of underlying geology, slope, and soils can create "feeder bluffs", where landslides contribute large quantities of soils to the nearshore to provide new material (sand and gravel) to eroding beaches. Not all eroding bluffs "feed" shoreline beaches—longshore currents and bathymetry may carry eroded material into deeper subtidal areas farther off shore, rather than distributing it along upper beach elevations. No specific studies were found that documented location of feeder bluffs along the city shoreline; for practical purposes, however, no feeder bluffs exist along the Edmonds shoreline because the railroad bed prevents most landslide material from reaching the beach.

The inland portions of the City of Edmonds are typically underlain by Vashon till (Qgt), a glacially-deposited, dense, compacted mixture of gravel, sand, and silt that mantles the upland regions of central Puget Sound (Figure 5). In some areas, such as near Lake Ballinger, the till is overlain by discontinuous deposits of more-recent recessional outwash (Qgo) and alluvium (Qa). Along the shore of Puget Sound, and in the stream valleys that drain to the sound, the till has been eroded exposing underlying advance outwash (Qga, Qga(t), Qcg, Qgu) and older pre-Fraser deposits (Qc(w)). A significant wetland deposit (Qa) and an area of artificial fill (Qf) occur at

Edward's Point and the Edmonds Marina and Washington State Ferry terminal, respectively (WDNR 2005).

Most soils in the City of Edmonds belong to the Alderwood-Everett soil map unit (Figure 8). Alderwood soils are formed on the Vashon till. These soils are moderately deep and moderately well drained. The surface layer is gravelly sandy loam, and the subsoil is very gravelly sandy loam. A weakly cemented hardpan is at a depth of about 20 to 40 inches. Everett soils are formed on the advance and recessional outwash deposits. These soils are very deep and somewhat excessively drained. The surface layer is gravelly sandy loam and the subsoil is very gravelly sandy loam. The substratum to a depth of 60 inches or more is very gravelly loamy sand over extremely gravelly sand (NRCS 2006).

3.1.4 Surface Water and Groundwater

Within the City jurisdiction, most surface water within the Edmonds Watershed flows directly into Puget Sound through numerous small creeks, all exhibiting similar drainage patterns through the central Puget Sound west shoreline. In general, the headwaters of the main stems are in relatively flat, developed areas. The streams carry runoff from these areas into steep ravines before flowing into Puget Sound. The existing drainage systems in the upper watershed consist of a network of pipes and ditches, built to older design standards, which collect and convey stormwater runoff from paved and other hardened surfaces directly to streams. Over the past several decades, the volume of stormwater flowing into the main stem and tributaries has increased significantly compared to pre-development volumes. Discharge rates have also increased, causing an increase in flooding events and in erosion of the ravine channels as the stream works to adjust its size to accommodate the increased flows (Snohomish County SWM 2002).

Lund's Gulch Creek drains an area of approximately 2.3 square miles (1,440 acres), although probably less than 5 percent lies within the City of Edmonds. The upper portion of the basin is flat with drainage systems consisting of older ditch and culvert systems that lack sufficient conveyance capacity. The upper watershed is urbanized with medium to high-density residential development. Commercial development is also located along the Highway 99 corridor. Notable hydrologic features in the basin include a 21-acre forested wetland and a regional detention facility located upstream of 52nd Avenue. Lund's Gulch Creek flows from 52nd Avenue, through a steep forested ravine to Southwest County Park, and then to Puget Sound (Snohomish County SWM 2002).

The majority of Lake Ballinger lies within the City of Mountlake Terrace, although approximately 0.75 miles of shoreline (37 acres of surface area) are within the City of Edmonds. The lake drains into McAleer Creek, which flows into Lake Washington. The lake has an average depth of 15 feet and a maximum depth of 35 feet (Bell-McKinnon 2006). It is eutrophic, meaning that it is nutrient-rich. Within the City, the shoreline is dominated by single-family homes, with numerous docks and piers. The lake receives stormwater runoff from the Cities of Edmonds, Lynnwood, Mountlake Terrace, and Shoreline, and areas of south Snohomish and north King Counties. In addition, it receives stormwater inputs (and accompanying water quality problems) via Hall Creek, which flows into the north end of Lake Ballinger.

The groundwater system in western Snohomish County, including the Edmonds area, consists of a sequence of aquifers and confining units within the unconsolidated geologic deposits. From stratigraphically highest to lowest, the principal aquifers in the area occur in the alluvial deposits (e.g., Qa), recessional outwash (Qgo), and advance outwash (Qga, Qga(t), Qcg, Qgu). The

Vashon till (Qgt) and pre-Fraser deposits (Qcw) typically act as confining units in this area (Thomas et al. 1997).

Recharge to the groundwater system occurs primarily by infiltration and percolation of precipitation. Recharge occurs throughout upland areas of the City area, except in locations that are covered by impervious materials such as buildings or pavement. Groundwater flows from the upland recharge areas toward plateau edges or stream valleys. Groundwater discharges to surface-water bodies such as streams, lakes, and marshes to springs, and seeps along stream valleys and bluffs directly to Puget Sound (Thomas et al. 1997).

CARAs are defined by WAC 365-190-030(2) as those areas with a critical recharging effect on aquifers used for potable water. CARAs are protected as critical areas under the Washington State GMA. CARAs have prevailing geologic conditions associated with infiltration rates that create a high potential for contamination of ground water resources or contribute significantly to the replenishment of ground water. No areas meeting criteria for CARAs exist in the vicinity of the City of Edmonds (ECDC 23.60.010).

3.1.5 Coastal Processes

Steep, gradually receding bluffs commonly back the shoreline along Edmonds. In a natural system, over time, bluffs erode and recede landward, providing sediment to the shore. Prior to vegetation clearing and construction of bulkheads and other structures that protect property from wave and tidal action, natural bluff recession rates were generally quite slow in most of Puget Sound (Adolfson 2004). Vegetation reduces erosion by holding surficial soil layers in place, absorbing water, and dispersing rainfall energy and runoff. Sediment that accumulates at the base of bluffs helps to protect the bluff from further erosion and reduces the recession rate.

Under natural conditions, sediment from eroded bluffs may enter the intertidal zone within the nearshore, where it is subject to transport by waves and water currents. Along the west shore of Central Puget Sound, the BNSF railroad bed forms a nearly continuous barrier between the eroding bluffs and the intertidal zone, reducing or preventing natural sediment influx. The waterward side of the railroad bed is armored by either a sloped or vertical seawall, which extends through the commercial area and marina (Figure 6). Prevailing winds and waves cause sediment to drift along the shore, primarily within the intertidal zone. Sediment that is sufficiently small (typically sand), is suspended for short durations by wave action and is transported along the shore parallel to the beach. Gravel is transported by rolling (saltation) as a result of storm waves. The direction of drift transport is generally in the direction of prevailing winds, which may differ in the summer and winter. The predominant, or net, shore-drift direction is the most important consideration for coastal processes (Adolfson 2004). Net shore-drift is determined through geomorphologic analysis of beach sediment patterns and of coastal landforms.

Many shorelines can be divided into discrete littoral, or shore, drift cells, which are independent of one another and for which distinct sediment sources and sinks can be identified. Heightened concerns about the adverse impact of shoreline modifications on geologic processes, and consequently, on nearshore biological resources, has created a need for information on longshore sediment transport. The Net Shore-Drift in Washington State program (Ecology 2002) map coverage denotes the extent of individual drift cells and the direction of net shore-drift within the littoral zone for much of Puget Sound (see Figure 5).

3.1.6 Historic Land Use Development

According to the 1909 Sanborn map, the present location of the State Ferry terminal had been used for maritime transportation at that time. The property was then called the "City Dock," and it contained a freight warehouse that was used for shipping. Civic improvements continued with construction of a new City wharf in 1911.

Puget Sound Navigation, commonly known as the Black Ball line, controlled most of the regional ferry routes, until cross-sound service was taken over in 1951 by the State Ferry System. Seattle-Everett electric interurban trains also served Edmonds for several decades. This service began in 1910 and reduced the market for the steamboat service of the *Telegraph* and *City of Everett*, the last two ships on the Seattle-Edmonds-Everett route. By that date the Great Northern Railroad had double-tracked its roadway through Edmonds with eight daily trains at its new depot. Later, increased competition from private vehicles resulted in reduced services (BOLA Architecture + Planning 2005).

In the 1920s, a sea dike and a sea gate were built to prevent floods of the tide flat areas southwest of downtown, near Edmonds Marsh. In 1924, a Unocal tank farm facility substation was established east of the railroad tracks near the foot of Dayton Street. Uses of the Edmonds waterfront began to shift from traditional industries to alternate commercial businesses in the 1940s and 1950s. In the 1950s, the Port of Edmonds expanded its breakwater and built a small marina on the site of former mills. Restaurants and shopping mall retailers began constructing new facilities in the marina area (BOLA Architecture + Planning 2005).

3.2 Shoreline Uses

Numerous plant and wildlife species depend on shorelines for the variety of conditions and functions that these transitional habitats provide. Competing uses are high in the shoreline jurisdiction, with human activities and structures dominating most of the shoreline jurisdiction uplands and influencing sizable areas of aquatic elevations, from the waters' edge outward to navigable depths. Overall, regional shoreline aquatic habitat is relatively stable, due to the presence of the BNSF railroad. The effect of this significant structure dividing the upper intertidal marine shorelands from upland shorelands is discussed in greater detail in subsequent report sections. The Edmonds shoreline is an indicative example of the majority of marine shoreline in this area. To a great extent, shoreline development in this regional area is limited by the lack of marine-to-upland access due to the BNSF railroad right-of-way.

The central Puget Sound marine shoreline in the vicinity of Edmonds, between Seattle and Everett, is dominated by urban structures, including transportation-related, residential, and commercial facilities, and pavement to provide vehicle access and parking. The few areas with pedestrian beach access also feature roads, flanked by paved walkways, which further eliminate habitat in favor of vehicles and people. The railroad bed adds an additional 35- to 75-ft-wide swath of rock pavement in the upper intertidal and adjacent upland shoreland along most of the central Puget Sound west shore. Structures in marine aquatic areas include railroad bed, bulkheads, ferry docks, commercial piers, sewer and stormwater outfalls, and a few residential structures. Freshwater shoreline uses consist largely of non-native landscaping, small residential-related structures, small piers and docks, and paved roadways. There is little "passive" human use of shoreline areas along the metropolitan extent of this area of Puget Sound—even the parks are developed with pavement, roads, structures, stormwater pipes, wastewater treatment facilities, and managed (unnatural or non-native) vegetation. The steep bluffs that abut large segments of

marine shorelines are also highly influenced by human activities, through vegetation clearing for construction and "views." The remaining small-scale, immature vegetation is inadequate for slope stabilization, contributing to erosion and landslides that regularly destabilize large areas of shoreland that would otherwise be undeveloped and available to wildlife.

Within the intertidal and subtidal portions of the central Puget Sound area, aquatic and shoreland habitats are used by fish, shellfish, and wildlife. Common wildlife species that adapt to urbanized areas, such as deer, coyote, raccoon, and opossum, are present along this regional shoreline. Because Puget Sound is a regional flyway for migratory birds, numerous birds, including rare or unusual species, are regularly observed along the shoreline. Many migratory birds congregate in the large Snohomish River estuary to the north, transiting along the Snohomish County shoreline. Port Susan, north of the Snohomish River estuary, provides critical habitat for large numbers of shorebirds during spring and fall migrations and for birds staying during winter. It is one of only four sites in Puget Sound that regularly support more than 20,000 shorebirds in a season (Seattle Audubon Society 2006). Large flocks of wintering ducks use the sloughs and sheltered bays. In winter, trumpeter and tundra swans and large numbers of snow geese forage along the shoreline and in the fields. Short-eared owls are regularly seen, as are other unusual sparrows such as Harris's, American tree, white-throated, vesper, and clay-colored. Many species of wintering raptors, including snowy owl and bald eagle, are attracted to the area. Further south, the Seattle shoreline along Discovery Park attracts abundant and diverse migratory bird species, including western grebe, red-throated and common loons, marbled murrelet, and rhinoceros auklet. Parasitic jaeger, Bonaparte's gull, and common tern are species present in late summer and fall. Five common species of gull use the beach all winter. Brant geese are commonly observed during spring migration foraging on eelgrass. Spring- and fall-migrating shorebirds, such as surfbird and ruddy and black turnstones, use rocky beach areas, while sanderlings use sandy beaches and remain all winter (Seattle Audubon Society 2006). Edmonds lies within the regional shoreline between these two important bird stop-over areas. The City of Edmonds sponsored an International Migratory Bird Day event in 2005 to raise awareness of the value of the shoreline and adjacent areas as migratory bird habitat.

Birds protected under the ESA that are frequently observed in this region include bald eagle and marbled murrelet.

Marine mammals, such as harbor seals and sea lions, are frequently observed in the nearshore areas. Dall's porpoise, harbor porpoise, and killer whale also inhabit the deeper waters of this regional shoreline area. The Southern Resident population of killer whale, consisting of J, K, and L pods, is listed under the ESA as endangered. This protected population, which sometimes appears in central Puget Sound during the height of the fall Chinook and chum salmon migrations, is not present in Puget Sound from early to mid-February through May or June (Wiles 2004).

Much of the marine food web is supported by the seasonal concentrated presence of salmon and trout runs, which provide the basis for commercial, recreational, and tribal fisheries. Chinook, coho, pink, and chum salmon, steelhead, and cutthroat and bull trout stocks from the Snohomish River and southern Puget Sound rivers likely migrate along the central Puget Sound western shoreline as juveniles. Several adult bull trout, rarely caught in Puget Sound, were tagged and tracked migrating along the Snohomish County shoreline between the Stillaguamish River (north of the Snohomish River) and Seattle (Salmon Bay and Elliott Bay/Green River) in 2003 (Goetz et al. 2004). Salmonid species listed as threatened species under the ESA in Puget Sound include Chinook salmon and bull trout.

The presence of a nearly continuous band of eelgrass along the Snohomish and King County shoreline provides critical habitat for juvenile salmonids, in addition to other fish species. Forage fish (e.g., surf smelt, sand lance, and Pacific herring) forage and spawn intertidally and form the foraging base for salmon and many other species of marine fish and shorebirds.

In this central Puget Sound region near Edmonds, human use of the shoreline is primarily for transportation, with the BNSF railroad bed constituting the largest area of use and other regional transportation hubs (e.g., former Unocal pier, WSF terminal, SR-104) comprising smaller areas of use. Residential housing is the other major use of this regional shoreline area. Commercial uses, including marinas, piers and docks, restaurants, and offices, occupy a relatively small area of regional shoreline, clustered in the urban cores of cities. Passive human use, such as picnicking and beachcombing, is concentrated at the city and county parks that provide parking and public access. Small "hobo camps" of transients occur at regular intervals along the BNSF railroad, usually hidden in the lower wooded reaches of the numerous ravines along this shoreline. Recreational, tribal, and commercial fishing and shellfish harvesting constitute a major human use of aquatic resources between Everett and Seattle.

3.2.1 Tribal Fisheries

Several tribal nations recognized as "Puget Sound Treaty Tribes" have fishing rights at all "usual and accustomed grounds and stations" in Puget Sound and the Strait of Juan de Fuca. Tribes have commercial fishing rights for salmon in their usual and accustomed fishing areas and also have the legal right to harvest shellfish and bottom fish from the same areas. Management of tribal and commercial fishing is a joint effort of WDFW and the treaty tribes. Recognized tribes participating in the management of Central Puget Sound fisheries are the Lummi, Suquamish, Swinomish, and Tulalip (CH2M HILL 2004). Other tribes, including the Upper Skagit, Duwamish, and Muckleshoot, have also claimed historic use of this area.

Current commercial fisheries near Edmonds include fisheries for salmon, Dungeness crab, spot prawn, and spiny dogfish. There is a tribal shrimp harvest area located on a 200- to 300-foot depth band from Point Edwards to roughly one mile north of Picnic Point (CH2M HILL 2004).

WDFW Crustacean Management Region 4, Catch Area 26B and Management Region 2W, Catch Area 26A have tribal fisheries for Dungeness crab that are open year-round. Many treaty tribes are involved in coho salmon fishing in Management Area 10, mostly in the vicinity of Point Edwards (FHWA *et al.* 1998).

In addition to commercial fishing, these tribes also harvest fish in their usual and accustomed areas for ceremonial and subsistence purposes. Fishing quotas and fishing open dates are negotiated from year to year, based on return projections calculated by tribal and WDFW harvest management biologists. During the past decade, because of poor salmon returns in the same years, the number of fishing days has dwindled to as few as three days each for the state and tribal fisheries in Salmon Management Area 10 (CH2M HILL 2004).

3.2.2 Commercial Fisheries

The following information was taken primarily from the Brightwater FEIS (KC DNR WTD 2003). Dungeness crab is the only commercially harvested crab species in Puget Sound, with the commercial harvest usually extending from October to April. Occasionally there are commercial harvest openings for short periods during the summer and at other times of the year.

The Edmonds shoreline falls within the WDFW Crustacean Management Region 4, Catch Area 26B and Management Region 2W, Catch Area 26A. Most of the commercial harvest for Dungeness crab occurs north of Everett; however, commercial harvesting does occur near Edmonds in Catch Area 26A. The commercial fishery in Catch Area 26B is currently closed to commercial harvest.

There is a commercial spot prawn fishery (both state and tribal) in Puget Sound, including in the vicinity of Edmonds. The management regions and catch areas are the same as those for Dungeness crab. The state commercial fishery remains open for 1 to 2 months, typically from June until the end of July. The quota is typically reached quickly and the fishery lasts approximately two weeks per season. Catch Areas 26A and 26B are two areas that open early to spot prawn fishing if test fishing shows that fewer than 2 percent of the females have eggs. Under these conditions, fishing is allowed in these two areas from approximately April 11 through October 15, or until quotas are reached.

There is currently a commercial spiny dogfish fishery in Central Puget Sound. Fishing typically occurs from Possession Bar south to Port Madison. The primary fishing gear used is long line, but set nets may also be used. While the fishery is open year-round, most fishing occurs in the spring and fall. The fishery generally occurs in water depths between -100 to -300 feet Mean Lower Low Water (MLLW).

3.2.3 Recreational Fisheries

Along the City waterfront are two WDFW management areas: Salmon Management Area 9, located north of the Edmonds Marina; and Salmon Management Area 10, located south of the marina. The coho season extends from roughly mid-September to early October, and the chum season extends from October through November. Salmon Management Area 9 is usually closed to non-treaty tribal commercial salmon fishing; therefore, the northern border of Salmon Management Area 10, located south of the Edmonds Marina, is a popular location for coho salmon fishing.

Sport fishers in Puget Sound target a wide range of salmonids, including coho salmon, king (Chinook) salmon), steelhead trout, pink salmon, cutthroat trout, and blackmouth (immature Chinook salmon). Fishing intensity is highest in the fall when salmon return to spawn in tributary streams and rivers. Sport fishing activity in the vicinity of Edmonds is generally concentrated off Point Edwards just south of the ferry terminal (Parametrix 2001a, cited in KC DNR 2003). The Edmonds fishing pier is open year-round for recreational fishing. Several species of fish are caught off the Edmonds fishing pier, including smelt, Chinook and pink salmon, rockfish, and perch (WDFW 2003). Invertebrates collected from the fishing pier include squid, shrimp, and red rock and Dungeness crabs. Clams are also collected in this area.

The central Puget Sound bottomfish sport fishery is also active. Historically, the most important fish species were rockfish, flatfish, Pacific cod, sablefish, and walleye pollock. Populations of many of these fish species have significantly declined in recent years, particularly Pacific cod, walleye pollock and Pacific whiting (hake), which have all been rated as “critical” or “depressed” by WDFW. Although not recommended by the Washington State Department of Health, because of water quality concerns, recreational shellfishing occurs along many central Puget Sound shorelines, particularly at public access beaches such as Marina Beach Park, and Meadowdale Beach Park. Harvesting for clams and crabs occurs frequently during low tides at these beaches (Parametrix 2001, cited in KC DNR 2003).

Recreational fishing for spot prawns is an active fishery that typically opens in late April and remains open for about 2 weeks. The area near the Edmonds Marina is a popular area for spot prawn fishers. There is a recreational squid fishery in the Central Basin of Puget Sound that typically occurs from late fall through March. Squid fishing frequently occurs in areas with public fishing piers.

3.3 Water Quality

There is little water quality information specific to the surface waters of the creeks and Puget Sound nearshore in the City of Edmonds. A series of studies by Snohomish County (titled Drainage Needs Reports) on similar streams near Edmonds (Report No. 11, Puget Sound Tributaries), available from online websites, offer a close approximation to stream conditions within the City. Other freshwater programs, either conducted by King County or administered by the State (such as Ecology's Rivers and Streams Water Quality Monitoring program), tended to focus on highly urbanized areas with known pollutant sources based on current or past recent industrial activities or densely populated areas with relatively large watershed sub-basins (e.g., Thornton Creek, Lake Washington). These studies were not particularly applicable to Edmonds streams or Lake Ballinger.

Groundwater quality in the City of Edmonds is generally good and has no widespread contamination issues, as reported in a U.S. Geologic Services (USGS) study on groundwater systems and quality in western Snohomish County (Thomas et al. 1997). However, the USGS study also notes the potential for chemicals released from various human activities to locally impact groundwater quality. This would include a potential for groundwater contamination at various locations in the area from leaking underground storage tanks, which are listed by Ecology, along with the nature and extent of contamination, the affected medium (e.g., soil, surface water, or groundwater), and the status of cleanup efforts. Contaminated sites are most likely to be present in areas with commercial or industrial development. Ecology's database was reviewed for properties within the Edmonds shoreline area listed as contaminated sites. The former Unocal site and the Chevron Richmond Beach Asphalt Terminal property were the largest industrial properties in the Edmonds area; both properties have documented or suspected soil and groundwater contamination. The Port of Edmonds includes two locations along Admiral Way listed as both groundwater and soil contaminated sites that have been undergoing cleanup actions since 1995, but are not yet de-listed. Other properties within the SMP boundary areas that were listed on Ecology's 2006 database of contaminated sites have been reported as cleaned up.

3.3.1 Freshwater Quality

The Edmonds Watershed tributaries flow into Puget Sound, which is classified as Class AA (Extraordinary) by WAC-201A, and thus all tributaries in the study area are designated as Class AA for water quality by the State. The applicable water quality criteria for Class AA freshwater in Washington are summarized in the Snohomish County Drainage Needs Report (2002).

The Snohomish County Drainage Needs Report (2002) evaluated nearby Lund's Gulch and Norma Creeks and concluded, "The overall water quality of Norma Creek is poor, and is typical of other well-developed urban residential watersheds. Degradation of water quality can largely be attributed to pollutants associated with the surrounding land uses, and a lack of treatment facilities. Although few water quality data are available for Lund's Gulch Creek or Picnic Point Creek, the water quality of these creeks can be expected to be comparable to that of Norma Creek, based on the general similarities in land use, topography, and observation of stream

conditions. Norma Creek is not meeting Class AA criteria for fecal coliform and dissolved oxygen, and is on the Ecology 1998 303(d) list of impaired waterbodies for both parameters."

Other water quality problems in adjacent area streams include elevated metals and high sediment loads. The primary sources of these water quality problems are presumed to be urban residential areas, commercial areas, roadways, and excess sediment from eroding stream banks, slopes, and construction sites.

Other water quality exceedances in Norma Creek included fecal coliform, dissolved oxygen, high sediment bed loads, and excess sedimentation in the lower reaches of both Norma Creek and Lund's Gulch Creek. Copper, lead, and zinc, which are usually the most significant metals in urban runoff, have been detected in water samples from Norma Creek. The levels of total recoverable metals in Norma Creek are comparable to metals concentrations for other built-out urban residential areas, such as in urban King County. Long-term sampling in Norma Creek shows that the stream appears to be meeting Class AA standards for temperature and pH, and these parameters are not a problem. Temperature and pH are often measured to assess stream conditions for fish health.

Sampling of benthic invertebrate populations has been used to determine the health of streams in Snohomish County. Results indicate relatively poor biological health due to any number of factors including flow regime, sediment transport, streambed habitat, and water quality. It should be noted, however, that the sample site is in a depositional zone, in which the streambed conditions are often not conducive to a diversity of benthic invertebrates.

In summary, the predominant water quality problems likely found in Edmonds and adjacent county streams are heavy sediment loads in the lower reaches, and high bacterial concentrations and low dissolved oxygen in the upper reaches.

Ecology maintains a water quality 303(d) list, composed of waterbodies where tested pollutants have exceeded thresholds established by the state surface water quality standards (WAC 173-201A). Streams that do not appear on the 303(d) list may fall short of that pollutant threshold, but may not be free of pollutants as not all streams are tested as part of this process. Therefore, absence from the 303(d) list may not necessarily indicate that the waterbody is not impaired. No streams within Edmonds were found on the 303(d) list. The 1998 303(d) list was the last one submitted to and approved by EPA. Lake Ballinger is on the 303(d) waterbody list for total phosphorus exceedance.

Lake Ballinger water quality has been studied for more than 30 years; problems identified in the mid-1970s were partially addressed in the late 1980's, but water quality continues to decline, despite limited efforts to reduce non-point source pollutants entering the lake. In 1977, a Phase I Federal Clean Lakes Restoration Project identified water quality degradation related to surface water and stormwater runoff from the surrounding drainage basin that caused high nutrient loads and fluctuating water levels, resulting in periodic flooding, blue-green algae blooms, hypolimnetic anoxia, high turbidity, low transparency, and sediment phosphorous recycling. In the mid-1980s, the lake was placed on the 303(d) list for failing to meet the Environmental Protection Agency (EPA) human health criteria for total phosphorous. A decade later, control measures were implemented, using stormwater diversion and structural controls, hypolimnetic injections/withdrawal (to reduce sediment phosphorous), lake level reduction, and public education. Initially, erosion stabilization efforts on Hall Creek (revegetation of streambanks and adjacent slopes) and construction of two regional sedimentation ponds resulted in reduced

phosphorus and sediment inputs into the lake (KCM 1986). Hypolimnetic injection and withdrawal greatly reduced internal phosphorus loading for three years. However, high phosphorus and ammonia loading, primarily from Halls Creek, increased dramatically in the third year due to deterioration of surface water quality throughout the developing Lake Ballinger basin, resulting in increased phosphorus, ammonia, and biological oxygen demand in the lake. This poor-quality surface water was injected into the lake bottom, causing the lake to become anoxic (oxygen-starved) in 1986. A series of recommendations, including more stringent controls on stormwater quality in the basin and improved maintenance of the hypolimnion injection system, have been proposed recently (City of Mountlake Terrace 2005).

In 1990, the City of Mountlake Terrace treated Lake Ballinger with alum to reduce the excessive phosphorus concentration in the lake. The clarity of the lake was increased by 40% and the phosphorus levels were reduced by 70% within 48 hours of the treatment. Although the short-term result of the alum treatment was satisfactory, the longevity of the treatment has become limited by continued external phosphorus loading. Currently, the increased external nutrient loading exceeds the internal (phosphorus) sediment component of loading and appears to be directly and indirectly (through recycling of increased productivity) driving the lake ecosystem (Bell-McKinnon 2006).

A Total Daily Maximum Load (TDML) for total phosphorous was approved by the EPA for Lake Ballinger in 1993. A TMDL of 30.0 mg/L was recommended by Ecology. In 2006, a study plan was developed by Ecology to monitor the effectiveness of the TMDL and determine if past restoration treatments had been effective in restoring Lake Ballinger to its designated uses.

Surface water quality in the Lake Ballinger basin continues to fluctuate seasonally. At times, standards for temperature, dissolved oxygen, turbidity, nitrates and phosphates, and coliform organisms are violated (City of Mountlake Terrace 2003). Residential runoff is a primary pollutant source in the spring and fall due to chemical applications to lawns and gardens. Rapid stormwater runoff from nearby urban development is another cause of seasonal water quality change. For example, stormwater runoff from large parking lots in the industrial district of the City is the major problem for the Halls Creek / Lake Ballinger drainage system (City of Mountlake Terrace 2003).

The Washington Department of Health issued a state fish advisory recommending that people limit their consumption of largemouth and smallmouth bass from fresh waterbodies in Washington State, due to various persistent and harmful chemical pollutants, such as mercury and PCBs. A recent national study on mercury deposition (USGS 2000) found mercury (presumably from air-borne deposition from an ASARCO smelter) in Lake Ballinger and Lake Washington sediment. Lake Washington sediment showed mercury concentrations increased above background in the early 20th century, leveled off between 1930 and 1970, and fell steadily through the 1960s. In a different trend, Lake Ballinger sediment data showed increases from the 1960s through the 1990s. The sources causing the increases are not currently known.

The outlet of Lake Ballinger is McAleer Creek, which flows into Lake Washington, within the WRIA 8 Cedar-Sammamish watershed. Water quality samples collected by Ecology between 1991 and 1997 were shown to have high levels of fecal coliform violating water quality criteria. High fecal coliform is typical in urbanized areas with large populations of pets and wildlife (e.g., geese, raccoons, etc.).

3.3.2 Marine Water Quality

There are few marine water quality data collected along Edmonds or in adjacent marine waters. Although numerous water quality monitoring programs have sampled central Puget Sound shorelines for decades (e.g., Ecology and WDFW's Puget Sound Ambient Monitoring Program [PSAMP] for water and sediment, Ecology's Beach Environmental Assessment and Communication of Health [BEACH] program, Ecology's South Puget Sound Marine Environmental Modeling program, Ecology's Marine Water Quality Monitoring Program) water quality sampling stations are typically located within major urban centers with known contamination, such as Seattle and Everett, or rural locations, such as Whidbey Island. Thus, few site-specific data were available and the nearest data locations, in urbanized industrial bays several miles away, were not appropriate for comparison. Applicable marine water quality data are reported below.

Table 3 shows areas on the 303(d) list for recent violations in marine water quality samples. Fecal coliform and ammonia as nitrogen (ammonia-N) are used as indicators of animal and human waste and fertilizers from landscape runoff. Landscape runoff enters the marine shoreline through creeks and numerous city stormwater drainages that discharge into Puget Sound (see Figure 6).

Table 3. Waterbodies with Recent Violations of State Water Quality Standards in Edmonds, Washington

Waterbody	Parameter	Year Listed	Medium
Point Edwards	Fecal Coliform	2003, 2004	Water
Brackett's Landing	Ammonia-N	2002, 2004	Water
Brackett's Landing	Fecal Coliform	2002, 2004	Water

Through Ecology's BEACH program, Snohomish County conducts weekly water quality monitoring of recreational areas from May through September, for bacteria that may pose a risk to people using the waterfront. Within Edmonds, water quality is monitored at Marina Beach Park (South Edmonds) and Edmonds Underwater Park. Elevated levels of *enterococcus* bacteria were found at Marina Beach Park in 2004 and 2005, but not at concentrations triggering an advisory to water users or a beach closure, although the park is closed to shellfish harvesting. The south section of Marina Beach Park is an off-leash dog park, which likely contributes substantial *enterococcus* bacteria to the area.

4. Inventory and Land Use Patterns

4.1 Existing Land Use

The City of Edmonds is located in southwest Snohomish County. Edmonds has a highly developed and well-established land use pattern (Figure 8). The Edmonds marine shoreline extends 5.2 miles from north to south. The City's northern border is the Meadowdale Beach Park shared by unincorporated Snohomish County and Woodway to the south. Unincorporated Snohomish County, the City of Lynnwood, the City of Mountlake Terrace, and the City of Shoreline bound the rest of the City (see Figure 1).

The BNSF Railway borders a majority of the Edmonds marine shoreline. The railroad tracks form a barrier between the natural shoreline and the existing residential neighborhoods for over half the Edmonds marine shoreline. This part of the City's marine shoreline is primarily characterized by a seawall and fill that created the BNSF railroad bed.

Approximately 2,000 feet south of the northern marine shoreline border of the City is an old pier structure once used in the fishing industry. This is commonly referred to as Laebugten's Wharf. The pile-supported wharf structure is currently unused, except as a fish pen.

Edmonds' southern shoreline is the current location for the Washington State Ferry (WSF) terminal to Kingston, in addition to commercial and residential properties, waterfront parks, walkways, and the Port of Edmonds Marina. On either side of the ferry terminal are two regional parks, Brackett's Landing North and South, respectively. Collectively, these parks include public beach, picnic areas, interpretive information, public restrooms, a parking lot, and showers. Paths lead to a wheelchair-accessible jetty. On the northern side of the ferry is another regional park, Edmonds' Underwater Park. This park was one of the first officially designated underwater parks on the West Coast. The facility includes 27 acres of tide and bottom lands and was established as a marine preserve and sanctuary in 1970.

From the ferry terminal to the Port of Edmonds Marina is a public waterfront walkway. This public facility offers wheelchair-accessible access to the waterfront while acting as a breakwater for existing residential and commercial structures within the shoreline area. At the southern portion of this walkway, at the northern edge of the marina, is a city park and public fishing pier. Olympic Beach Park is located just north of the fishing pier. The shoreline jurisdiction extends east to the vicinity of Railroad Avenue from Main Street and south to the vicinity of Dayton Street. Between Railroad Avenue and the City's walkway are a number of commercial offices, a senior center, a parking lot, and private residential condominiums.

From Dayton Avenue south to the southern edge of the Edmonds Marina, the upland jurisdiction of the shoreline extends to the vicinity of Admiral Way, including Edmonds Marina. The Port of

Edmonds owns and operates the marina and adjacent uplands, including the Harbor Square Development and the land adjacent to the Edmonds Marsh.

The marina includes 676 wet moorage slips and 279 dry storage spaces. More than 50 guest moorage slips are available for overnight and short-term stays. The Port provides two boat haulout facilities, showers, laundry facilities, restrooms, fuel, and boat launch for both tenants and guests. A rubble mound breakwater that extends some 2,400 feet from north to south protects the marina. The marina was originally constructed in 1961 with a major reconstruction in 1998 following destruction by a major winter storm.

On Port property upland from the marina and within the shoreline jurisdiction are several businesses and restaurants with associated parking facilities. In addition, the Port Administrative offices are located on the uplands, east of the marina, within the shoreline jurisdiction.

The southern-most portion of the Edmonds marine shoreline jurisdiction ends at two beach parks, referred to collectively as Marina Beach Park. North Marina Beach, between the marina and the former Unocal pier, includes a large open grassy area with picnic and playground facilities, as well as car-top boat launch opportunities. South Marina Beach, south of the pier, is a designated off-leash dog park area maintained by volunteers.

Edmonds' freshwater shoreline consists of the south and west shores of Lake Ballinger. The eastern half of Lake Ballinger is located in the City of Mountlake Terrace. This shoreline is zoned single family residential.

4.2 Comprehensive Plan, Zoning, and Corresponding Zoning Designations

The GMA of Washington requires that local governments must adopt comprehensive plans to provide plans and policies for orderly development of land within the local jurisdiction. The corresponding zoning (see Figure 3) must be consistent with and implement the goals and policies of the local comprehensive plan. The City of Edmonds Comprehensive Plan, adopted in 2004, contains those goals and policies that are implemented through the local zoning code found in Titles 16 and 17 of the Edmonds Community Development Code (ECDC). The two documents are now consistent in that the comprehensive plan and the zoning code support the same land uses.

The City's comprehensive plan designates the northern portion of the City of Edmonds marine shoreline for residential use, Single Family – Resource. This corresponds to lower-density single family zoning designations such as RSW-12, RS-12, and RS-20, which allow densities of less than 4 dwelling units per acre. Due to the railroad tracks and easements located between the uplands and beach areas, there is no upland access to residential properties that would justify the development of waterfront facilities, such as piers and docks.

Between Brackett's Landing North and South, the shoreline is designated park or open space under the City comprehensive plan. From Brackets Landing South, the shoreline jurisdiction is designated Shoreline Commercial or Master Plan Development. This entire area is part of the Downtown/Waterfront Activity Center. The Edmonds comprehensive plan contains a full description of the Downtown/Waterfront Activity Center, including a vision, goals, transportation issues related to development of the Edmonds Crossing--a multi-modal facility for ferry, bus, and commuter train facilities--and a set of downtown waterfront plan policies. This portion of the 2004 comprehensive plan also contains a detailed description for areas of the downtown waterfront area.

The southern-most portion of the Edmonds shoreline is designated master plan development, which includes the proposed Edmonds Crossing project.

Along Lake Ballinger, the comprehensive plan designation is Single Family-Urban 1. This designation corresponds to the zoning designations of RS-6 and RS-8 translating to between 5 and 8 dwelling units per acre. The Lake Ballinger shoreline is fully developed with single family residences. Almost all of these homes also have piers or docks.

4.3 Roads and Transportation Facilities

Edmonds is served by a series of State and local roads. SR 104 runs from the east at Interstate 5 through the southern part of Edmonds, ending at the State of Washington Ferry Terminal. SR 524 begins in Lynnwood at Interstate 5 and runs west through the center of Edmonds from the crest of the hill and down into the city center. Local roads provide access throughout Edmonds. These roads provide access for Community Transit, the commuter bus service for South Snohomish County. Commuter Park and Ride lots are located throughout Edmonds and are served by Community Transit bus service.

The rail lines along the Edmonds' shoreline are primarily used by BNSF for freight service, but also provide Amtrak passenger train service through Edmonds. Sound Transit provides daily commuter service to and from Seattle.

Washington State Ferries operates ferry service from Edmonds to Kingston providing access to the Olympic Peninsula. This is one of the busiest commuter ferry terminals in Puget Sound, as well as one of the major access points from the east side of Puget Sound to the west.

4.4 Wastewater and Stormwater Utilities

The City of Edmonds operates and maintains a wastewater treatment plant on the corner of SR 104 and Dayton Street that was originally put into service in 1957 to provide primary treatment and was upgraded to secondary treatment by 1991. The current average annual flow rate is approximately 6 MGD. The plant has primary treatment and sedimentation, air-activated sludge secondary processes, and chlorine disinfection for liquid treatment (KC DNR WTD 2003).

The City of Edmonds, through agreement with King County, Ronald Wastewater District, Olympic View Water and Sewer District and the Cities of Lynnwood and Mountlake Terrace, also provides wastewater service to the Town of Woodway, the Richmond Beach service area, the City of Mountlake Terrace, the Olympic View Water and Sewer District, the Ronald Wastewater District, and areas of the City of Lynnwood (Snohomish County 2002). King County uses its Lake Ballinger pump station to pump wastewater generated in Mountlake Terrace and the Lake Ballinger area of Edmonds to either the Edmonds or West Point Treatment Plants. The Unocal site is currently serviced by a private septic system (FHWA et al. 1998).

The City of Edmonds also owns two secondary treated wastewater outfalls and a number of wastewater trunk lines. These trunk lines include two 36-inch-diameter outfalls that enter Puget Sound north of the Port of Edmonds' breakwater. Both outfalls extend approximately 1,200 feet into the sound at a depth of about -60 feet MLLW (FHWA et al. 1998). In addition, the Lynnwood Regional Wastewater Plant, a 7.4-mgd capacity wastewater treatment plant, is located in the City of Edmonds in Segment B. The Lynnwood Treatment Plant's outfall extends

approximately 1,000 feet into Puget Sound, near 170th Street SW. The outfall is a 36-inch high-density polyethylene (HDPE) pipe located at a depth of approximately -200 feet MLLW (Davis, personal communication 2002).

Stormwater drainage information, including locations and diameters of stormwater outfalls that pass through Edmonds' Shoreline Master Plan jurisdictional area, is shown in Figure 6 (City of Edmonds 2003). The city provides stormwater catchment basins and maintains them by conducting regular clean-out efforts and annual inspections. Solid material is mechanically settled in the catchment basins. The city also administers a program to react and respond to illegal discharges (City of Edmonds 2006a). The area southwest of Edmonds Marsh on the former Unocal property has stormwater system separate from the City. Because it discharges through City shorelands, it is included in this inventory. The stormwater collection and treatment system that was used on the 27-acre Unocal property includes a series of catch basins connected by underground concrete pipes that served the upper and lower yards (EMCON 1994 cited in CH2M HILL 2004). Much of that system remains in place although the Unocal facility is no longer operating and site demolition and clean-up is underway. The Unocal stormwater system operates as follows:

During normal precipitation events, all of the catch basins drained into a duplex sump, and the collected stormwater was pumped into an oil/water separator in the lower yard. Any recoverable oil was skimmed from the oil/water separator, and the treated stormwater was pumped into Detention Basin 2. Flows were discharged from Detention Basin 2 into Willow Creek, in the ditch section adjacent to the BNSF tracks, via a National Pollutant Discharge Elimination System (NPDES)-permitted outfall. If this treatment system exceeded capacity, stormwater was routed from Detention Basin 2 into a larger detention basin through a spillway. The large detention basin has no outlet; therefore, after high flows subside, stormwater is pumped back through the oil/water separator and eventually into Willow Creek. During very high tides and heavy rainfall events, stormwater was discharged directly from the oil/water separator into Willow Creek via NPDES-permitted outfall 001 (EMCON 1994 cited in CH2M HILL 2004). This was estimated to occur three to four times a year.

4.5 Existing Public Access Sites

Public access to the marine shoreline is available within the City in seven areas: Meadowdale County Park (Lund's Gulch), Southwest County Park (Perrinville Creek), Edmonds Underwater Park, Brackett's Landing Park (north and south units), Olympic Beach Park and Fishing Pier, the Port of Edmonds Marina, and Marina Beach Park (north and south units). The BNSF railroad is privately owned, and pedestrian access across the tracks is prohibited, except at designated locations due to safety concerns. Edmonds Marsh and the adjacent Wildlife Sanctuary are also publicly accessible, with a boardwalk and viewing areas provided. Public access to Lake Ballinger within the City is located at the end of McAleer Way.

The City of Edmonds provides public access sites to the marine shoreline primarily along the southern portion of its 5.4 mile shoreline. Waterfront public parks are located along the shoreline on both sides of the Washington State Ferry Terminal at Brackett's Landing North and South. Waterfront access is available at Olympic Beach Park and Fishing Pier where Dayton Street intersects with the water. Another major waterfront park, Marina Beach Park, is located at the southern-most portion of the Edmonds marine shoreline.

The City of Edmonds provides public access (for fishing, swimming, and hand-launching small boats) at the west side of Lake Ballinger off of McAleer Way. Other public access to Lake Ballinger located in the City of Mountlake Terrace.

4.6 Historical/Cultural Resources

The Unocal treatment plant site, Point Edwards, and the City are within territory attributed to the Snohomish, Suquamish, and Snoqualmie people. The Snoqualmie may have had a winter village or a permanent fishing camp used on an annual basis at Edmonds. The Suquamish fished for salmon in the waters off Edmonds and gathered cattails at Edmonds. (Haeberlin and Gunther 1930, Turner 1976, Tweddell 1953, Kennedy and Larson 1984, Lane 1974, Miller 1999, Snyder 1988 cited in KC DNR WTD 2003).

Edmonds lies within lands and waters once controlled by the Suquamish Tribe. At the time of historic contact, there was a large population in southern Puget Sound consisting of eight closely related tribal groupings: Twana-Skokomish, Nisqually, Puyallup, Duwamish, Suquamish, Skykomish, Snoqualmie, and Muckleshoot—all of whom spoke Coast Salish languages (Wessen and Stilson 1987 cited in CH2M HILL 2004). These peoples were skilled fishermen, hunters, and plant collectors who employed a settlement and subsistence system marked by a central base or winter village and a cycle of movements to smaller, more informal, settlements at different times of the year to exploit locally available resources. The winter village was a focal point of social and ceremonial life.

Living along the Sound, the Suquamish had direct access to intertidal and marine resources, and their principal settlements were located adjacent to or on modern saltwater beaches. The Edmonds waterfront area, with its generally flat beach and adjacent intertidal estuary/wetland marsh, is a spot that would have been most favorable for the location of one or more prehistoric or proto-historic Suquamish settlements (CH2M HILL 2004).

Suquamish subsistence patterns along the western shores of Puget Sound are similar to those reported for the nearby Duwamish who inhabited the Seattle waterfront area. The Duwamish and their neighbors (Suquamish) practiced a seasonal round that consisted of spring, summer, and fall migrations to fishing grounds, berry and root patches, and shellfishing areas, with retirement to a sedentary lifestyle in the winter longhouses. The fall fisheries were crucial to their subsistence because they provided dried or smoked food for the winter months.

In 1841, Lt. Charles Wilkes USN of the U.S. Exploring Expedition named Point Edwards ‘Point Edmund,’ presumably in honor of his son. Early city history recounts the pioneering settlement by George and Etta Brackett in 1870, followed by the City’s destination as a Mosquito Fleet stop, a logging community, and the home of 11 shingle mills. The first cedar shingle mill was built near 220 Railroad Avenue about 1890, at the time the City of Edmonds incorporated.

Between 1889 and 1891, a seawall and associated backfill were constructed into the upper foreshore by the Seattle & Montana Railroad (later part of the Great Northern) to Edmonds. The fill was constructed to defend the overlying railroad from wave erosion and burial by landslide colluvium from adjacent receding bluffs. By 1910, eight trains stopped daily and a depot was built. The present station was built in 1956.

The number of mills grew rapidly because of the availability of quality timber close at hand, unlimited source of water power, and good transportation. At the height of the shingle industry,

mills stretched along the Edmonds waterfront. The remains of a later (1930's-era) mill are still visible in the upper reach of Fruitdale Creek.

Brackett's Landing is on the Washington Historical Register as an Exploration/Settlement site in recognition of Etta and William Brackett, the first European-American settlers in the area that would become Edmonds (WDAHP 2006). Early inhabitants, numbering about one thousand, were mostly loggers, shingle sawyers, boom-men, kneebolters, and shingle weavers who were dependent on the mills. Rail spurs served the mills and cargoes were also shipped by coastwise steamers. In 1902, Allen Yost and family formed the Edmonds Spring Water Company, dammed upper Shell Creek, and piped the retained water into the town for consumption. Remnants of these dams and settling tanks are visible along the Shell Creek and Weir park trails (City of Edmonds 2006b).

Along the waterfront, a shingle mill in operation in 1907 continued production until the early 1950's. Receding forests and competition eventually forced its closure in 1951. An auto ferry began operating between Edmonds and Kingston in 1923, and later to Port Townsend, Port Ludlow, and Victoria.

The Washington Information System for Architectural and Archaeological Records Data (WISAARD) database was searched for State and National Register listed properties within Edmonds. This comprehensive database provides information available for over 1800 registered historical sites including images of the property, a short summary description about the significance of each resource and a link to the nomination document as a PDF file. Archeological sites that are National Register listed are included. As of 2006, there were no nationally registered historic places within the Edmonds shorelands. The Edmonds Crossing project area (former Unocal site, partially bordering Willow Creek and Edmonds Marsh) contains no prehistoric or historic archaeological sites that are currently listed on, nominated to, or determined eligible for the National Register of Historic Places (CH2M HILL 2004). A prehistoric archaeological site was discovered on May 3, 1995, during field reconnaissance along the small access road to the Deer Creek Fish Hatchery. The site was named the Deer Creek Hatchery Shell Scatter and was designated as site 45-SN-310 by OAHP. It is located about 50 feet or more north of the present access road, northwest of the hatchery building and stock pond (CH2M HILL 2004). This site is not within the SMP area.

4.7 Toxic or Hazardous Material Clean-up Sites and Dredge Material Disposal Sites

According to the federal and state environmental agency databases reviewed, the WSF terminal is a Resource Conservation and Recovery Act (RCRA) small-quantity generator of hazardous waste (less than 2.2 pounds of acute hazardous waste or 220 pounds of other hazardous waste per month) (CH2M HILL 2004).

The areas north and south of the ferry terminal have had industrial uses in the past dating back to at least 1909. The primary industries in the immediate vicinity were shingle mills. The shingle mill south of the dock is noted as destroyed by fire in the 1926 Sanborn map. The 1955 aerial photograph and later photographs suggest that the area south of the terminal was used as a boatyard (CH2M HILL 2004).

The SR-104/Edmonds Crossing FEIS (CH2M HILL 2004) reviewed numerous databases for hazardous waste information in the downtown Edmonds area, including the EPA National Priority List, Resource Conservation Recovery Information System, Comprehensive

Environmental Response, Compensation, and Liability Information System, Corrective Action Report, Emergency Response Notification System, Facility Index System, and Toxic Substance Control Act; the USDOT Hazardous Material Information Reporting System; and the Washington Department of Ecology (DOE) Leaking Storage Tanks Site List, Confirmed and Suspected Contaminated Sites List, Statewide Underground Storage Tank Site Report, and Solid Waste Facilities Handbook. The FEIS documented the locations of historic or potential current hazardous waste. For this report, the locations were screened for their proximity to the shoreline area. The following sites within the shoreline area were associated with known or suspected chemical contaminants, including total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), and metals:

- WSF ferry terminal (current RCRA Small Quantity Generator (SQG), former freight operations; with SVOCs, metals)
- Anderson Marine (former shingle mill, leaking underground storage tank, reported cleaned up in Ecology's LUST database)
- Commercial buildings north of marina (former shingle mill, lumber yard, paint warehouse; with TPH, SVOCs, metals)
- Boat storage and maintenance area (former general location of Washington Steel and Bolt Company, BNSF railway maintenance facility; with possible dredge spoil fill, with TPH, SVOCs, polychlorinated biphenols or PCBs, metals)
- Port of Edmonds Furbreeders Building (leaking underground storage tanks)
- Port of Edmonds underground storage tanks (new), possible dredged spoils fill, marine fueling facility (with TPH, SVOCs, metals)
- Former area of Willow Creek/Unocal/Port of Edmonds Dry Storage discharge (water discharge, possible dredge spoil fill, with SVOCs, metals, and TPH contamination in soil and groundwater)

In addition, marine sediment north of the marina was reported to be adversely affected by historic operations and discharges (CH2M HILL 2004); however, sediment investigations in the Edwards Point area did not find evidence of contamination (KC DNR WTD 2003).

The largest potential hazardous waste facility in the Edmonds area is the Unocal site. The facility was constructed and operated along the top, side, and base of a hill in an area bordered by Puget Sound marine shorelands, Willow Creek, and Edmonds marsh (partially filled during the many phases of facility construction). Although the site is outside the city of Edmonds and its SMP boundaries, the facility partially drains into Edmonds and adjacent SMP areas. The following detailed description of the facility is taken from the SR-104/Edmonds Crossing FEIS (CH2M HILL 2004).

> "The Unocal Point Edwards facility was constructed and put in operation in the early 1920s. The site is approximately 44 acres (EMCON 1994; 1995; 1996a). The facility was used as a bulk fuel terminal for storage and distribution of fuel from approximately 1923 until 1991 and would be categorized as a "substantially contaminated site" using FHWA terminology (FHWA 1997). The…29-acre lower yard was used for other operations including dock operations, railcar unloading, truck loading, laboratory operations, warehousing, and other facility maintenance and support activities. In

addition, an asphalt refinery, constructed in about 1953 and dismantled around 1980 (EMCON 1995), operated in the lower yard. A total of 10 underground storage tanks (USTs) were located at the facility. According to EMCON (1994, 1995), six of the USTs have been removed... Two detention basins are located in the lower yard along with two oil/water separators. Surface water runoff from the site was once directed to the detention basins and discharged to a tidal basin that empties to Puget Sound. Discharge from this area was easily observed in early aerial photographs. In the 1960s, when the Port of Edmonds Marina was constructed, the discharge stream was covered and rerouted through culverts.

A number of petroleum product releases to the environment have been reported for the facility, including nine spills recorded between 1954 and 1990. According to EMCON (1994), the spills ranged from a few gallons to 80,000 gallons and involved fuel oils, heavy fuel oils, gasoline, off-specification emulsified asphalt, and diesel. Other minor releases have occurred on land, but have not entered water. EMCON (1994) reports that periodic product releases have occurred within the tank farm, loading facilities, and piping systems, but complete records of these events are not available. EMCON (1994) also provides information on a diesel release to Puget Sound that occurred from a 1971 derailment on the BNSF tracks immediately south of the Unocal pier approach trestle, and a spill of asphalt cutter stock to the Sound in 1990 from the Chevron facility 1 mile south of Point Edwards.

According to the environmental agency databases reviewed, the site is reported to be on EPA and Ecology contaminated sites lists, as an UST and LUST site, and as a RCRA large-quantity generator of hazardous waste. Ecology and Unocal have entered into an Agreed Order for conducting the site RI and FS under MTCA. Before entering into the Agreed Order, a number of voluntary site investigations and environmental clean-ups were conducted at the site. An RI was conducted by Unocal in compliance with the Agreed Order with Ecology. The RI was conducted between October 1994 and August 1996. Additional quarterly and annual groundwater monitoring and product recovery has continued through 2002 (Brearley, pers. comm., 2003). According to the Ecology Site Manager, the current schedule is to finalize the RI and issue a supplemental RI/FS by the fall of 2003. These documents will be released for public comment at that time (South, personal communication, 2003).

According to the draft RI report, the primary environmental impacts at the existing Unocal property include free product on the groundwater table, related petroleum hydrocarbon chemicals in subsurface soil and groundwater, and paint/sand blast grit-related metals in the surface soil. Free product has been found in six plumes in the lower yard: the railroad spur plume, truck loading rack plume, asphalt plant plume, RW-2 plume, office plume, and Detention Basin No. 1 plume. These plumes are the result of releases during former Unocal operations. Recovered product results indicate that the free product consists of gasoline-range, diesel-range, and oil-range hydrocarbons. Field observations made during the RI have been interpreted by EMCON (1996a) to indicate that much of the free product may be heavier-end hydrocarbons. Based on product thickness measurements over the last 10 years, product migration rates are estimated by EMCON (1996a) at less than 6 feet per year.

Groundwater at the existing Unocal property generally flows to the northwest toward Puget Sound. The groundwater table is present within 4 to 8 feet below the ground

surface in most areas. Petroleum hydrocarbon constituents dissolved in groundwater were primarily found near free product plumes and in areas with freephase product trapped in the vadose zone near the water table. These chemicals were found at or above MTCA clean-up levels for TPH and benzene, ethylbenzene, toluene, or total xylenes (BETX) in site shallow wells (EMCON, 1996a). Except for zinc, metals concentrations in groundwater were generally low, with the highest concentrations found in isolated locations around the terminal. Zinc was the most frequently detected metal in groundwater, with the highest concentrations found in wells along the perimeter of the site. Non-BETX volatile organic compounds were not found in groundwater at the terminal (EMCON, 1996a).

EMCON reports that high concentrations of petroleum hydrocarbons in soil were primarily found near free product plumes and in areas with free-phase product trapped in the vadose zone. High concentrations of petroleum hydrocarbons were also found in the material within Detention Basin No. 1. Elevated metals concentrations were found in surface soil in areas of sand-blast grit and paint chips that occur under pipe runs and manifolds, in isolated grit piles, and in certain tank basins. Leachable metals concentrations were low, indicating that leaching of metals from surface soil is not likely. Additionally, metals were not found in substantial concentrations in subsurface soil.

Petroleum-related chemicals were detected in on-site stormwater, primarily from the lower yard. Non-BETX volatile organic compounds, and oil and grease were not found in stormwater. Similarly, these constituents were also not detected in surface water in the drainage ditch and tidal basin adjacent to the site, nor were TPHs in the gas, diesel, or oil ranges. The highest metals concentrations, and elevated PAH concentrations, were found in surface water upgradient of the site. Biotoxicity testing results for sediments collected in the drainage ditch along the existing Unocal property boundaries exceeded clean-up screening level criteria at five of 15 sample locations. No discernible pattern was identified by EMCON (1996a) that would point to a single sediment toxicity source. However, the draft RI report concluded that the potential was low for toxic effects further downgradient from the upland tidal basin in the drainage ditch. No sampling and analysis of offshore marine sediments was performed for the RI."

Since the draft RI was submitted, Unocal has begun interim clean-up actions at the site under the supervision of Ecology. The following clean-up actions have occurred or are ongoing:

"Lower yard interim remedial action 2001-2003. Free petroleum product and associated petroleum-contaminated soil were removed from four areas of the lower yard east of Willow Creek/drainage ditch and shipped off site for thermal treatment. The excavations extended vertically to between 6.5 and 10.5 feet below grade and extended laterally until product-saturated soil was not observed in the excavation side walls (or until structural concerns made it prudent to cease excavation). Additionally, the excavation was kept open for several weeks to allow for removal of floating product from the groundwater surface. This work was performed primarily between August 28 and November 7, 2001. A final interim action as-built report was submitted to Ecology in November 2002 (Maul Foster & Alongi, November 30, 2002). According to Unocal, no free product has been observed in monitoring wells in the area since the action was completed (Brearley, pers. comm.., 2003). A second lower yard interim remedial action was completed in December 2003 that included excavation of contaminated materials from Detention Basin No. 1 and the southwest lower yard. The excavated materials were transported and

disposed of at an offsite landfill (Brearley, pers. comm., 2004; South, pers. Comm., 2004).

The FS for clean-up alternatives for contaminated soils and groundwater at the existing Unocal property has not been completed. A draft FS report was submitted to Ecology in 2004, but the agency was notified that the document is to be replaced with a revised version. Ecology is deferring review of the FS until receipt of the revised document (South, pers. comm., 2004).

Environmental clean-ups at the Unocal property that have occurred at the lower yard (adjacent to Edmonds and near SMP boundaries) include an interim action to remove free product from groundwater and petroleum contaminated from four areas was completed in 2002. Contaminated materials from Detention Basin No. 1 and the southwest lower yard were excavated and disposed of offsite during an interim action completed in December 2003."

Studies were conducted at the Point Edwards site, west of the BNSF right-of-way, including the Marina Beach Park and subtidal areas in the vicinity of the Unocal pier and the two stormwater outfalls and the Port of Edmonds South Marina dry storage area. Soil and groundwater samples from Marina Beach Park were analyzed for TPH as gasoline, diesel, and heavy oil, and metals. Although TPH (as heavy oil) was detected in soil, concentrations were substantially below MTCA Method A clean-up levels for unrestricted land use and as such do not represent a threat to human health or the environment. Groundwater samples collected from the boreholes were analyzed for TPH as gasoline, diesel, and heavy oil, and volatile organic compounds. These contaminants were not detected in groundwater.

A subsurface investigation at the Port of Edmonds' South Marina, north of Marina Beach Park, confirmed the presence of TPH in soil and groundwater. The source of the petroleum hydrocarbons was not established. Ecology's Hazardous Site List ranked this site "5" (lowest potential threat to human health and the environment) and is awaiting remedial action (as of February 2003).

A sediment investigation was conducted at the Point Edwards site in accordance with a sampling and analysis plan approved by Ecology. Sediment samples were collected from 15 stations offshore of Marina Beach Park between the inner and outer harbor lines and in the DNR lease areas. Sample stations included five in the vicinity of the Willow Creek drain and Edmonds Way drain located south of the Port of Edmonds breakwater. The chemical analytical results showed compliance with the Washington State Sediment Quality Standards (SQS) [WAC 173-204-320], and as such the marine sediments were found to be uncontaminated (CH2M HILL, 2000d).

The area west of the railroad tracks between Point Edwards and Dayton Street has been used historically by various industries, wood shingle mills, a steel and bolt manufacturing facility, a lumberyard with a paint and oil warehouse, and a boat maintenance facility. Most of these industrial facilities had docks or piers. In addition, various residences were located here. Possible onshore or offshore contaminants that could have resulted from operation, storage, and maintenance activities at these facilities include petroleum products, semivolatile organic compounds (including PAHs), volatile organic compounds, and metals. Ecology's sediment database indicates that sediments in the vicinity of the proposed pier under this alternative have concentrations of PAHs elevated above Puget Sound Marine Sediment Clean-Up Screening

Levels (WAC) 173-204-520 (including fluorene, indeno (1,2,3-cd) pyrene, and phenanthrene, Washington Sediment Management Standards).

Since the 1960s, the area has been managed and operated by the Port of Edmonds Marina. The marina was dredged in the early 1960s and early 1970s in conjunction with construction projects; no maintenance dredging was performed. According to Port of Edmonds staff, the marina was last dredged about 1987 and the sediments were transported to an upland site for a parking lot project. Some of the marina dredge spoils were used as fill at the Harbor Square business park. Sediment testing data are not available. According to historical aerial photographs, surface water discharge from the existing Unocal property previously entered Puget Sound within the area now used by the marina. As such, it is possible that the dredged sediments may have been contaminated from boat maintenance and repair operations, as well as possible industrial discharges from adjacent sites (e.g., Unocal).

According to the environmental agency database search, the Port of Edmonds has removed old USTs and replaced them with new tanks. In 1985, the tanks were located close to the water near the marina fuel dock. Ecology's database also indicates that one or more leaking USTs have been reported and that clean-up of soil and groundwater was initiated in 1995. In addition, the database search indicated that the Port is a RCRA small-quantity generator of hazardous waste.

According to staff at the Port of Edmonds, two Northwest Farm Food Co-op tanks were acquired by the Port and were replaced, along with two tanks previously owned by the Port, in June 1995. The exact location of these tanks was not identified during the database search (Howard, pers. comm., 1995). In addition to fueling activities at the marina, some boat maintenance activities appear to take place in the upland storage areas immediately west of the BNSF right-of-way. At least one boat was observed being prepared for painting during the site visit on June 2, 1995. A subsurface investigation conducted to collect geotechnical information for design of a dry stacked storage area of the south marina of the Port of Edmonds detected petroleum in soils. The Port of Edmonds initiated a focused environmental investigation to confirm the presence of petroleum in the subsurface and to help determine the origin of the petroleum. Background information in the investigation report stated that the south marina site was filled in 1962 using dredged sediments from what is now the marina basin (Landau, 1998). Subsurface soil samples contained concentrations of TPH (as diesel and oil) that exceeded MTCA Method A clean-up levels at five locations. Groundwater samples were reported to contain concentrations at or above MTCA Method A clean-up (1 milligram per liter) at two locations. The report recommended additional investigation to assess the presence of other petroleum constituents and to further evaluate the source(s) of contamination.

Unocal was contacted regarding the potential that the Edmonds Bulk Terminal may have been the source of the contamination. Unocal responded by installing a single monitoring well (MW-301) in the right-of-way area immediately north of Shellabarger Creek (Brearley, pers. com., 2000). The purpose of the well was to evaluate whether the backfill and storm drain might have presented a preferred path of flow for petroleum hydrocarbons from the Unocal property onto the Port's property. It is not clear from the report whether the well was installed in the backfill of the Shellabarger/Willow Creek culvert (48-inch diameter) or in the backfill of the Edmonds Way storm drain (72-inch diameter). Testing of soils and groundwater collected from MW-301 did not reveal contamination. Other commercial facilities exist adjacent to the rights-of way, including restaurants, retail, and professional offices. Some private residences were also observed. It is not known whether these structures have any heating oil USTs or any building materials with asbestos-containing materials or lead-based paint.

BNSF maintains a railroad maintenance area within the railroad right-of-way immediately south of the Dayton Street crossing. According to historical aerial photographs, it appears that this maintenance area has been in existence since at least the late 1940s. During the site visit on June 2, 1995, a maintenance building, a diesel aboveground storage tank, a flammable gas tank (propane), and several 55-gallon drums of what appeared to be lubricating oils were observed. The drums were outside and directly on the ground. They were corroded, and one had visible oil leakage on the top. Stained soils were also observed in the area. Currently, there is a railroad spur to the west of the tracks where rail cars were stored. Historically, as evidenced from aerial photographs, there was also a rail spur on the east side of the tracks under what is now the Harbor Square business park. Potential contaminants in this area could include petroleum products, semivolatile organic compounds, volatile organic compounds, PCBs, and metals. Insufficient information is available to classify the site as "reasonably predictable" or "substantially contaminated" in accordance with FHWA terminology (FHWA, 1997).

Other hazardous material clean-up sites were identified by searches through state and federal databases. Ecology's Toxics Cleanup Program database, including the LUST database was searched in 2006 for site addresses within the shoreline jurisdiction. Sites within the SMP shoreline jurisdiction were reviewed for their material and clean-up orders. The LUST list indicated that all potential clean-up sites within the shoreline jurisdiction were either completed (i.e., cleaned up) or, in the case of the former Unocal site and two Port of Edmonds properties, undergoing remedial action.

The Dredged Material Management Program (DMMP) represents a coordinated multi-agency approach to management of dredged materials in the state of Washington. The cooperating agencies include the U.S. Army Corps of Engineers - Seattle District, U.S. Environmental Protection Agency - Region 10, and the Washington Departments of Ecology and Natural Resources. The Washington State Department of Natural Resources (DNR), through its DMMP office, provides oversight of all disposal activities occurring on the public's state-owned aquatic lands. The Puget Sound Dredged Disposal Analysis Program (PSDDA) manages disposal within Puget Sound and the Strait of Juan de Fuca. There are no recognized dredge material disposal sites in the Edmonds shoreline jurisdiction. The closest site is in Port Susan, west of Everett, at 47°58.85'N 122° 16.74'W (NAD83) or 47°58.86'N 122°16.57'W (NAD27) (USACE et al. 2002).

5. Nearshore Physical Characterization

The City of Edmonds abuts the eastern shore of Central Puget Sound and contains 5.2 miles of sand, gravel, and cobble beach, mostly backed by moderate to high bluffs. Natural beach area and beach replenishment material has been limited by the topography of the area (bluffs predominate), the BNSF railroad bed and right-of-way, seawalls and other structures in the intertidal zone, and the loss of sediment sources that replenish beach substrate under natural conditions. Data from the Snohomish County database (2001) indicate that most of the shoreline is bordered by armored slopes or vertical seawalls (see Figure 6). Most of the upper intertidal zone has been armored and filled, and additional areas of the lower intertidal beach have been covered by boulders dislodged from the armored face of the railroad bed.

Edmonds beaches are typical of sediment-starved beaches, indicated by a relatively narrow and steep beach profile and coarser-grained sediment. Puget Sound beaches that have limited replenishment typically have a narrow, steep foreshore in the upper intertidal areas with an intertidal/shallow subtidal bench adjacent to the upper beach. The beach material may vary seasonally, but is typically coarse-grained (coarse sand, gravel, or cobble) (Downing 1983). Exceptions are the low-gradient beach south of the marina breakwater (Marina Beach Park), where a large sand flat was constructed, and the Brackett's Landing beaches, which capture some finer material between the fishing pier, the WSF ferry pier, and the groin at Edmonds' Underwater Park. Sediment-starved beaches gradually loose their intertidal fine material to subtidal depths, resulting in continued steepening of increasingly coarser-grained nearshore slopes until equilibrium is reached. These conditions affect beach function both physically and biologically. Physically, the intertidal beaches begin to disappear in most areas. A few areas (e.g., the groin at Edmonds Underwater Park) may actually accumulate sand that normally would have been deposited along a longer stretch of beach.

Adjacent marine shorelands and upland areas consist primarily of steep slopes and moderate to high bluffs, ranging in height from 15 to 100 ft above sea level. The high shoreland is crossed by deeply incised ravines with perennial streams and a few riparian wetlands. In the downtown area of Edmonds, the shorelands drop to sea level in a broad bowl that contains the largest wetland (Edmonds Marsh) and two additional streams.

Small deltas have formed at the mouths of most creek drainages in Edmonds, particularly at Shell Creek (Pentec Environmental 2001). Stream discharges are not sufficient to significantly alter the salinity at these locations, although they may serve as a source of organic material to the local estuarine environment. These small deltas tend to be composed of sand and gravel and provide a lower gradient habitat relative to the adjacent fringing beach. In general, they do not provide enough sediment to supply a significant source of sand and gravel to adjacent beaches.

5.1 Geologic Units

Recessional outwash deposits (Qgo), Vashon till (Qgt), and pre-Fraser deposits [Qc(w)] are exposed in shoreline Segments A through E. Advance outwash (Qcg, Qgu) is extensively exposed in incised stream channels above the shoreline in these segments. Segments E, F, G, and H contain artificial fill (Qf).

Advance outwash (Qga, Qga(t), Qcg, Qgu) is extensively exposed in incised stream channels above the shoreline area in these segments. Segments F, G, and H contain a combination of artificial fill and alluvial deposits (Qf and Qa). Segment I (Lake Ballinger) is underlain predominantly by outwash deposits (Qga and Qgo). These geologic units were described in more detail in Section 3.1.4 and shown on Figure 5. Table 4 summarizes the surficial geologic units present along each shoreline segment.

5.2 Soils

With the exception of Segments F, G, and H, which are mapped as urban land, soils along Edmonds' Puget Sound shoreline are all mapped as various members of the Alderwood-Everett soil unit (NRCS 2006). These soils are described in more detail in Section 3.1.4. The south and west shores of Lake Ballinger (Segment I) are mapped as Mukilteo Muck (a very deep, very poorly drained organic soil that occurs in depressional areas) and Alderwood soil, respectively. Table 4 summarizes the soil types that are present along each shoreline segment (Figure 8).

Table 4. Soil Types and Surficial Geologic Units Present at Each Shoreline Segment

Shoreline Segment	Soil Type (NRCS 2006)	Surficial Geologic Unit (DNR 2005)
A	Alderwood-Everett Gravelly Sandy Loams, 25 to 70 % slopes and 2 to 8 % slopes	Qc(w)
B	Alderwood-Urban Land Complex, 8 to 15 % slopes	Qgt
C	Alderwood-Everett Gravelly Sandy Loams, 25 to 70 % slopes and 2 to 8 % slopes	Qgo, Qgu, Qcg
D	Everett Gravelly Sandy Loam, 0 to 8 % slopes and 8 to 15 % slopes	Qc(w)
E	Alderwood-Urban Land Complex, 2 to 8 % slopes except in the center of the segment Custer Fine Sandy Loam	Qc(w), Qf
F	Urban land	Qf
G	Urban land	Qf
H	Urban land	Qf
I	West side of lake is Alderwood-Urban Land Complex, 8 to 15 % slopes. South side of lake is Mukilteo Muck.	Qgo, Qga, Qa

5.3 Landslide Hazard Areas

Landslide hazard areas, as discussed in this inventory, are areas that have been given landslide hazard designation by the City of Edmonds. Per ECDC Chapter 23.80.020, landslide hazard areas are areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. Susceptibility is based on any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors that are prone to failure. Within the City of Edmonds, landslide hazard areas specifically include:

1. Areas of ancient or historic failures in Edmonds which include all areas within the Earth Subsidence and Landslide Hazard Area as identified in the 1979 report of Robert Lowe Associates and amended by the1985 report of GeoEngineers, Inc.

2. Any area with a slope of forty percent (40%) or steeper and a vertical relief of ten (10) or more feet, except areas composed of consolidated rock.

3. Any area potentially unstable as a result of rapid stream incision or stream bank erosion.

4. Any area located on an alluvial fan, presently subject to, or potentially subject to, inundation by debris flow or deposition of stream-transported sediments.

Along the City's shorelines, only the northern two-thirds of Segment A, predominantly along Browns Bay, is presently mapped by the City of Edmonds as a landslide hazard area (Figure 9), based on geologic conditions and analysis conducted in 1979 and 1985. The City data agree with the Coastal Zone Atlas (Ecology 2001), which depicts Browns Bay as unstable, with recent landslides; however, the landslide dataset was based on information collected in the mid-1970s (Ecology) to mid-1980s (GeoEngineers, Inc.), which omits the other city shoreline areas that have had recent slides.

5.4 Seismic Hazards

Per ECDC Chapter 23.80.020, Designation of Specific Hazard Area, 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.

The most damaging effect of an earthquake is shaking at the ground surface. Ground shaking during an earthquake is strongest in areas of soft soils, such as in river valleys or along the shorelines of bays and lakes. In addition, ground shaking in areas of soft soils underlain by stiffer soils or rock is generally stronger than in areas where there is little or no variation between the surface and substratum.

Liquefaction is a phenomenon in which strong earthquake shaking causes a soil to rapidly lose its strength and behave like quicksand. Liquefaction typically occurs in artificial fills and in areas of loose sandy soils that are saturated with water, such as low-lying coastal areas, lakeshores, and river valleys. The northwest shoreline of Lake Ballinger contains areas of moderate and high soil liquefaction risk.

Along the City shorelines, landslide hazard areas and areas of moderate to high risk of soil liquefaction are shown in Figure 9 and Figure 10, respectively. These hazard areas contain some of the elements that define a seismic hazard area. Further definition of seismic hazard areas is provided by the City on a case-by-case basis.

5.5 Shoreline Slope Stability

For the purposes of this inventory, shoreline slope stability refers to the relative stability of coastal slopes as portrayed in the Washington State Department of Ecology Coastal Zone Atlas (Ecology 2001). This determination refers to the relative stability of coastal slopes as interpreted by geologists based on aerial photographs, geological mapping, topography, and field observations. This mapping was digitized from the Department of Ecology Coastal Zone Atlas and represents conditions observed in the early and mid-1970s.

Along the Edmonds Puget Sound shoreline, the northern two-thirds of Segment A is mostly mapped as "unstable" (i.e., slopes generally are greater than 15 percent in areas underlain by weak, unstable materials in which old or recently active landslides have occurred) with some areas mapped as "unstable old landslides" (i.e., former landslide areas, generally located within areas underlain by weak, unstable materials. Slopes generally are greater than 15 percent.),and some mapped as "modified" areas (i.e., highly modified by human activities and considered unpredictable). The southern one-third of Segment A is mapped as "intermediate (i.e., believed to be stable under natural conditions; may become unstable if disturbed. Slopes generally greater than 15 percent, but may be less in areas with less stable geologic materials.). Segment B is mostly mapped as "stable" (i.e., well-drained permeable layers with slopes less than 15 percent). Segment C is mapped as "unstable." The northern portion of Segment D is mapped as "intermediate," while the southern portion is mapped as "stable." Segments E through H are mapped as modified and stable.

Segment I (Lake Ballinger) is not addressed by the Coastal Zone Atlas; however, the available geology and soils data indicate that the northwestern shoreline of the lake contains areas with unconsolidated soils (Alderwood-Urban Land complex and Mukilteo Muck), moderate slopes approaching 15 percent, high erosion potential, and moderate to high soil liquefaction potential. These factors indicate probable slope instability along part of Segment I. There are some potential indications this may also increase seismic risks.

5.6 Erosion Hazard Areas

In this inventory, erosion hazard areas are areas determined by the City of Edmonds to be erosion hazards. Per ECDC Chapter 23.80.020, erosion hazard areas are at least those 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 erosion hazard. Erosion hazard areas are also those areas impacted by shoreland and/or stream bank erosion. Erosion hazard areas include:

1. Those areas of the City of Edmonds containing soils that may experience severe to very severe erosion hazard. This group of soils includes, but is not limited to, the following when they occur on slopes of 15 percent or greater:
    a. Alderwood Soils (15 to 25 percent slopes);
    b. Alderwood/Everett Series (25 to 70 percent slopes);
    c. Everett Series (15 to 25 percent slopes);
2. Any area with slopes of 15 percent or greater and impermeable soils interbedded with granular soils and springs or groundwater seepage; and

3. Areas with significant visible evidence of groundwater seepage, and which also include existing landslide deposits regardless of slope.

Erosion hazard areas are shown on Figure 9. All shoreline segments of the City, except Segment F (between the ferry terminal and the marina) contain hillsides mapped as erosion hazard areas. In addition, all streams within the City, included in the SMP Update because of their hydraulic connection to shorelines of the state, are mapped with extensive erosion hazard areas along their banks.

In urban areas, erosion hazard areas are important considerations along waterways where soil deposition can harm wetlands, streams, and lakes by excessive accumulation. Clearing (vegetation removal) and grading (earthmoving) are the first steps toward destabilization of slopes (Canning 2001). Soil protection provided by vegetation is especially important in erosion hazard areas in Edmonds to prevent soil compaction and erosion on ravine slopes and lake shorelines, thereby limiting turbidity and sedimentation in waters that harbor fish and aquatic invertebrates.

5.7 Aquifer Recharge Areas

As described in Section 3.1.5, groundwater in the Edmonds area is recharged in upland areas and discharged along streams, lakes, and the Puget Sound shoreline. No significant recharge areas are expected to exist in the shoreline area. Additionally, no CARAs have been identified anywhere in the City (ECDC 23.60.010).

5.8 Lakes and Streams

Within the City limits, numerous surface water drainages flow into Puget Sound through gorges downcut in the steep bluffs. The Edmonds Critical Areas Ordinance (CAO) defines streams as "areas where surface waters produce a defined channel or bed which demonstrates clear evidence, such as the sorting of sediments, of the passage of water. The channel or bed need not contain water year round." From north to south, the following perennial streams were identified along the marine shoreline: Lund's (Gulch) Creek and Meadowdale Creek in Segment A; Perrinville Creek in Segment B; one unnamed creek in Segment C; Fruitdale Creek, Northstream Creek, and Shell Creek (with tributary Hindley Creek) in Segment D; and Shellabarger (various spellings)/Willow Creek in Segment H. Willow Creek, which lies mostly within Woodway, flows into the Edmonds Marsh along the base of the hillside of the former Unocal site where it mixes with flows from Shellabarger Creek before flowing through a series of ditches and culverts into Puget Sound near the Unocal Pier at Point Edwards. Shellabarger Creek, situated along the western bluff abutting Puget Sound, represents the intersection of the land surface with the Vashon advanced outwash aquifer water table. The Edmonds CAO recognizes the six named creeks south of Lund's Creek as Category 2 streams.

None of the streams included on the 2004 CAO inventory within the City of Edmonds meet the criteria for "shorelines of the state," but all contain potential or actual fish habitat and, thus, meet designation criteria for Type F waters pursuant to WAC 222-16-030. The only lake within City limits is Lake Ballinger in Segment I. Neither the inlet source (Hall Creek) nor the outlet (McAleer Creek) of Lake Ballinger flow within the City, although small areas of the City drain into them.

5.9 Flood Hazard Areas

Aside from the shoreline of Puget Sound itself, the Federal Emergency Management Agency (FEMA) 100-year floodplain only includes the Edmonds Marsh, a small portion of the Shell Creek drainage extending about one-quarter-mile upstream from the stream outfall, and shoreline areas of Lake Ballinger located within the City limits. In total, these areas include only 84 acres or 0.67 percent of Edmonds' total jurisdictional area (EDAW 2004).

Although the flood hazard areas in the City of Edmonds are defined on the FEMA maps, a better way to describe them is by referring to their base (100-year) flood elevations. For the coastline this elevation is 10 feet National Geodetic Vertical Datum (NGVD) or 14 feet North American Vertical Datum (NAVD). For Lake Ballinger this is elevation is 282.5 feet NGVD or 286.1 feet NAVD. Some flooding has occurred along the coast, but more serious flooding has occurred in areas adjacent to the Edmonds Marsh/Shelleberger Creek and on Lake Ballinger in recent years.

5.10 Nearshore Processes

The Net Shore-Drift in Washington State program (Ecology 2002) map coverage denotes the extent of individual drift cells and the direction of net shore-drift within the littoral zone for the City shoreline, based on a shoreline study conducted in the early 1990s by Jim Johannessen. The Edmonds shoreline littoral drift zone consists of two large partial drift cells separated by an area of no appreciable net drift (see Figure 5). No clear net-shore drift pattern was observed from Ecology's 2001 aerial photos taken of the Edmonds shoreline.

A large drift cell (SN-3) extends north from King County and terminates at the south end of the marina, contributing sand and drift logs to Marina Beach Park. SN-3 measures approximately 6.2 miles. Accretion shoreforms in this drift cell were found in relatively close proximity to Point Wells and the King-Snohomish county line. Historically, about 66 percent of this drift cell actively contributed slide material to the nearshore; following the railroad construction, little material currently reaches the shore (Johannessen *et al.*, 2005).

Between the park and the downtown area is a 1.6-mile-long area of no appreciable net drift (SN-2/SN-3 NAD), which terminates at a latitude roughly even with Caspers Street. The ferry terminal and southern breakwater of the Edmonds Marina impede net shore-drift in this shore segment. The southern breakwater of the Edmonds Marina prevents northward sediment transport, resulting in accretion and progradation of the South Marina Beach (Johannessen *et al.*, 2005); however, the beach was initially constructed along with the marina breakwater and may not receive enough nearshore drift sediment to be self-maintaining. North of the ferry terminal at Brackett's Landing (north unit) is a constructed rock groin and beach area that may function as a potential accretion shoreform. The beach was artificially nourished in 1989 with several different sizes of gravel (Shipman in prep). Results of historic accretion shoreform mapping indicated that 58 percent of the historic accretionary beaches in this drift cell have been lost due to anthropogenic alterations to the nearshore (Johannessen *et al.*, 2005).

North of the "no drift" area, another large drift cell (SN-2) moves sediment northerly along the city shoreline and beyond the city limits. SN-2 originates approximately 1,000 ft north of the ferry terminal and extends approximately 10.7 miles to just beyond Elliott Point in Mukilteo. Eighty-nine percent of the shores of this drift cell are modified by the Burlington Northern Santa Fe (BNSF) seawall. Landslides delivered sediment over the top of the BNSF railroad in three percent of the drift cell. The remaining 11 percent consisted of small accretion shoreforms typically formed from sediment derived from nearby streams (Johannessen *et al.*, 2005). The few

small deltas along the shoreline are symmetrical and give little visual indication of a predominant drift direction. Currently there are no intact bluff sediment sources in this drift cell; however, historic mapping and analysis shows that at least 74 percent of this cell was an active sediment source prior to construction of the BNSF seawall (Johannessen *et al*,. 2005).

Today, intermittent landslides continue to occur along bluff shores, but sediments loads rarely reach the water, due to the presence of the BNSF railroad bed and land use restrictions by State agencies that prevent the timely transfer of slide material onto the beach. Obstructions to beach re-nourishment and net shore drift, such as bulkheads, breakwaters, groins, docks, and boat ramps, block the redistribution of upland sediment onto the nearshore and result in increased erosion in areas where the beach is depleted. Hardened surfaces also deflect waves and concentrate wave energy onto adjacent properties, leading to increased beach erosion and a restructuring of shoreline substrate slope and particle size, which in turn alters biological composition from sandy beach communities (e.g., eelgrass, littleneck clam, Dungeness crab, surf smelt) toward gravel and cobble beach communities (e.g., kelp, butter clam, red rock crab) (Williams and Thom 2001).

5.11 Shoreline Modifications

Shoreline modifications refer to features or structures added to or removed from a shoreline that alters the shoreline's natural function, typically resulting in changes to wave energy dissipation, erosion, and sediment transport. Examples of modifications include armored intertidal slopes (e.g., bulkheads, riprap armoring, etc.), overwater structures (e.g., dock and piers), cleared vegetation (commonly done to improve views), channelized stream outlets (confining streams to channels or culverts that discharge at a point, instead of across a broad area), dredging, and filling.

Visible shoreline modifications along the City's waterfront within 200 feet of OHW were recorded using a GPS during a shoreline inventory and transferred into a GIS database (Snohomish County 2001). Figure 6 depicts the primary shoreland modification, bulkhead/seawall, and locations of armoring and overwater structures that affect marine habitat. No corresponding data were available for Lake Ballinger, although aerial photos reveal numerous piers and floats along the entire Edmonds shoreline.

In general, the Edmonds marine shoreline is defined by the steep shoreline bluffs and the BNSF railroad bed along the northern two-thirds of its length. The western edge of the rail bed fill covers the intertidal and transitional upland zones along the beach, with either a vertical seawall or a steep armored slope composed of large boulders or granite block. The remaining third of the shoreline, adjacent to the downtown area and south to the county border, is characterized by low or no banks; however, the low banks have been bulkheaded or armored and filled by buildings and road. These structures have likely been constructed on historic backshore habitat, which formerly allowed a slow and widespread re-distribution of erodable bluff material along the shoreline. Today, only infrequent and severe landslides are able, at few locations, to contribute "pulses" of sediment to the nearshore.

Intertidal structures have also eliminated most nearshore riparian vegetation and limited marine life to those species adapted to hard, nearly vertical substrates. Shoreline hydrology along the southern third of the city is further modified by a rock groin, a ferry terminal, a parking lot, a fishing pier, a marina, and a commercial pier. Nearshore drift is interrupted, reduced, or shifted seaward by these structures, causing drift sediment and organic material to drop into subtidal, rather than intertidal areas. What once had been a broad sandy gravel intertidal slope with a

width of hundreds of feet is now, in numerous areas, a narrow intertidal gravel and cobble beach with a width of 50 feet or less. Considering that many marine invertebrates, fish, and plants are adapted specifically to a narrow range of intertidal elevations, the reduction of intertidal habitat represents a significant loss of habitat area for those species along the Edmonds shore.

5.11.1 Shoreline Armoring

Shoreline armoring typically refers to the placement of hard structures, such as rock-covered slopes and bulkheads, to deflect wave energy away from a location perceived as vulnerable to erosion. Armoring is also done to stabilize an area from normal changes in sediment transport (e.g., to reduce shoaling at a marina entrance or encourage sand deposition along beach). Shoreline armoring has adverse effects on the nearshore physical processes necessary to maintain native species habitats and shoreline functions. These effects include the loss of beach areas, impoundment of sediment, modification of groundwater regimes, lowering of beach elevations, concentration and redirection of wave energy to adjacent areas, alteration of substrate, and loss of riparian vegetation and associated functions (KC DNR WTD 2003).

With the exceptions of Lund's Creek estuary, Edmonds Underwater Park, Brackett's Landing, and part of Marina Beach Park, the entire Edmonds shoreline (more than 90 percent) is armored by the BNSF railroad bed and bulkheads. Most of the BNSF rail bed along the Edmonds shoreline consists of an armored berm with two sets of parallel tracks on top, comprising a top width of at least 24 feet or more and a wider base width. The waterward side of the berm is typically armored with large rock or granite blocks, placed vertically or on a 2:1 slope. Concrete or wood bulkheads comprise the upper intertidal shoreline of the marina, adjacent commercial and residential buildings, and parking areas (see Figure 6). Many of these structures are probably reconstructions of old timber mill structures that date back to the late1800s, when Edmonds was established specifically because of the potential for waterfront access to transport lumber by steamship and rail (BOLA Architecture + Planning 2005). The railroad tracks were constructed along the shoreline, and mills and docks were built waterward, on planks and fill placed on the beach. A new city wharf was built in 1911 near the WSF ferry terminal, and a sea dike and sea gate were built around the same time to prevent floods of the tide flats areas southwest of downtown in the area of the Edmonds Marina.

Impacts to coastal processes from the extensive armoring of upper intertidal habitat along the Edmonds shoreline have affected the area for over a hundred years. Historic records of site-specific shoreline natural conditions are generally either unavailable or not quantifiable, so it is difficult to ascertain pre-development shore features and derive subsequent changes to nearshore conditions and processes. However, one potentially useful historic record in this regard is the United States Coast Survey's topographic sheet ("T-sheet") for the Edmonds' area. T-sheets are comprehensive and detailed early map representations of nearshore conditions in the second half of the 19th century, and are generally quite accurate, with some limitations.

The most obvious impact is the conversion of intertidal sand and gravel beach habitat into steep-walled, armored upland slopes and structures with little or no habitat value.

A second impact to shoreline function from armoring is the isolation of landslide material from the beach and adjacent shoreline areas. In many Puget Sound areas, landslide material is the sediment source that replenishes beaches from erosion by waves and currents; drift cell studies indicate that 66 to 74 percent of nearshore sediment sources from bluffs between Shoreline and Mukilteo have been eliminated by the railroad (see Section 5.10). The stream deltas north of

downtown Edmonds shore contribute small volumes of nearshore sediment (about 11 percent in Drift Cell SN-2) to the beach. The loss of historic sources of beach sediment caused by the construction of rail bed and other bulkheads, and the interruption of shoreline drift at other structures, such as the marina, ferry terminal, and the groin north of the Edmonds Underwater Park, further limit sediment replenishment. These modifications may be responsible for the relatively steep and narrow beach along this shoreline, and a possible shift from sandier substrate to gravelly cobble substrate in some areas.

Another impact to shoreline function from armoring and filling is the loss of nutrients from beach wrack that normally accumulates in broad bands along upper intertidal elevations. Beach wrack, consisting of decomposing marine and terrestrial shoreline vegetation, is a significant source of nutrients to the nearshore and a habitat upon which many aquatic vertebrates and invertebrates thrive (Sobocinski 2003). Beach wrack also provides shelter, food, and protection from solar energy and desiccation over intertidal sediment that is used as spawning and foraging substrate for several species of forage fish (e.g., sand lance and surf smelt) and shellfish (e.g., crabs, snails, gastropods).

The sea dike and sea gate would have stopped the natural tidal inundation of the Edmonds Marsh, shifting water quality to a less-saline, more stagnant brackish wetland, and shifting vegetation to species that are tolerant of lower salinity, warmer temperatures, and eutrophic water conditions. About three-quarters of the former marsh was subsequently filled for development of the marina, Harbor Square development complex, Edmonds sewage treatment plant, SR-104, and a City park. These changes have likely eliminated most sediment input to the intertidal nearshore.

It is possible that the shoreward extent of eelgrass has been reduced by the presumed steepening of the shoreline caused by armoring and fill. The addition of such marine structures and the resulting elimination of beach vegetation and possible coarsening of beach substrate may have reduced or eliminated forage fish spawning areas along most of the Edmonds shoreline.

5.11.2 Docks, Piers, and Over/In-water Structures

Overwater and in-water structures in Edmonds include docks, piers, ramps, wharves, and a marina. Over/in-water structures change the levels of light, shoreline energy regimes, substrate type and stability, and water quality along shorelines (Nightingale and Simenstad 2001). These changes result in alterations in the presence, abundance, and diversity of plant and animal species in the nearshore, including eelgrass, algae, fish, and wildlife. The physical supports that hold up overwater structures, such as bulkheads and piling, alter wave energy and sediment dynamics that affect plant propagation, fish foraging, spawning and migration, and shellfish settlement and rearing. In addition, construction materials associated with overwater structures can leach contaminants (e.g., creosote, metals from paint) into the nearshore environment.

The most significant over/in-water structures within the City's shorelands are the Port of Edmonds Marina and the Washington State Ferry terminal. The marina covers about 617,000 square feet, and the ferry terminal covers about 24,700 square feet (CH2M HILL 2004). Other overwater coverage includes Laebugten's Wharf (about 70,300 square feet, including the ramp, pier, and wharf structure), the former Unocal fuel pier (about 23,500 square feet), the City and Port of Edmonds fishing pier, and a small concrete ramp in Segment F.

In the locations of overwater piers, aerial photographs and hydroacoustic surveys reveal the fragmentation of an otherwise continuous band of eelgrass paralleling the shore. Eelgrass is

absent from under-pier areas probably due to shading and erosion from boat propeller wash and current/wave refraction around pier piles.

Although these structures appear to cover large areas of the shallow nearshore marine waterfront, they are probably less extensive than the historic boardwalks, beach mills, and numerous steamship docks that covered the waterfront in the late 1800s and early 1900s.

Along the Lake Ballinger shoreline, docks and piers were noted at almost every parcel. Aerial photos revealed about 47 structures that extend into the lake. These structures alter freshwater shoreline physical and ecology characteristics, although the effects are difficult to estimate because the lake itself is a highly modified wetland that was converted into a lake by damming the outlet to McAleer Creek.

6. Nearshore Biological Characterization

Physical shoreline conditions and processes described in Section 5 determine the biological species, conditions, and processes of the nearshore. Within the Edmonds SMP area, the marine shoreline is dominated by seawalls and fill, with the exception of three small beach parks. Waterward of the seawalls is a short, steep beach that ranges from sandy gravel to gravelly cobble. Landward of the seawall are moderate to tall (greater than 70 ft) bluffs, except in the commercial waterfront area. In addition to the seawalls within the intertidal zone, five additional in-water structures extend into the subtidal: the former Unocal pier, the Edmonds marina, the WSF pier, the rubble mound groin north of the ferry terminal, and Laebugten's Wharf. These structures all affect the physical characteristics of the shoreline, which influence or determine the biological characteristics. The effects of in-water structures on longshore currents, sediment and nutrient transport, light (photosynthetic active radiation), and substrate largely determine the habitats available for aquatic plants and animals.

The seawalls and fill for the railroad, marina, and commercial district occupy much of the intertidal zone, eliminating habitat for plants and animals that depend on those limited elevations between aquatic and terrestrial conditions. This includes the loss of upper intertidal and backshore vegetation, such as pickleweed, saltgrass, dune grass, driftwood, and beach wrack. Beach wrack, which consists of accumulations of aquatic and terrestrial plants and animals, provides nutrients and minerals to the shoreline and food and habitat to a community of resident and migratory species, including insects, fish, birds, and mammals. Recent studies of Pacific Coast and Puget Sound beaches have shown that the loss of beach wrack results in the absence of critical food resources for marine and terrestrial communities, and migrating shorebirds (Orr et al., 2005, Sobocinski 2003). Shoreline armoring eliminates beach wrack and decreases abundance and species diversity in both benthic infaunal invertebrate and insect assemblages in the upper intertidal zone. The impacts of shoreline modifications are most profound when they are installed below MHHW and where backshore vegetation has been removed (Sobocinski 2003), which is the condition of most of Edmonds' marine shoreline.

The numerous streams along this Central Puget Sound shoreline continue to contribute nutrients, insects, and terrestrial plant detritus to the marine nearshore via culverts under the BNSF railroad bed. These streams are unlikely to have ever been a significant source of driftwood or log debris, although landslides along the eroding bluffs would have regularly contributed logs to the marine nearshore. Currently, the BNSF railroad, the marina and WSF ferry terminal, and commercial seawalls occupy the zone in which drift logs and beach wrack would have accumulated.

Mid- and upper intertidal beach elevations provide spawning habitat for forage fish, such as surf smelt and sand lance, which form a critical base of the Puget Sound food web for birds, fish, and marine mammals. Although a few spawning areas for forage fish occur between Seattle and

Everett, none has been identified by WDFW in the Edmonds area, possibly due to intertidal beach alterations and habitat loss due to seawalls and fill.

Shoreline armoring, backshore fill, and in-water structures affect sediment transport and deposition as described in the previous section. The results of a shift in the physical shoreline conditions affects beach biological function in several ways. Structures deflect energy from waves and currents into unarmored areas, resulting in small areas of sediment accumulation (e.g., Underwater Marine Park spit) at the expense of larger areas of beach erosion, slope steepening, and substrate coarsening. The rate of erosion or sedimentation is too extreme for most plants and animals to adapt to, so these continually disturbed areas soon favor large numbers of a few species that thrive in unstable habitats. The result of sediment coarsening is often seen in a shift to larger, hardier bivalves (e.g., horse clams instead of Manila clams) and the loss of eelgrass at intertidal elevations.

In both freshwater and marine ecosystems, structures such as bulkheads, docks, and piers create a physical barrier between upland and aquatic biological communities, in addition to eliminating critical habitat features (especially vegetation), that forms important transitional habitat between the upland fresh-water ecosystem and the marine ecosystem.

6.1 Wetland Habitat

The City has four areas with potential wetlands that may be associated with the draft shoreline jurisdiction (Figure 11). These four areas are: the Edmonds Marsh area, the area around the mouth of Shell Creek, the area around the mouth of Perrinville Creek, and the Lake Ballinger area.

The City has one wetland (the 23-acre Edmonds Marsh), designated as a Category 1 wetland (highest quality), in addition to a Wildlife Habitat and Natural Resource Sanctuary. It is classified by the State as a priority habitat. Edmonds Marsh has been filled on the east by SR 104, the Harbor Square commercial area to the north, the BNSF tracks and the Port of Edmonds to the west, and the historical Unocal facility and Deer Creek Fish Hatchery to the south. The isolated remnant of Edmonds Marsh east of SR104 is hydraulically connected with the main marsh via a culvert under SR 104 that also conveys Shellabarger Creek. Portions of the marsh are seasonally flooded from discharges from Willow and Shellabarger Creeks. For the purpose of this inventory, both sections are treated as the Edmonds Marsh.

A series of ditches, pipes, and a culvert under the railroad tracks convey flows from the wetland under Admiral Way into Puget Sound.

The Edmonds Marsh receives water from approximately 900 acres, including Willow and Shellabarger Creeks, as well as runoff from surrounding properties. Adjacent property on the former Unocal site includes two stormwater detention ponds that were created from diking and filling the south portion of the wetland. During certain storm conditions, stormwater overflows from the ponds currently discharge into Willow Creek, which flows through the marsh. The marsh (including flows from Shellabarger Creek) drains to Puget Sound via a channelized portion of Willow Creek. The creek passes through a tide gate into a 48-inch pipe, which extends 1,275 feet into the lower intertidal portion of the beach south of the Edmonds Marina breakwater. The tide gate is kept closed from October through March (although there is some leakage); during the spring and summer months the marsh is tidally influenced.

The marsh tends to be brackish in the winter months and saline in the summer, once the tide gate is opened. The upgradient (eastern) portion of the marsh nearest the fish hatchery is primarily freshwater and is dominated by cattails, hard-stem bulrush, common velvet grass, water parsley, climbing nightshade and redtop. The overstory consists of alder, black cottonwood, Scouler's willow, Western red cedar, Douglas fir, and bigleaf maple. The shrub and herb layers include beaked hazelnut, salmonberry, red elderberry, skunk cabbage, horsetail, fringecup, and creeping buttercup. The western, estuarine portion of the marsh is dominated by American three-square, fleshy jaumea, Pacific silverweed, seacoast bulrush, salt grass, brass button, and soft rush. Invasive species are present throughout the marsh (and may be dominant) and include Himalayan blackberry, Japanese knotweed, Scot's broom, purple loosestrife, and reed Canary grass (CH2MHILL 2004).

The marsh is used by a wide variety of bird species (over 225 species), including the great blue heron (a State monitor species), which nests near the marsh (WDFW 2006a).

The presence of some other potential wetlands outside of shoreline jurisdiction was noted as part of the Edmonds Stream Inventory and Assessment (Pentec Environmental 2002), based on the Snohomish County Critical Areas 1991, but little information is available regarding these features. Vegetation is anticipated to be similar to that observed in the freshwater portion of Edmonds Marsh. Wildlife use is likely to be less, because of the smaller size of these other potential wetland areas.

6.2 Fish and Wildlife

None of the streams included on the 2004 CAO inventory within the City of Edmonds meet the criteria for "shorelines of the state," but all contain potential or actual fish habitat and, thus, meet designation criteria for Type F waters pursuant to WAC 222-16-030. As of 2004, Edmonds anadromous fishbearing streams are known to include Willow Creek, Shellabarger Creek, Shell Creek, Hindley Creek (a tributary of Shell Creek), Perrinville Creek, and Lund's Creek (ECDC 23.90.010).

Numerous fish and wildlife species depend on the Edmonds shoreline and adjacent shoreland habitats for either part or all of a life stage. Certain species and habitats are therefore recognized by state and federal agencies because of their special values. Special values are often associated with consumptive use by people representing commercial, recreational, or tribal interests. In some cases, special value is assigned because of rarity (e.g., killer whale) or ecological importance (e.g., forage fish). These species and associated habitats are typically documented and protected by WDFW, at the state level, and several federal agencies. Government agencies may assign variable levels of value and protection to a species or its habitat, based on numerous factors. This is collectively referred to as a species' "status." General fish and wildlife species and their status are discussed below.

Under the state's SMA, the City of Edmonds is also responsible for identifying critical habitats within its boundaries for the protection of natural resources under their jurisdiction. The Potential Fish and Wildlife Conservation Areas identified in the CAO are shown in Figure 4. Edmonds Underwater Park is a portion of the area owned or controlled by the City of Edmonds designated as Brackett's Landing Shoreline Sanctuary. Brackett's Landing Shoreline Sanctuary includes intertidal areas owned or under the control of the City in addition to the underwater park area. The City has designated additional critical habitats that include Edmonds Marsh.

6.2.1 State Priority Habitats and Species

WDFW has identified priority habitats for shellfish, salmonids, eagle, great blue heron, California sea lion, and harbor seal in the wetland, riparian, and estuarine habitats along the Edmonds shoreline (see Figure 11). State special status species that may occur in nearshore areas include peregrine falcon, pileated woodpecker, Vaux's swift, merlin, purple martin, great blue heron, green heron, western big-eared bat, Keen's myotis bat, long-eared bat, and longlegged bat.

6.2.1.1 Shellfish

Shellfish resources include clams, mussels, crab, and shrimp. Species representing all of these groups are found in the marine waters of the City (Table 5).

Table 5. Common Shellfish Found in the Edmonds Shoreline Jurisdiction

Common Name	Scientific Name
Dungeness crab	*Cancer magister*
Red rock crab	*Cancer productus*
Bay mussel	*Mytilus edulis*
Small clam	*Macoma charlottensis*
Native littleneck clam	*Protothaca staminea*
Manila clam	*Tapes japonica* or *Venerupis philippinarum*
Bentnose clam	*Macoma nasuta*
Butter clam	*Saxidomus gigantea*
Heart cockle	*Clinocardium nuttalli*
Horse clam	*Tresus capex*
Geoduck clam	*Panopea abrupta*
Spot prawn	*Pandalus platyceros*
Broken-back shrimps	*Heptacarpus* spp.
Dock (coon-stripe) shrimp	*Pandalus danae*

Information from KC DNR WTD 2003, WDFW 2006a, Kozloff 1993, Golder and Parametrix 2002

Several clam species inhabit Puget Sound waters in the vicinity of Edmonds, including horse or gaper, manila, native littleneck, butter, cockle, and geoduck clams. Clams have planktonic larvae that settle onto the bottom and crawl until they find a suitable habitat. They then attach themselves by a filament and burrow into the substrate after reaching sufficient size. Manila, native littleneck, butter, and horse clams, and heart cockle are found in intertidal sand and in sand-gravel substrates; butter and horse clams are the most abundant. Manila clams are typically found in intertidal habitat, whereas native littlenecks can occur from the mid-intertidal down to shallow subtidal areas. Butter clams can inhabit low intertidal down to subtidal areas (Harbo

1999). Horse and geoduck clams are found in both intertidal and subtidal zones but can occur in deeper waters than other clam species. Geoduck clams can occur from low intertidal areas down to a depth of over 300 feet (KC DNR WTD 2003). The small clam *Macoma charlottensis* dominates deeper subtidal areas.

Hardshell clams, such as littleneck and butter clams, may be in sufficient densities to support recreational harvest, in those intertidal beach areas characterized as gravelly or cobbly. Geoduck are harvested both recreationally and commercially in Puget Sound. Geoduck beds were identified by WDFW along the entire Edmonds shoreline, from the marina north to the City boundary. The Edmonds beds range in depth from about -20 to -120 feet MLLW (KC DNR WTD 2003). A recent geoduck survey (Golder and Parametrix 2002) confirmed the range of geoduck beds along the City and recorded mean densities between 0.4 and 2.5 geoducks per square meter, with greater densities at increasing depth. A commercial geoduck harvest area occurs along the entire City nearshore, from the north end of the Edmonds marina to Picnic Point and north.

Dungeness crab in Puget Sound prefer sandy bottom habitats or those with sandy-muddy substrates that support eelgrass, typically in waters ranging from approximately -9 to –185 feet MLLW. Dungeness crab can be expected to occur in the marine zones adjacent to the City at depths typically seen in other parts of the Central Basin of Puget Sound over similar substrate. They have also been harvested commercially and recreationally near the City of Edmonds (KC DNR WTD 2003). A juvenile Dungeness crab study, sponsored by the Snohomish County Marine Resources Committee, is currently being conducted in the North Marina Beach area (Lider 2006 personal communication).

Red rock crab is more abundant in intertidal areas than Dungeness crab and is commonly associated with rock/gravel substrates, although they may also occur in sandy and muddy areas containing eelgrass. Red rock crab preys and scavenges on a variety of benthic species, including clams, mussels, snails, and other crabs. Like Dungeness crab, this species also has planktonic larvae that settle out as juveniles in intertidal to shallow subtidal areas. Red rock crabs are expected to occur along the Edmonds shoreline and have been harvested recreationally near Edmonds.

Several species of shrimp inhabit Puget Sound waters, including pink, humpback, and coonstripe shrimp, as well as spot prawns (also known as spot shrimp). Spot prawn, the largest of the pandalid shrimps, is the most important commercially and recreationally harvested shrimp species in Puget Sound. Adult spot prawns inhabit discrete areas called beds and are typically found in waters between depths of -185 to -285 feet MLLW in central Puget Sound. Spot prawn habitat requirements depend on the developmental stage of the animal. Adults occupy deeper waters, while juveniles use shallower waters where vegetation is present. Spot prawns exhibit seasonal migrations from deep to shallow waters; they can also migrate vertically in the water column. There are commercial, tribal, and recreational spot prawn fisheries in or near Point Edwards (KC DNR WTD 2003).

6.2.1.2 Salmonids

Eight species of salmonids use nearshore areas of Puget Sound at some point in their life cycle. These include Chinook, chum, coho, sockeye, and pink salmon and sea-run cutthroat, steelhead, and bull trout (Striplin and Battelle 2001).

Table 6. Salmonids Found within the Edmonds Shoreline Jurisdiction

Common Name	Scientific Name
Chinook salmon (also called king, blackmouth)	*Oncorhynchus tshawytscha*
Coho salmon (also called red)	*O. kisutch*
Sockeye salmon	*O. nerka*
Chum salmon (also called dog, fall, calico)	*O. keta*
Steelhead (same as rainbow trout)	*O. mykiss*
Pink salmon (also called humpback)	*O. gorbuscha*
Bull trout	*Salvelinus confluentus*
Cutthroat trout	*O. clarki*

Salmonids use nearshore areas for adapting from freshwater to saltwater, for migration, as nursery areas for juveniles (Striplin and Battelle 2001). Nearshore area surveys conducted in 2001 found juvenile coho, Chinook, sockeye, and chum salmon, along with cutthroat and steelhead trout at several locations in the Edmonds vicinity.

Deeper water provides habitat for adult salmonids. Salmonid stocks that may be present near Edmonds include runs from the Skagit and Stillaguamish Rivers, but mostly from the Snohomish, Green, Puyallup, and Nisqually Rivers and smaller drainages in central and southern Puget Sound.

All streams within the City of Edmonds discharge either directly or indirectly to Puget Sound. However, anadromous salmon use (primarily chum and coho) has only been documented in three drainages (Lund's, Shell, and Willow Creeks), although natural spawning may be limited to Lund's and Shell Creek (accidental releases from the Deer Creek Hatchery are presumed to account for adults in Willow Creek). Juvenile chum salmon have been released in Perrinville Creek as part of a class project at Seaview Elementary School; however, no adult returns to this stream have been reported (Pentec Environmental 2002). In general, high sediment loads and impassable fish barriers have limited the use of potential spawning and rearing habitat that may be present. Native cutthroat trout are present in Perrinville, Northstream, Shell, Hindley, Shellabarger, and Willow Creeks. No bull trout have been observed in any of the drainages within the City (Pentec Environmental 2002).

6.2.1.3 Forage Fish

Forage fish include those species that are preyed upon by species of concern. Forage fish include herring, surf smelt, and sand lance.

Sand lance (*Ammodytes hexapterus*) and surf smelt (*Hypomesus pretiosus*) are generally found in nearshore areas. Both species are a prey item for seabirds, marine mammals, and a variety of fishes. From November 2000 to February 2001 and again from November 2001 to

February 2002, King County conducted sand lance and surf smelt spawning surveys on beaches in the vicinity of Edmonds. Documented sand lance spawning habitat was found at Brackett's Landing and along Ocean Avenue. Documented surf smelt spawning habitat was found at Point Edwards (KC DNR WTD 2003). Although there are Pacific herring spawning grounds in the central basin of Puget Sound, none are within the City's shoreline.

6.2.1.4 Shorebirds and Upland Birds

Birds with priority habitats that occur within the City include bald eagle, purple martin, and great blue heron.

The bald eagle is listed as a federal and state threatened species. The following paragraph was taken from the Brightwater FEIS (KC DNR WTD 2003). Bald eagles are both residents in and migrants through the Puget Sound region. Eagle populations are usually highest in the region in the winter months, when both resident birds and winter migrants are present due to the mild winter climate and abundant fall salmon runs. Bald eagles generally perch, roost, and build nests in mature trees near water bodies and available prey, usually away from intense human activity. They prey on a variety of foods, including fish, birds, mammals, carrion, and invertebrates. In the Puget Sound region, waterfowl and fish are generally the most common food for eagles. Bald eagles typically return to one of several nests located within an established nesting territory. Their seasonal home range for foraging and nesting averages 1.8 square miles in this region.

WDFW priority habitat map (2006a) notes nesting bald eagles at two locations within the City limits. It is not known if these nests are occupied every year, although nesting has been noted over the last 10 years (since 1997).

Great blue heron have nested in the woods surrounding the Edmonds marsh. Up to 17 birds have been observed in the marsh in recent years (WDFW 2006a). The WDFW Priority Habitat and Species map (2006) noted the presence of a seabird colony (glaucous-winged gull) near the Edmonds Underwater Park. In April 2004, gourds were installed on a group of pilings south of the Edmonds ferry dock by volunteers, with the approval of the Edmonds Parks and Recreation Director. Prior to that time purple martin, a priority species, had not been nesting on the Edmonds waterfront due to lack of nesting habitat. Since the artificial nest sites were provided, Martins have successfully nested in 2004 and 2005, and nesting activity has been observed recently (Lider 2006 personal communication).

6.2.1.5 Marine Mammals

A Priority Haulout Area has been identified by WDFW (2006a) within the Edmonds Underwater Park for harbor seals and California sea lions. These pinnipeds, along with the endangered Steller sea lion, will use beaches or structures near beaches as haulout areas. In the past, floats installed for divers at the Edmonds Underwater Park were taken over by sea lions. Because the sea lions rendered the floats unusable by divers, the floats were eventually removed, so this haulout designation may no longer be relevant; however, the adjacent beaches are frequently used by harbor seals (Lider 2006 personal communication).

6.2.2 Federal Threatened and Endangered Species

Several federally listed threatened or endangered species that may inhabit marine waters or adjacent habitats within the City are identified in the State database (WDFW 2006a). Threatened birds include the bald eagle (*Haliaeetus leucocephalus*) and marbled murrelet (*Brachyramphus*

marmoratus). Bald eagles are known to be present in nearshore areas of the Central Basin of Puget Sound, and there are documented eagle nests and breeding areas within the City (Figure 11). Marbled murrelets are observed intermittently in inland Puget Sound waters; winter and summer surveys by WDFW conducted near Edmonds found no murrelets in winter and only a few birds in the Edmonds area in summer (Striplin and Battelle 2001).

Federally listed threatened fish species that may occur in or in the vicinity of Edmonds, including Puget Sound Chinook salmon and bull trout. Puget Sound steelhead are currently proposed for federal listing as a threatened species. All three salmonids require varied habitats during different phases of their lives. Adults use nearshore areas as migration corridors when returning from the oceanic life stage, while juveniles reside in the nearshore prior during their outmigration from freshwater to the ocean. Bull trout adults also use shallow nearshore marine and estuarine areas as foraging grounds and migration corridors.

Federally listed marine mammals may be present in the Edmonds shoreline jurisdiction, but are not commonly observed. Steller sea lion (*Eumetopius jubatus*), listed as endangered, is not commonly observed in the Central Basin of Puget Sound, although the area beaches and large fish diversity at the Edmonds Underwater Park would provide attractive habitat. The southern Puget Sound resident population of killer whale (*Orcinus orca*), listed as threatened, is also an uncommon visitor to central Puget Sound. Because the City of Edmonds' shoreline jurisdiction extends far offshore, it is likely that killer whales could transit through the area; however, extensive shoreline development, ferry traffic, and the absence of salmon-bearing streams makes it unlikely that they would be attracted to the nearshore.

Critical habitat is designated by the federal government as part of its management of threatened and endangered species under the ESA. Critical habitats with the City of Edmonds include those for Chinook salmon and bull trout. Chinook salmon are not known to have used any of the small creeks within the City; critical habitat includes only the marine nearshore, from extreme high tide to a depth of 30 meters (FR Vol. 70, No. 170, September 2, 2005). Likewise, bull trout habitat is not recognized within any of the City creeks; critical habitat includes the marine nearshore, from MHHW to -10 meter MLLW, and any tidally influenced freshwater heads of estuaries (FR Vol. 70, September 26, 2005). Chinook salmon habitat use along the Edmonds shoreline would be during periods of juvenile foraging and juvenile and adult migration. The eelgrass beds along the shoreline provide high quality foraging habitat for juveniles. Bull trout habitat use along the Edmonds shoreline would be during periods of adult foraging and migration. Bull trout display wide-ranging foraging habits and are known to consume juvenile salmon (including Chinook) that inhabit shallow nearshore areas.

6.3 Riparian Zones

Riparian habitats are those habitats that border streams, lakes, and marine beaches. All habitat types occur with the City. Figure 11 shows the location of both freshwater and marine riparian habitats.

6.3.1 Freshwater

Two major drainages have been identified by the State as having priority riparian habitats; Lund's Creek and Perrinville Creek. Additional riparian habitat is associated with Shell, Hindley (a tributary of Shell), Shellabarger and Willow Creeks and parts of the shoreline of Lake Ballinger.

Riparian habitat within the City is typically characterized by western red cedar, red alder, willow, bigleaf maple and Douglas fir, depending on the degree of flooding and gradient with the corridor. Characteristic understory vegetation includes Indian plum, salmonberry, thimbleberry and elderberry, with an herbaceous layer consisting of curly dock, skunk cabbage, salal, Oregon grape, stinging nettle, sword and lady fern, horsetail, and piggy-back plants. Invasive (e.g., Himalayan blackberry, ivy) or introduced plant species (e.g., holly, grasses, morning glory) may also be present, depending on the degree of disturbance or cultivation along the stream corridors.

Riparian corridors support a variety of wildlife, including birds (such as song birds, owls, flickers, and pileated woodpeckers) and mammals (such as beaver, otter, and deer).

6.3.2 Marine

The City's marine riparian zone is the narrow shoreline adjacent to the Sound, extending 5.2 miles from Point Edwards to the mouth of Lund's Gulch. This zone has been highly modified by development, including fill associated with the Burlington Northern Santa Fe (BNSF) railroad bed and the Port of Edmonds Marina, construction of piers and wharfs to support industrial/commercial facilities in the downtown area (including the former Unocal facility), and bulkheads and seawalls for shoreline protection. These developments have replaced native vegetation, such as salt-tolerant plants found on less developed sites, which would otherwise grow at the highest tide elevations and in adjacent upland areas.

Marine riparian vegetation, when present along the Edmonds shoreline, is characterized by a mix of native and invasive species (including dune wildrye, white sweet clover, yarrow, Puget Sound gumweed, oceanspray, English plantain, and Scot's broom). Near the shoreline, at the base of the small streams that flow through ravines, vegetation is a combination of non-native herbs and shrubs, and fast-growing deciduous trees that have established on the steep slopes following logging, clearing, and landslides. Plant species are described in more detail for each segment in Section 7.

Native vegetation is mostly absent from the shoreline because of urban development in the downtown Edmonds area and the BNSF railroad in other areas. Native trees and shrubs that would have dominated this Puget Sound lowland forest shoreline include western hemlock, western red cedar, Sitka spruce, Douglas fir, bigleaf maple, red alder, madrona, and black cottonwood (Kruckeberg 1995). Common shrubs associated with lowland coastal forest would be Scouler's willow, vine maple, salal, red huckleberry, Oregon grape, and devil's club Kruckeberg 1995). A few native trees, such as bigleaf maple and red alder, and many native shrubs are present in the ravines and along the estuarine edges, but no longer along the shoreline edges. Besides providing essential wildlife habitat for native animal species, the dense native forest that would be present along the shoreline (and overhanging the upper intertidal beach) provides an important source of terrestrial insects for shoreline-oriented migratory animals, including shorebirds and juvenile salmonids (Brennan et al. 2004, Sobocinski 2003). Shade from vegetation also plays an important role in sheltering the eggs of beach-spawning forage fish from ultraviolet light and desiccation (Pentilla 2001). The elimination of fringing shoreline vegetation decreases food, shelter, and habitat value for all animals that use the shoreline.

6.4 Beaches and Backshore Flats

No undeveloped areas of natural backshore flats remain along the Edmonds shoreline. Backshore flats would likely have been common along the southern third of Edmonds, in the

locations of the existing marina, waterfront commercial buildings, ferry terminal, and parks. Additional areas of backshore flats were likely common at the base of the bluffs, where the BNSF railroad bed was constructed. The areas without natural backshore flats were likely those areas where the BNSF railroad bed was constructed with vertical walls in the lower intertidal zone.

Edmonds beaches are typical of sediment-starved beaches. Along most of the armored shoreline, steep, narrow beaches composed of gravelly cobble have replaced broad, sand and gravel beaches. The current sandy beaches at Marina Park and Brackett's Landing were constructed and have been artificially re-supplied with sand and gravel brought from upland sources. Little vegetation is typically present in the intertidal zone, with the exception of rockweed (*Fucus* spp.), sea lettuce (*Ulva* spp.) and the low-salinity tolerant *Enteromorpha* sp. (in cases where there are freshwater seeps). However, many burrowing organisms use the intertidal area, particularly from the mid-tidal elevations and deeper. Typical sandy beach communities are characterized by cockles, clams, moon snails, isopods, burrowing worms, nudibranchs, sea cucumbers, and sea stars. In addition to those species, periwinkles, drills and other snails, barnacles, mussels, hermit crab, shore crab, errantiate (not confined to tubes or burrows), and tube-dwelling worms, anemones, tunicates, and sponges will also be present if the beach contains some gravel or cobble. Small fish (gunnels, blennies, and sculpin) may also be present in small depressions or under rocks. More stable, hard substrate (e.g., consolidated clay or rock) will encourage the presence of urchins. At high tide, larger organisms will be move into the beach areas, including Dungeness and red rock crab, juvenile salmon and other fishes (Kozloff 1993).

6.5 Sub-Estuaries (Stream Mouths and Deltas)

The Edmonds Critical Areas Ordinance (CAO) recognizes six Edmonds creeks as Category 2 streams. Streams are defined in the CAO as "areas where surface waters produce a defined channel or bed which demonstrates clear evidence, such as the sorting of sediments, of the passage of water. The channel or bed need not contain water year round." None of the streams included on the 2004 CAO inventory within the City of Edmonds meets the criteria for "shorelines of the state," but all contain potential or actual fish habitat and, thus, meet designation criteria for Type F waters pursuant to WAC 222-16-030. Among these streams are "Anadromous Fishbearing Streams" (streams existing in whole or in part within the City of Edmonds in which anadromous fish are known to occur). As of 2004, Edmonds fishbearing streams are known to include Willow Creek, Shellabarger Creek, Shell Creek, Hindley Creek (a tributary of Shell Creek), Perrinville Creek, and Lund's Creek (ECDC 23.90.010).

Due to the location of the BNSF rail bed, sub-estuary habitat along Edmonds' shoreline has been significantly reduced by fill and further constricted by culverts. The sub-estuaries now occur shoreward/upgradient of the tracks, separated from Puget Sound by 50- to 150-ft-long culverts—except at Edmonds Marsh, where the culvert is about 800 ft long. These inland sub-estuaries receive relatively high volumes of stormwater runoff from the backshore drainage ditch that parallels the rail bed. All stormwater runoff from all upland areas along the tracks flows toward the tracks and into the ditch, and then it is conveyed into the stream sub-estuaries. Because the steep slopes along the tracks are frequently denuded by slides and vegetation removal, unusually high sediment inputs are conveyed into the ditch and into the sub-estuaries, further degrading water quality. It is likely that the sub-estuaries support an altered benthic and epibenthic invertebrate community that favors large numbers of a few species that are tolerant of high siltation and small volumes of pollutants released by train traffic (e.g., oil and grease).

Small deltas have formed at the outlets of most sub-estuaries in Edmonds, particularly at Shell Creek (Pentec Environmental 2001). Stream discharges are not sufficient to significantly alter the salinity at these locations, although they may serve as a source of organic material to the local estuarine environment. These small deltas tend to be composed of sand and gravel and provide a lower gradient habitat relative to the adjacent fringing beach.

Small deltas are fairly productive and will be inhabited by worms, clams, mussels, snails, barnacles, amphipods, and other small crustaceans, anemones, red rock crab, sea stars, and small fish. The gravel and cobble that may be present can serve as holdfasts for smaller algae and kelp at the lower beach elevations. These stream deltas serve as foraging areas for diving ducks, shorebirds, fish-eating birds (such as herons and kingfisher), river otter, and fish. This habitat also provides spawning and rearing areas for many marine species that live out their lives in deeper water (e.g., midshipman fish).

The small deltas along the marine shore also provide critical migration corridors for wildlife and anadromous fish between the marine shore and upland freshwater riparian habitat. Access to and from the marine shore is largely limited to the stream corridors and culverts at sub-estuaries. Large animals, such as raccoons and deer, may climb the railroad embankment, but face lethal train traffic. Urban development, including housing, parks, the ferry terminal, and the railroad bed has eliminated virtually all overhanging marine shoreline vegetation in Edmonds; thus terrestrial wildlife foraging in the intertidal beach habitat has no shelter or cover to avoid predation or adverse weather, other than at the sub-estuaries.

Aquatic species are also dependent on sub-estuaries as migration corridors. Both juvenile and adult salmonids migrate through sub-estuaries to and from the ocean. The variable salinity within sub-estuaries provides juveniles with a relatively sheltered area and abundant food in which to adjust from freshwater to salt water (osmoregulation) during their migration to the ocean; adults returning to spawn depend on sub-estuaries for holding until stream flows adjust to acceptable volumes and temperatures for upstream migration.

6.6 Eelgrass Meadows

Eelgrass is distributed in patchy narrow bands along the City waterfront south of the marina to Point Wells, and north of Shell Creek to Picnic Point (KC DNR WTD 2003) (Figure 1). Dense patches are present in some areas, including north and south of the Lynnwood outfall (near Meadowdale Creek), and north and south of Laebugten's Wharf. Although the WDNR ShoreZone inventory in 2001 depicted eelgrass between the ferry terminal and the north side of the marina, the recent Battelle Nearshore Survey (KC DNR WTD 2003) did not show eelgrass in that area.

At its shallowest extent, the eelgrass starts 10 feet waterward of the shore, at about -2 feet MLLW. The deepest extent is probably about 200 feet offshore, to a maximum depth of about -20 feet MLLW, based on the depth of nearby eelgrass beds that were mapped south of the marina for a recent eelgrass survey (Parametrix, reported in KC DNR WTD 2003). The density of the mapped eelgrass beds is variable, ranging from a few shoots per square meter, to several hundred per square meter.

Eelgrass beds provide foraging and refuge habitat for many species, including juvenile fish and Dungeness crab. Many diving ducks and other seabirds will also forage in the eelgrass beds. By late spring and summer, there is usually a well-developed invertebrate community inhabiting the beds, including small algae (attached to the eelgrass blades), flatworms, small crustaceans

including copepods, amphipods, isopods, hydroids, jellyfish, snails, nudibranchs, six-rayed seastars, spider crabs, and many others (Kozloff 1993).

6.7 Kelp Beds

Bull kelp (*Nereocystis luetkeana*) and sugar kelp (*Laminaria saccharina*) are the most common types of kelp in central Puget Sound. Distribution of kelp, especially bull kelp, varies over time (Shaffer 1998 in KC DNR WTD 2003, see Figure 12). In general, kelp beds are found offshore of eelgrass beds, in deeper water, in areas of higher currents and rocky substrates that provide stable platforms for holdfast attachment. A dense band of kelp was recently mapped off the mouth of Shell Creek, extending about 1,000 feet to the north and south. Six smaller kelp beds were identified offshore in the general area of Perrinville Creek. One small kelp bed was mapped south of Laebugten's Wharf (KC DNR WTD 2003). The DNR ShoreZone Inventory indicates that an area of bull kelp was observed north of the Edmonds Underwater Park for about 2,000 feet, and between Perrinville and Fruitdale Creeks for about 3,000 feet.

Kelp beds provide habitat for a variety of fish species, herring spawning substrate, and refuge for a variety of crabs and shrimps. Young rockfish common to the Central Basin of Puget Sound (brown, copper, and quillback) are typically found in kelp beds prior to moving to more typical adult rocky reef habitat.

6.8 Habitat Conservation Areas

Brackett's Landing Shoreline Sanctuary Conservation Area is defined in WAC 220-16-720 as those bed lands and tidelands owned by the City of Edmonds at Brackett's Landing Shoreline Sanctuary, and the water column above these bed lands and tidelands including all of the area known as Edmonds Underwater Park. Established in 1970, this is the oldest marine conservation area in Puget Sound, serving as a reference area for research into long-term marine conservation and ecological adaptation and recovery (WDFW 2006b).

According to WDFW (2006b), the park's predominant fishes include copper rockfish (*Sebastes caurinus*), quillback rockfish (*S. maliger*), lingcod (*Ophiodon elongatus*), and cabezon (*Scorpaenichthys marmoratus*). Kelp greenling (*Hexagrammos decagrammus*), painted greenling (*Oxylebius pictus*), surfperches (Embiotocidae), and black rockfish (*S. melanops*) are also common in the park, although they are associated with artificial rocky reef habitats that are atypical of the natural nearshore habitat of this locale. Flatfishes are often found on the sand and mud habitats away from the artificial structures, and the eelgrass beds support many small fishes such as bay pipefish (*Sygnathus leptorhynchus*), juvenile codfishes (Gadidae), and shiner perch (*Cymatogaster aggregata*). Pelagic schooling fishes may be seen in the park such as juvenile and adult salmon, tubesnouts (*Aulorhynchus flavidus*), and juvenile herring (*Clupea harengus pallasi*).

Predominant macro-invertebrates include giant anemones (*Metridium senile*) that cover much of the artificial structures.

Marine mammals frequent the site, including harbor seals and sea lions. Diving ducks, such as surf and white-winged scoters and red-breasted mergansers, can be observed during the winter at the park. Red-necked grebes (*Podiceps grisegena*), Western grebes (*Aechmophorus occidentalis*), and horned grebes (*Podiceps auritus*) also occur in the reserve, as do seabirds such as marbled murrelets (*Brachyramphus marmoratus*) (WDFW 2006b).

7. Segment Summaries and Assessment

The marine shoreline was divided into segments (see Figure 2) based on a habitat assessment (Pentec Environmental 2001) that considered numerous environmental factors favorable to salmonids. The segmentation was determined by biologists based on shoreline physical characteristics identified through field surveys and hydrological, chemical, geomorphologic, biological, and landscape features identified from natural resource maps and reports, and a review of aerial photographs. Lake Ballinger was assigned a separate segment from the marine shoreline because of its physical separation and unique lacustrine characteristic.

Detailed information about the habitat features within each segment were obtained from literature cited in this inventory, including a shoreline inventory conducted along the marine shore in 2001-2002 (Snohomish County 2001). The marine shore inventory consisted of teams of biologists carrying global positioning system (GPS) receivers who walked along the shoreline in two tracks parallel to OHW and recorded the type and location of numerous physical and biological features within 200 feet of OHW (Table 7). This dataset provides the most comprehensive documentation of shoreline marine features, although continuing development at certain locations (e.g., the former Unocal site, the waterfront commercial district) has undoubtedly changed some conditions since 2000.

Table 7. Marine Shore Inventory Habitat Features recorded for Snohomish County 2001

	Banks /Bluffs	Bulkheads	Ramps	Piers	Pipes	Stream Outlets	Seeps	Wetlands	Invasive Species	Riparian Vegetation
Location	X	X	X	X	X	X	X	X	X	X
Material	X	X	X	X	X					
Condition	X	X	X	X	X			X		X
Elevation	X	X	X	X		X		X		
Length	X	X	X	X	X		X	X	X	X
Width	X	X	X	X		X	X	X	X	X
Diameter					X					
Patch Size								X	X	X
Type or Species								X	X	X
Flow					X	X	X			
Complexity								X		X

7.1 Segment A—Lund's Gulch to Perrinville Creek

7.1.1 Marine Shoreland

Segment A, from the northern edge of Edmonds to the mouth of Perrinville Creek, is about 7,100 feet long. The segment includes part of Lund's Creek estuary, although most of the creek and estuary is outside of Edmonds' city limits. The segment also includes Meadowdale Creek. The segment forms a broad arc along the shoreline, referred to as Browns Bay.

The BNSF railroad track bed fills the transition zone between the upper intertidal zone and the upland slope. Along this segment, the waterward side of the railroad bed consists of a rock-armored, steep slope (about 1:1). Some of the armoring is in good condition, but a length of about 4,000 feet is failing, as evidenced by deep holes in the waterward face and large rocks that have tumbled into the intertidal zone. At the top of the bed, the track(s) and adjacent fill width varies between 10 and 15 feet. Throughout the segment are numerous small pipes and culverts that convey creeks and stormwater drainages under the BNSF railroad. At least 34 pipes, ranging in diameter from 4 inches to 3 feet, cross through the railroad bed and discharge into Puget Sound. Within the shoreline jurisdiction, most of Segment A is devoid of riparian vegetation, except for about 400 feet of upland shoreline, immediately south of Lund's Creek estuary, where the forested ravine meets the water. The forest is separated from the intertidal beach by the railroad bed, and trees have been cleared to improve water views in front of several residences so the (lack of) riparian vegetation offers diminished value to the marine shoreline.

Near Laebugten's Wharf, the railroad bed moves inland, and an area of low bank stretches for about 230 feet along the shoreline, waterward of the tracks. Low-growing vegetation, consisting of grasses, forbs, and weedy shrubs, covers this "no bank" area just upland of the shoreland.

Laebugten's Wharf covers about 200 square feet of intertidal habitat near the middle of Segment A, between Lund's and Meadowdale Creeks. At the wharf, a 20-foot-wide wood ramp crosses the shoreland and extends about 200 feet across the intertidal to the wharf, all on creosote-treated wood supports.

Attached to the wharf is a salmon-rearing net pen, about 20 x 20 x 12 ft in size. Since 1990, the net pen has been used by WDFW to rear hatchery coho salmon smolts for release into Puget Sound as a supplement to recreational and commercial fisheries. About 27,000 fish are released annually into the Edmonds Marina Boat Basin between May and June (WDFW 2006c). The Northwest Salmon and Steelheaders Council (NWSSC), Laebugten Chapter, maintains the net pen, and feeds and releases the penned fish.

South of Laebugten's Wharf is Meadowdale Creek. The railroad fill has largely eliminated the estuary, and a culvert concentrates creek flows into a narrow band that discharges as a point in the lower intertidal, instead of a broad arc across the upper intertidal. Consequently, this special aquatic habitat is greatly reduced in both area and function.

South of Meadowdale Creek is a roughly 1,000-foot-long segment of shoreline that belongs to the City of Lynnwood. The property includes a sewage treatment plant and outfall. Near the south end of Segment A, nine derelict wood piles were observed in the intertidal zone.

Segment A is rated as providing moderate quality habitat for juvenile Chinook salmon and bull trout. Although eelgrass is present along the nearshore, the armored and filled intertidal zone and lack of riparian vegetation within the 200-foot shoreland decrease habitat value. Lund's Creek

estuary provides a small section of high quality habitat, but Meadowdale Creek's estuary has been filled by the railroad bed. Dense urban development in the upland areas adjacent to the shoreland further reduces habitat value and function along this segment.

7.1.2 Lund's Gulch Creek

Lund's Gulch Creek subbasin drains an area of approximately 2.3 square miles (1,440 acres), of which only a small fraction, probably less than five percent, lies within the City of Edmonds. West of 52nd Avenue W, including the area within the City of Edmonds, the creek and its tributaries are contained within a deeply incised ravine with sloping sidewalls steeper than 40 percent. The creek and ravine are part of Meadowdale County Park.

A significant part of the estuary has been filled by the BNSF railroad bed; the creek passes through a 36-inch-diameter culvert before entering Puget Sound. Shrubs and small trees on the east side of the railroad bed extend about 200 feet south of the estuary, except in front of several houses where vegetation has been cleared for unobstructed water views. Within the city limits, the ravine is mostly forested, except for a small area at the top of the hillside that contains medium-density residential housing. The upper portion of the basin is flat with drainage systems consisting of older ditch and culvert systems that lack sufficient conveyance capacity.

The upper watershed, east of Edmonds, is urbanized with development consisting of medium to high-density residential development. Commercial development is also located along the Highway 99 corridor. Notable hydrologic features in the basin include a 21-acre forested wetland and a regional detention facility located upstream of 52nd Avenue (Snohomish County SWM 2002).

Snohomish County SWM (Snohomish County SWM 2002) modeled hydrologic conditions for the entire Lund's Gulch Creek subbasin to determine stormwater runoff volumes that would be generated at different locations for both existing and future land use conditions. The county also modeled hydraulic conditions to evaluate the conveyance capacity of portions of Lund's Gulch Creek, as well as the primary drainage system, to determine water levels and evaluate backwater conditions that occur when downstream flow restrictions, such as an undersized culvert, cause high upstream water levels (Snohomish County SWM 2002). Geomorphologic analyses were conducted to evaluate erosion and sediment deposition problems within or affecting the study area. The geomorphologic field investigation included portions of the main stem for Lund's Gulch Creek, and detailed geomorphic analyses were also conducted to assess the stability of the stream channel and its tendency to erode and deposit sediment. The results of the studies, models, and analyses were presented in a Drainage Needs Report and appendices available through Snohomish County. The report identified 19 specific locations within the Lunds Gulch Creek subbasin with drainage problems. Most problems were related to inadequate stormwater conveyance and subsequent flooding of roads and private property outside of the creek corridor. Two undersized culverts within the creek channel were identified as blocking or restricting fish access and impounding creek flows, resulting in channel erosion and unnatural drainage patterns that further impacted the creek. The culverts were identified as Washington Department of Fish and Wildlife's priority replacement projects. One section of creek was recommended for "tightlining," in which 300 feet of channel would be removed and water would be conveyed in a pipe. Although tightlining may simplify a drainage conveyance problem, it accomplishes one objective—water conveyance—by eliminating all other physical and biological functions from a creek system, resulting in practically complete habitat loss. Several other drainage erosion problems (related to flooding and erosion) that occurred on private property were not

recommended for correction because the costs were not justified by the limited scope of property damage; however, the analysis did not consider the cumulative impacts from these small-scale, but numerous and frequent sediment inputs into the creek channel. Ironically, this type of small-scale degradation, on a single-lot basis, is now recognized as the primary factor contributing to the degradation of Halls Creek. Coho and chum salmon and cutthroat trout are the predominant salmonid species that use Lund's Gulch Creek (Snohomish County SWM 2002). The creek is neither known nor presumed to support Chinook salmon, bull trout, rainbow trout, or steelhead, although one steelhead was reportedly seen in the creek in 1978 (Kerwin 2001). Lund's Gulch Creek may support a small population of resident cutthroat trout. Anadromous fish entering Lund's Gulch Creek pass through a culvert under the railroad tracks that occasionally clogs with sediment and sometimes limits access. The condition of fish habitat in the creek is fair to poor. The creek appears to have good spawning gravels in the first kilometer upstream of saltwater; however, active transport of bedload material from upstream sources and inputs of sediment likely limit egg survival in the spawning gravels. No study on the survival rate of eggs laid in these habitats was available. In addition to stream channel erosion problems, there are also side ravine sediment discharges throughout the creek.

Little information regarding the salmonid population is available, except for WDFW (Pfeifer 1979, in WDFW 2003), of which all accounts are anecdotal. Coho and chum in Lund's Gulch Creek have been sighted consistently for the past decade or more, through 2001, by the park ranger. In 2001, about 100 coho and 100 chum salmon spawned in Lund's Gulch Creek. Local high schools and the Brackett's Landing Foundation are also reported to participate in off-site chum salmon rearing for release in Lund's Gulch Creek. The Brackett's Landing Foundation maintains a small hatchery in the large wetland complex at the headwaters of Lund's Gulch Creek. The Foundation rears and releases fry and smolts resulting from 10,000 chum and 500 coho eggs per year (CH2M HILL 2004). Local anglers have reported sea-run cutthroat use of Lund's Gulch Creek.

The lower reaches of Lund's Gulch Creek provide a low-gradient spawning area without fish passage barriers as far upstream as 52nd Avenue W. Above 52nd Avenue W., the naturally low baseflow and moderate to steep gradient limits the area useable for salmonids and further upstream passage. In the midsection of Lund Gulch Creek, water velocity preferences for most anadromous species are exceeded due to high gradients. Historical distribution of salmon in Lund's Gulch Creek probably limited to the lower reaches.

7.1.3 Meadowdale Creek

No information specific to Meadowdale Creek was found during a literature search. References to a drainage basin study of Meadowdale Creek by R.W. Beck in 1991 were reported in the Edmonds Stream Inventory and Assessment (Pentec Environmental 2002), but no details were provided. Based on the Snohomish County marine shore inventory, USGS topographic maps, and aerial photographs, Meadowdale Creek characteristics and conditions appear to closely resemble the other short-length, deeply incised urbanized creeks that flow through the City.

The outlet of Meadowdale Creek consists of a 30-inch-diameter culvert that passes under the BNSF railroad bed and discharges directly onto intertidal beach. No delta or defined estuary is present in aerial photos near the creek outlet. The gradient of the lower reaches of Meadowdale Creek closely resembles Perrinville Creek, which is moderately steep, but still allows anadromous fish passage. There are no records by WDFW of anadromous fish using the creek.

7.2 Segment B—Perrinville Creek to Southwest County Park

7.2.1 Marine Shoreland

Segment B, from the mouth of Perrinville Creek to a latitude even with 176th Street SW, is about 2,100 feet long. This segment, rated as having low quality shoreline habitat for salmonids, lies between two adjacent areas of moderate quality habitat, as identified in the Edmonds Shoreline Habitat Assessment (Pentec Environmental 2001).

The BNSF railroad track bed fills the transition zone between the lower intertidal zone and the upland slope. Along this segment, the waterward side of the railroad bed consists of a rock-armored slope, ranging from 20 to 30 feet high. Little of the armoring is in good condition—a length of about 1,200 feet is failing, as evidenced by deep holes in the waterward face and large rocks that have tumbled out into the lower intertidal and shallow subtidal zones. At the top of the bed, the double tracks and adjacent fill width is about 15 feet.

Near the northern end of this segment is Perrinville Creek. The creek passes through a 36-inch-diameter concrete culvert under the railroad bed and discharges directly onto the lower intertidal, where a large delta is forming. Along the rest of the segment, five small plastic pipes, ranging in diameter from 4 to 6 inches, convey stormwater drainage under the BNSF railroad into Puget Sound.

A backshore wetland is found within this segment, formed by water impounded along the railroad bed. The wetland is about 150 feet long and 35 feet wide.

Moderate banks, less than 50 feet high, cover the backshore transition into upland habitat, except for a 300-feet-long section of low bank on both sides of Perrinville Creek. The upper riparian slopes along Segment A are mostly devoid of trees and other significant riparian vegetation. A narrow band of brambles and shrubs separates the rest of the shoreland from lawns and dense residential housing. Parts of the adjacent hillsides appear to have been cleared about the time of the 2002 shoreline survey.

The shoreline segment is within a bald eagle breeding territory (WDFW 2006a).

7.2.2 Perrinville Creek

Perrinville Creek is classified by the City of Edmonds as a Category 2 stream. The Perrinville Creek drainage basin was studied extensively in 1991 (R.W. Beck), 1998 (Pentec and Shannon & Wilson), and 2002 (Pentec Environmental). This creek closely resembles other creeks within the City, which are similar in topography, gradient, soils, vegetation, and channel modifications resulting from the railroad and surrounding urban development. The Perrinville Creek outlet is a 36-inch-diameter concrete culvert that discharges onto lower intertidal beach habitat that is heavily armored with boulders that have rolled off the BNSF railroad bed. A noticeable delta is accreting at the culvert outlet, indicating high sediment volumes are likely eroding from the upstream riparian corridor. The creek slopes moderately (less than 5 percent) for about 500 feet through residential properties west of Talbot Road. The gradient (and erosion-related problems) increases upstream of Talbot Road.

Information about fish use of Perrinville Creek is limited. WDFW (1991, 2006a) reported resident cutthroat trout in the lower reaches and accessible, good quality spawning and rearing habitat in the lower and middle reaches for anadromous salmonids. Since 1994, juvenile chum salmon have been released annually in Perrinville Creek as part of a class project at Seaview

Elementary School; however, no adult returns to this stream have been reported (Pentec Environmental 2002). In general, high sediment loads and impassable fish barriers upstream of the culvert at Talbot Road have limited the use of potential spawning and rearing habitat that may be present. No bull trout have been observed in any of the drainages within the City (Pentec Environmental 2002).

The lower riparian zone is within a bald eagle breeding territory (WDFW 2006a).

7.3 Segment C—Southwest County Park to Fruitdale Creek

7.3.1 Marine Shoreland

Segment C, from Southwest County Park to Fruitdale Creek, is about 5,300 feet long. The segment coincides with a habitat segment assessed as moderate quality in the Edmonds Marine Shore Habitat Assessment (Pentec Environmental 2002). This segment includes one unnamed creek. Most of this segment is defined by the vertical rock wall along the BNSF railroad bed.

The BNSF railroad track bed fills the transition zone between the mid-intertidal zone and the upland slope. Along this segment, the waterward side of the railroad bed consists of 3,700 feet of rock-armored, steep slope (about 1:1) and 1,600 feet of vertical rock wall, about 15 feet high. Most of the armoring is in good condition; a length of only about 200 feet is failing, as evidenced by deep holes in the waterward face and large rocks that have tumbled out into the subtidal zone. At the top of the bed, the double tracks and adjacent fill are about 15 feet wide. At the northern end of the segment is a 24-inch-diameter concrete culvert that carries stormwater flows under the railroad bed. Further south along the shoreline, a 36-inch-diameter plastic pipe also conveys stormwater flows under the railroad bed. Along the rest of the segment, ten small plastic pipes, ranging in diameter from 4 to 6 inches, convey stormwater drainage under the BNSF railroad into Puget Sound. A freshwater seep is also located along this segment.

The entire segment consists of a continuous, moderately high bank that appears to have been cleared of vegetation in patches prior to the survey in 2002. Scattered trees (alder) were present along some of the slope uphill of the shoreland; however, no significant riparian tree or shrub layer was present within the shoreland. No vegetation was present from the intertidal zone to the landward edge of the railroad bed. Along the shallow subtidal zone, extensive eelgrass beds are visible in aerial photos and in maps of sonar surveys.

This segment is within a bald eagle breeding territory (WDFW 2006a).

7.4 Segment D—Fruitdale Creek to Shell Creek

7.4.1 Marine Shoreland

Segment D, from the mouth of Fruitdale Creek to a point south of Shell Creek, is about 3,300 feet long. This segment, rated as having moderate quality shoreline habitat for salmonids, lies between two adjacent areas of moderate quality habitat, as identified in the Edmonds Shoreline Habitat Assessment (Pentec Environmental 2001).

The BNSF railroad track bed fills the transition zone between the mid-intertidal zone and the upland slope. Along this segment, the waterward side of the railroad bed consists of a rock-armored slope, ranging from 10 to 20 feet high. Most of the armoring is in good condition, with

only a short span (about 560 feet) failing, as evidenced by deep holes in the waterward face and large rocks that have tumbled into the lower intertidal and shallow subtidal zones. At the top of the bed, the double tracks and adjacent fill width is about 15 feet.

At the northern end of the segment, Fruitdale Creek passes through a 30-inch-diameter concrete culvert under the railroad bed and discharges directly onto the lower intertidal, where a small delta has formed. A narrow backshore wetland, about 230 feet long, was formed by drainage impounded along the railroad bed. A large seep area is also located in this segment. This segment also includes Northstream Creek and Shell Creek.

Low banks cover the backshore transition into upland habitat. About 1,000 feet of upper riparian slopes along Segment D contain riparian vegetation; the remainder is mostly landscaped residential yards devoid of trees and other significant riparian vegetation. No specific data on vegetation species and composition is available. A narrow band of brambles and shrubs separates the rest of the shoreland from lawns and dense residential housing.

The shoreline segment is within a bald eagle breeding territory (WDFW 2006a)

7.4.2 Fruitdale Creek

Fruitdale Creek is an Edmonds Category 2 stream, about 0.75 miles long, that drains 143 acres of the Talbot Park basin. Little information is available for Fruitdale Creek apart from a drainage study by URS in 1989 and a recent habitat survey (Pentec Environmental 2002). The creek outlet consists of a 30-inch-diameter concrete culvert under the BNSF railroad bed. During the 2002 survey, the culvert was about 40 percent filled with gravel. The creek channel flows through a series of pipes, incised channels, debris, and a flood-control structure.

The WDFW (2006a) Priority Species database contains no fisheries information for Fruitdale Creek. An unspecified fish habitat survey conducted in 1985 (no other information available) found no fish present. A 2002 habitat survey (Pentec Environmental) verified the lack of salmonid spawning and rearing habitat in the creek and concluded current fish use of the creek was unlikely.

7.4.3 Northstream Creek

Northstream Creek is classified by the City of Edmonds as a Category 2 stream that drains the 248-acre Northstream drainage basin (URS 1989). The creek is about 0.75 miles in length and drops about 400 feet in elevation from the top of the basin to the outlet, through a 24-inch-diameter culvert under the BNSF railroad bed (Pentec Environmental 2002; Snohomish County database 2001). In 1989, Northstream Creek was determined to have erosion and water capacity problems due to stormwater runoff (URS 1989). The stream channel has been confined to a narrow, concrete-lined ditch between several residential properties; all vegetation has been removed. Further upstream, the creek regains its natural channel and riparian vegetation.

Information on fish use of Northstream Creek is limited. As of 2002, WDFW had not conducted fish surveys in the creek, although Pentec Environmental (2002) biologists observed fish, presumed to be cutthroat trout, downstream of an impassible fish barrier at the site of a 1920's era shingle mill water diversion structure. Residents along the creek reported that great blue heron and river otter were present in the basin.

7.4.4 Shell Creek

Shell Creek is classified as a Category 2 stream by the City of Edmonds. The creek drains an 806-acre basin, which includes Hindley Creek. A significant part of the estuary has been filled by the BNSF railroad bed; the creek passes through a 36-inch-diameter culvert before entering Puget Sound, where a large delta has formed. The lower reaches of the creek are relatively undeveloped and provide good-quality shoreline habitat, including a rare Category 2 riparian wetland along the backshore. Within the shoreland, the wetland is about 100 feet wide and 230 feet long. It extends about a quarter-mile upstream from the railroad, out of the shoreland boundary.

A short distance upstream of the BNSF culvert, Hindley Creek joins Shell Creek. Gradients are low in both channels and below the confluence, and spawning gravels are abundant. The middle and upper reaches of Shell and Hindley Creeks are described in detail in the Edmonds Stream Inventory and Assessment (Pentec Environmental 2002). Both creeks pass through urbanized areas, where habitat is degraded by obstructions, culverts, riparian clearing, urban landscaping, stormwater inputs, and erosion/sedimentation.

A large city park, Yost Park, protects part of the upper watershed from the impacts of dense urban development. The park includes upland forest and mature second growth riparian vegetation dominated by mature red alder trees as tall as 90 feet. The dense canopy and poorly drained soils limit the diversity of understory, which is dominated by salmonberry. Also present are red huckleberry, salal, sword fern, and elderberry, along with other shrubs, grasses, and herbaceous plants. The Yost Park red alder forest, meandering stream, and surrounding conifer forest offers critical refuge to wildlife in an increasingly urban environment (City of Edmonds 2006b).

The park was originally the site of the first Edmonds community water supply; remains of dams built by the Edmonds Spring Water Company are still visible in Yost Park. Dozens of large old western red cedar stumps are found throughout the park as well as “nurse logs.” As stumps and logs decay, their nutrients replenish the soil, and encourage smaller plants to grow upon them. Huckleberry, salal, salmonberry, ferns, moss, lichen and fungi all benefit from the decomposing wood in the park.

Yost Park provides a habitat for numerous species of resident and migratory birds including barred owls, pileated woodpeckers, northern flickers, rufus-sided towhees, and Cooper’s hawks. Black-capped chickadee, Swainson’s thrush, olive-sided flycatcher, and winter wren are some of the more common small birds found in the park. Mammals include the nocturnal mountain beaver, opossum, raccoon, shrew mole, and a few types of bats. Giant pacific salamanders are sometimes found in the creek, and tree frogs can sometimes be heard singing in the wetlands surrounding the boardwalk (City of Edmonds 2006b). Although WDFW has not conducted any recent fish surveys on the Shell Creek system, biologists counted six chum salmon carcasses in the lower reach of Shell Creek during November 2002 survey, and other Pentec Environmental biologists reported seeing both coho and chum salmon spawning in lower Shell Creek in 2000 and 2001 (Pentec Environmental 2002). Resident cutthroat trout are likely distributed throughout many sections of the creek system (Pentec Environmental 2002). The state has designated lower Shell Creek as habitat for priority anadromous fish species (chum and coho salmon), and priority resident fish species (cutthroat trout).

7.5 Segment E—Shell Creek to Edmonds Underwater Park

7.5.1 Marine Shoreland

Segment E, south of Shell Creek to the Edmonds Underwater Park, is about 3,300 feet long. This segment, rated as having moderate quality shoreline habitat for salmonids, lies between adjacent areas of moderate and low quality habitat, as identified in the Edmonds Shoreline Habitat Assessment (Pentec Environmental 2001).

The BNSF railroad track bed fills the transition zone between the lower intertidal zone and the upland slope. Along this segment, the waterward side of the railroad bed consists of a rock-armored slope or vertical rock bulkhead, ranging from 10 to 20 feet high. Most of the armoring is in good condition, with only a short span (about 200 feet) failing, as evidenced by deep holes in the waterward face and large rocks that have tumbled out into the lower intertidal and shallow subtidal zones. At the top of the bed, the double tracks and adjacent fill width is about 15 feet. Near the south end of the segment, the double tracks converge into one track, the gradient drops slightly, and the shoreline extends waterward against a large rock-armored groin. Along this segment, the bank transitions from steep high bank to moderate bank along most of the tracks, and then drops to low or no-bank slopes for the southernmost 700 feet.

Along this segment are two 24-inch-diameter concrete pipes and one 24-inch-diameter corrugated metal pipe that provide stormwater drainage under the BNSF railroad bed.

Riparian vegetation is largely absent from Segment E. No riparian vegetation occurs between the railroad bed and adjacent shoreland along about 2,400 feet of the segment. Near the underwater park, a small area of low-growing vegetation (grasses, weeds) and a narrow band of blackberries, Scot's broom and other non-native shrubs separate the shoreland from streets, lawns, and residential housing.

No streams occur in this segment.

7.6 Segment F—Edmonds Underwater Park to Port of Edmonds

7.6.1 Marine Shoreland

Segment F, from the Edmonds Underwater Park to the Port of Edmonds Marina, is about 1,850 feet long. This segment, rated as having low quality shoreline habitat for salmonids, lies between two adjacent areas of low quality habitat, as identified in the Edmonds Shoreline Habitat Assessment (Pentec Environmental 2001). A Washington State Ferry terminal is in middle of this segment. The ferry car ramp and access pier is about 75 feet wide. It is supported by a combination of older creosote-treated piles and newer steel piles.

Segment F is one of three marine segments whose shoreland is not defined (and filled) by the BNSF railroad bed. The shoreland transition into the upland consists of low or no bank. The upper intertidal shoreline is entirely armored with rock, wood, and concrete, except for a 250-foot section of natural beach and restored native vegetation at Brackett's Landing. About 1,300 linear feet of this segment consists of a vertical bulkhead; the remaining 250 feet is sloped rock and concrete armoring. A wood bulkhead, about 75 feet in length, projects about 25 feet into the intertidal beach area to provide parking for a commercial building. Most of the bulkheads extend into middle or lower intertidal elevations.

The dominant feature of this segment is the ferry terminal, which covers about 24,700 square feet over aquatic nearshore habitat (CH2M HILL 2004)**.** In addition, support piling and associated "halos" cover about 5,868 square feet of substrate. (A "halo" refers to accumulation of shell debris at the base of a piling from barnacle shell fallout and other debris from the invertebrate community encrusting on the piling surfaces above. This forms a ring at the pile base and limits the use of the area by clams and other non-mobile benthic infauna in this zone. The calculated area assumes that the ring extends outward 18 inches from each piling around the entire perimeter.) Impacts to benthos, eelgrass, and macroalgae beds occurred when the terminal was built 50 years ago. Over time, the approach to the pier was dredged to a depth of about 40 feet. Propeller wash-caused scour eliminated a much larger footprint of eelgrass and macroalgae beds, in addition to the dredged beds. Eelgrass loss from shading, scour, and dredging was estimated to be approximately 112,033 square feet or 2.6 acres. Macroalgae losses from these same factors were estimated to be approximately 165,020 square feet or 3.8 acres. Together, this represents about 6.4 acres of historical eelgrass and macroalgae loss at the existing Edmonds ferry terminal (CH2M HILL 2004).

Recently, substrate composition in the scour trough was described as rocky, incised in till, supporting a community of fish and invertebrates characteristic of rocky environments. Aquatic substrate prior to the building of the terminal was almost certainly fine to medium sand, as it is on either side of the terminal today (CH2M HILL 2004). It is likely that the eelgrass beds to the north and south of the existing terminal were once a continuous bed, although smaller ferry vessel propeller scour may have disturbed the eelgrass beds decades earlier.

Little or no riparian vegetation characterizes most of the shoreland area, except for restored native vegetation mixed with ornamental landscaping at Brackett's Landing and ornamental (grass) landscaping along several commercial buildings. A 10-foot-diameter patch of invasive Japanese knotweed, observed in 2001, continues to flourish in Brackett's Landing Park.

The nearshore subtidal area between the existing ferry terminal and the Port of Edmonds Marina is mostly sand. There are areas of artificial reef materials and rock at depths of -15 to -90 feet MLLW and some mixed sand/gravel at +5 to -15 feet MLLW. The marina breakwater consists of large rock riprap. A public fishing pier built on concrete piles extends beyond the breakwater. There is a band of sand/shell substrate at the base of the breakwater

The area near the existing ferry terminal and Dayton Street has expansive macroalgae and eelgrass beds. Macroalgae, including *Laminaria* and *Nereocystis*, are nearly continuous from the -5-foot contour to the -60-foot MLLW contour. The area directly offshore of and including the docking area of the existing ferry terminal is conspicuously devoid of macroalgae, probably as a result of propeller-induced turbulence. Eelgrass beds are continuous from the marina to the ferry pier and from the ferry pier north through the underwater park and beyond. Depths range from about -2 feet to -20 feet MLLW. The green algae, *Ulva lactuca*, and the red algae, *Gracilaria sjoestedtii*, are also common (CH2M HILL 2004).

A narrow sand and gravel beach extends north and south of the ferry terminal and provides habitat for surf smelt and sand lance spawning, according to WDFW records. Surf smelt spawn between 7 feet and MHHW and sand lance spawn between 5 feet and MHHW; these elevations comprise most of the publicly accessible beach along the Edmonds Underwater and Brackett's Landing parks. Heavy public use of these two beaches and the Edmonds Underwater Park (with over 20,000 diver visits annually) (City of Edmonds 2006c), plus strong propeller wash from the regular ferry service, probably decrease the habitat value for juvenile salmon, forage fish,

wildlife, and aquatic vegetation; however, the area is also a state-designated Marine Protected Area, which prohibits the collection or removal of plants and animals. This sanctuary is the oldest in Puget Sound, and its longevity has resulted in a succession of marine plants and animals of unusual size for Puget Sound.

The Edmonds Underwater Park includes 27 acres of tide and bottom lands and was established as a marine preserve and sanctuary in 1970 (City of Edmonds 2006). The shore consists of sandy beaches recessed in two small coves to the north of the WSF pier. A jetty consisting of revetment rock juts into the water, splitting the conservation area. The primary subtidal habitat of the underwater park is a wide, sand flat gently sloping from the shore seaward. The maximum depth at the offshore extent of the park is approximately -40 feet MLLW. At the nearshore edge of the sand flats, healthy beds of eelgrass separate the intertidal zone from the deeper subtidal habitats. This habitat contains many artificial structures that attract fishes normally associated with rocky habitats (WDFW 2006b).

The area within Edmonds Underwater Park is recognized as a fish haven for numerous large commercial species that face high fishing pressure in unprotected areas of Puget Sound. Exceptionally large lingcod and rockfish are associated with the park (G. Broadhurst 2005; Seattle Post-Intelligencer 2002.) Floats anchored within the park provided haulout platforms for California sea lions and harbor seals (WDFW 2006b), but they were subsequently removed to avoid conflicts with divers. In October 2004, the invasive tunicate *Didemnum lahillei* was identified in the Edmonds Underwater Park growing on a submerged ship hull. An eradication effort using bleach was attempted in 2005. The park continues to be monitored for reoccurrence.

In April 2004, gourds were installed on a group of pilings south of the Edmonds ferry dock by volunteers, with the approval of the Edmonds Parks and Recreation Director. Since the artificial nest sites were provided, martins have successfully nested in 2004 and 2005, and nesting activity has been observed recently (Lider 2006 personal communication).

Along the bulkheads, five drainage pipes, ranging from 3 to 12 inches in diameter, discharge into the intertidal zone.

No streams occur in this segment.

7.7 Segment G—Port of Edmonds Marina

7.7.1 Marine Shoreland

Segment G consists of the Port of Edmonds Marina, Edmonds Marsh, and Shellabarger Creek. The marine portion of this segment is about 3,200 feet long. It is rated as having low quality shoreline habitat for salmonids, but Edmonds Marsh is rated as having high quality habitat, as identified in the Edmonds Shoreline Habitat Assessment (Pentec Environmental 2001). The marine segment consists of a steeply sloped rock breakwater surrounding the marina basin and a vertical concrete bulkhead along the shoreline. The shoreland consists of drives and paved parking for the marine, with a few port offices and workshops. The only vegetation in this segment consists of small strips of ornamental landscaping that line the sidewalk between the parking lot and the marina access street.

The marina extends 500 feet westward into Puget Sound and is dredged to a depth of minus 13 feet (Port of Edmonds 2006). The marina breakwater extends approximately 2,400 feet from north to south along the shoreline. The marina footprint covers about 617,000 square feet of

intertidal and subtidal habitat with fill, armored breakwaters, piers, ramps, and docks. The shoreline is armored with a concrete bulkhead and backfilled to provide an area for port offices, parking, workshops, and commercial businesses. Although construction of the original marina was completed as early as 1961, most of the marina's piers, floats, and covered docks were destroyed in 1996 during a major storm. Reconstruction was completed in 1998 using concrete and steel materials (Port of Edmonds 2006).

Adjacent to the marina basin is the Olympic Beach Park and Fishing Pier, which includes a developed urban park with amenities on the shoreline and a public fishing and viewing pier extending over the marina breakwater to the waterward edge of the marina.

The Port property once included a fur breeding business; as of 1995, the site has been under a State cleanup order for a leaking underground storage tank that contaminated groundwater (Ecology 2006).

7.7.2 Edmonds Marsh and Shellabarger and Willow Creeks

Edmonds Marsh and its associated streams (Shellabarger and Willow Creeks) are part of the SMP jurisdictional shoreland area. Within this segment, Willow Creek flows parallel to the BNSF railroad tracks in a ditch, continues under the tracks and marina parking lot, and accesses the street through several hundred feet of culvert. Contrary to old maps and reports, the creek discharges subtidally at Point Edwards near the oil pier, not in the marina.

Edmonds Marsh has been altered extensively by filling and creek re-channelization during the previous decades; about 22 acres remain of the original 40-acre estuarine wetland. It consists of a primarily freshwater wetland with a small area of saltmarsh along the western edge near the tide gate.

The Shellabarger Creek drainage basin includes about 354 acres (Pentec Environmental 2002). A drainage study by URS (1989) identified numerous problems, including stream erosion, inadequate culvert capacity, nutrient loading from overuse of fertilizers, and oil pollution from road runoff and illegal dumping. These impacts indicate that the many ecological functions of Shellabarger Creek are impaired or subsumed by the overwhelming use of the creek as a surface water conveyance channel, with the primary function of moving excess water and contaminants off private property and into Edmonds Marsh and Puget Sound. Information on fish use of Shellabarger Creek is limited. As of 2002, WDFW had not conducted fish surveys in the creek, although resident cutthroat are likely present, and the creek is accessible to anadromous fish that use Edmonds Marsh. Steep slopes, lack of suitable spawning gravel, migration barriers (e.g., an impassible culvert at Third Avenue), lack of riparian vegetation and shade, and poor water quality probably prevent use by anadromous fish.

Willow Creek, an anadromous fish-bearing Category 2 stream, drains about 343 acres within the Edmonds Way Basin (Pentec Environmental 2002). Willow Creek flows from a low-density residential area in the town of Woodway just south of the project area and above the existing Unocal property. The creek culvert runs under Pine Street near its intersection with SR 104 and flows past the Deer Creek Fish Hatchery to Edmonds Marsh. The Willow Creek riparian corridor south of Pine Street and through the Deer Creek Fish Hatchery is a narrow, shaded corridor with gently sloping banks. Vegetation along the creek includes western red cedar, red alder, bigleaf maple, and Douglas fir in the overstory; salmonberry, Indian plum, salal, and

Oregon grape in the shrub layer; and sword and lady fern, pig-a-back, bentgrass, reed canarygrass, and mannagrass in the herb layer (CH2M HILL 2004).

The downstream area of Edmonds Marsh includes a channelized section of Willow Creek. The channel, as it approaches the culvert under the BNSF railroad bed, is characterized as a ditch with a bottom composed entirely of silt. The ditch passes through an area of contaminated groundwater that is presently in contact with the stream and has been for many decades. The ditch is connected to a 48-inch-diameter culvert, about 1,275 feet in length, that passes under the road, parking areas, and beach before discharging into the subtidal zone off Marina Beach Park. The existing culvert is considered a partial block to migrating adult salmon, because it is so long and its outlet is frequently blocked by sand. Gradient is not a migratory barrier, because the slope of the culvert is very low (CH2M HILL 2004).

Willow Creek is known to contain coho salmon, resident and sea-run cutthroat trout, and, historically, chum salmon. Electrofishing efforts on June 28, 1995 confirmed use by coho salmon and cutthroat trout. Other fish species observed include sculpins (*Cottus* sp.) and three-spined stickleback (*Gasterosteous aculeatus*) (CH2M HILL 2004).

7.8 Segment H—Port of Edmonds Marina to Point Edwards

This segment consists of the beach south of the marina breakwater to the City limits at Point Edwards, including the Unocal pier. The segment is about 1,650 feet long, of which 900 feet is the rock-armored marina breakwater. The shoreland consists of a natural-appearing sand and gravel, low-gradient beach. The backshore consists of the south breakwater rock wall, a grassy open space, a narrow parking lot, a section of BNSF railroad bed, fragments of upland vegetation (shrubs and trees) on the hillside, and a small area of naturalized shoreline with beach logs along the upper intertidal zone. North of the Unocal pier, North Marine Beach Park is designated as a marine sanctuary, where beach collecting and shellfish harvesting are prohibited. The southernmost portion of the segment, south of the Unocal pier, includes a mixed area of riparian vegetation; including shrubs and small trees, and the BNSF railroad bed. This area is South Beach Park, which features an off-leash dog area on the beach.

The Point Edwards area has been surveyed extensively for several large infrastructure projects, including the Brightwater sewage treatment plant and the Edmonds Crossing multimodal transportation center. The following information about this segment, including the Unocal pier, was taken from the SR 104, Edmonds Crossing FEIS (CH2M HILL 2004).

The nearshore area just south in the vicinity of the Unocal pier includes a broad shallow bench to the south that is intertidal to about two-thirds of the distance to the end of the Unocal pier. Water depths drop off rapidly at that point (at about -10 feet MLLW). The intertidal area is mostly mixed gravel and small gravel, with some scattered areas of cobble and rocks. Some areas of medium sand are also present. Shallow subtidal areas are mostly sand with areas of mixed sand/gravel, sand/shell, and rock from the 8-foot contour and higher. The Edmonds Way stormwater drainage outfall (between the Unocal pier and the marina breakwater) is supported and surrounded by riprap materials.

Habitat in the vicinity of the southeast corner of the Edmonds Marina Park breakwater is similar to that described for the Unocal pier, at least offshore of the zero tide elevation (MLLW). The marina breakwater is composed of large riprap boulders. Substrates are composed of sand, mixed sand and gravel, and shell fragments at depths between 0.0 and -10 feet MLLW at the foot

of the breakwater. Further offshore, substrates are composed of medium to fine sand. These habitats are used by flatfish and sculpins for the most part.

Eelgrass beds are small, patchy, and sparse in the vicinity of the Unocal pier (11). Macroalgae, primarily *Ulva* and *Entermorpha* species, are abundant in large patches adjacent to the Unocal pier on both sides. Geoduck clams were found in low densities in the area as a whole (<0.1/square yard) but were relatively abundant in a few restricted areas (such as between the Unocal pier and the marina breakwater (2.6/square meter)). Ten to fifteen crabs were found buried in the sand at about -10 feet MLLW. Most had soft shells, indicating that they had just molted. Hardshell clams are abundant in the intertidal and shallow subtidal areas surrounding the Unocal pier (CH2M HILL 2004).

7.9 Segment I—Lake Ballinger

Little specific shoreline information is available for the Lake Ballinger Segment I. The portion of shoreline with the City of Edmonds is about 4,000 feet. The lake shoreland consists of single-family homes with docks and piers. In 2006, at least 42 docks and piers were visible in aerial photos—roughly one structure per waterfront lot. Within this segment, riparian vegetation consists almost entirely of lawns and a few scattered ornamental plantings. No other vegetation data were available along the Edmonds shoreline. Habitat value is likely low, due to the extensive shoreline alteration and the conversion of what was formerly a large wetland into a small lake and stormwater detention basin.

The lake-level/stormwater control outlet structure is considered a barrier to anadromous fish, although resident fish have been stocked in the lake. Lake Ballinger is stocked with rainbow and cutthroat trout, catfish, yellow perch, and largemouth bass (City of Mountlake Terrace 2005). WDFW releases about 5,000 rainbow trout in the lake each spring for a recreational fishery (WDFW 2006c). Outside the Edmonds' city limits, the lake discharges into McAleer Creek, which has anadromous salmonid populations that travel through the Lake Washington system (WDFW 2003).

Water quality studies of Lake Ballinger indicate that the lake is adversely affected by urban residential and commercial development, including increasing areas of pavement, high nutrient loading from surrounding lawns, golf courses, and gardens, and contaminant loading from roads and parking areas that are conveyed by Halls Creek into the lake. Runoff from the surrounding sub-basin carries high concentrations of nutrients into the lake, resulting in nuisance algae blooms and high biological and chemical oxygen demand, which is exacerbated by phosphorus cycling between lake water and sediment. Water quality conditions are no longer capable of supporting reproducing populations of cool-water adapted fish, although non-native warm-water adapted fish are flourishing. There are ongoing efforts by the surrounding jurisdictions, including Edmonds and the City of Mountlake Terrace, to control flooding and nutrient loading (especially phosphorous). Efforts to address water quality degradation from the 1950s to present include: transferal of homes from private septic systems to a public sewer system, stabilization of Hall Creek banks, construction of sedimentation ponds in Hall Creek, phosphorus control through alum treatment, hypolimnion "treatment" by injection of Hall Creek water and withdrawal of low-dissolved oxygen/high phosphorus lake water, and adjustments to lake inlet and outlet structures (City of Mountlake Terrace 2005, KCM 1986).

Although the many water quality control efforts were initially effective, increasing urban development and population density within the Halls Creek and Lake Ballinger sub-basins have

exceeded design capacity and largely overwhelmed many of the water quality controls. For example, the sewage conveyance system initially reduced nutrient loads and fecal coliform contamination in the lake, but high density urban development has increased inputs from other non-point sources, such as animals (primarily geese, secondarily dogs and cats) and lawn runoff. The sediment control projects initially designed to limit sediment and phosphorus loading into the lake have been overwhelmed by Halls Creek sub-basin development and stormwater management within the lake. The hypolimnetic injection system, although initially successful, was found after several years to be detrimental to the lake because it relied on the quality of Halls Creek water, which had become increasingly degraded. In addition, the lack of effective lake-level management at the outlet weir also results in flooding throughout the surrounding areas of urban lawns, roads, driveways, sewer connections, and golf courses, all of which contribute nutrients, sewage, and pollutants to the lake. In terms of ecosystem function, Lake Ballinger's biological functions have been minimized or eliminated and its hydrologic and hyporheic functions maximized, resulting in a transformation from a lake into a regional stormwater detention pond that serves as an (unmaintained) collection basin for nutrients and waste. Although this functional shift is detrimental to Lake Ballinger's biology and chemistry, it likely benefits McAleer Creek and Lake Washington by retaining pollutants and controlling stormwater flows downstream.

8. Shoreline Planning Reaches

The shoreline segments described in the previous section were initially developed for a biological survey that focused on fisheries and related marine and freshwater habitats, using a detailed level of characterization and analysis. For the purposes of this shoreline characterization document, shoreline segments were then examined with adjacent shorelands and upland areas on a broader scale, considering zoning and land use. The shoreline segments were consolidated into four shoreline planning reaches, based on ecological similarities within a zoning and land-use context that would be useful for planning purposes (see Table 2).

This section lists the ecosystem factures or functions within each reach that have been affected or impaired by land use. It also identifies opportunities for restoration within each reach. Potential restoration projects and shoreline locations are shown in Figure 13. These will be further evaluated as part of the preparation of the Edmonds Restoration Plan, a future element of the Edmonds SMP Update.

8.1 Reach 1

Biological functions or features that have been impaired in Reach 1 (Segments A through E) include:

- Fish and wildlife accessibility between the marine nearshore and the terrestrial backshore: blocked by the BNSF railroad bed and restricted to a few small culverts.
- Nutrient transport and cycling: reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore, and further reduced by restricting the estuarine transitional area to small-diameter culverts that impound creek flows and block detritus and woody debris from moving between the ravine and the beach.
- Estuarine and creek-mouth habitat area: significantly reduced, and habitat function, significantly impaired.
- Marine riparian vegetation: eliminated by railroad fill or cleared for right-of-way maintenance and upland residential views.
- Beach substrate composition and slope: coarsened and steepened by erosion and lack of replenishment from upland or aquatic sources.
- Longshore drift: altered by in-water structures (seawalls, bulkheads, culverts, and a pier) that prevent sediment from naturally recruiting to the beach.

Restoration opportunities (numbered according to Figure 13) include:

1. Replace railroad crossing over Lunds Creek with wider box culvert or trestle.
2. Enhance riparian vegetation along Lunds Creek.
3. Create an off-channel pond for fish and wildlife in lower Lunds Creek.
4. Add woody debris to off-channel pond.
5. Enhance marine riparian vegetation on lower Lunds Creek and along backshore between bluffs and BNSF railroad.
6. Conduct beach nourishment activities at Lunds Creek outlet.
7. Remove existing pier, piles, and overwater structures near Meadowdale Creek.
8. Conduct beach nourishment activities at Shell Creek outlet.
9. Replace railroad crossing over Shell Creek with trestle.

8.2 Reach 2

Biological functions or features that have been impaired in Reach 2 (Segments E and F) include:

- Fish and wildlife accessibility between the marine nearshore and the terrestrial backshore: blocked by the BNSF railroad bed and urban development.
- Upper intertidal and adjacent terrestrial habitat: degraded or lost due to urban development.
- Nutrient transport and cycling: reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore.
- Marine riparian vegetation: eliminated by railroad fill or cleared for right-of-way maintenance and upland residential views.
- Longshore drift: altered by in-water structures (WSF pier and seawall, groin at Edmonds Underwater Park) that prevent sediment from naturally recruiting to the beach.

Restoration opportunities (numbered according to Figure 13) include:

10. Further enhance marine riparian vegetation along Bracketts Landing Park: remove invasive species (e.g., Japanese knotweed, blackberries), and extend vegetation enhancement north to Edmonds Underwater Park parking lot and BNSF railroad.

8.3 Reach 3

Biological functions or features that have been impaired in Reach 3 (Segments F, G, and H) include:

- fish and wildlife accessibility between the marine nearshore, Edmonds Marsh, and the terrestrial backshore: blocked by the BNSF railroad bed, Edmonds Marina, and commercial waterfront development, restricted to a paved corridor and culvert between Edmonds Marsh and South Marina Park.
- Nutrient transport and cycling: significantly reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore, and further reduced by restricting the estuarine transitional area to a small-diameter culvert and tide gate on Willow Creek that impounds creek flows and blocks detritus and woody debris between the marsh and the beach.
- Estuarine and creek-mouth habitat area: significantly altered and reduced, and habitat function, significantly impaired.
- Marine riparian vegetation: eliminated by port development, commercial development, and railroad fill, and cleared for right-of-way maintenance and upland residential/commercial views.
- Beach substrate composition and slope: coarsened and steepened by erosion and lack of replenishment from upland or aquatic sources.
- Longshore drift: altered by in-water structures (seawalls, bulkheads, culverts, and the former Unocal pier) that prevent sediment from naturally recruiting to the beach.

Restoration opportunities (numbered according to Figure 13) include:

11. Restore Willow Creek by removing most or all of the outlet culvert, planting native riparian vegetation, and addressing soil and groundwater contamination issues through ongoing site cleanup activities.
12. Remove former Unocal pier: restore marine aquatic vegetation (e.g., eelgrass and kelp) in former pier footprint. Enhance marine riparian vegetation along South Marina Park, remove non-native vegetation (e.g. grass) and replace with native vegetation.

8.4 Reach 4

Biological functions or features that have been impaired in Reach 4 (Segment I) include:

- hydrologic function of the lake outlet, which is currently managed as a stormwater catchbasin control
- hyporheic function, which has reached its capacity as a nutrient sink for nitrogen and phosphorus
- nutrient transport and cycling, significantly reduced by increasing sediment and nutrient loading from watershed development, stormwater runoff, and former

septic/sewage inputs; replacing native wetland and riparian vegetation with ornamental vegetation (e.g., grass) and adding bulkheads, docks, and piers to the shoreline

- lake inlet and outlet deltas, significantly altered or eliminated by control structures.
- fish and wildlife accessibility between the lake and McAleer Creek, blocked by the outlet control structure.
- fish and wildlife biological communities, significantly altered by habitat alteration (i.e., conversion of a wetland into a lake) and introduction of non-native species (e.g., catfish, yellow perch, and largemouth bass).
- lake sediment, significantly altered by substantial sediment inputs from urban development within the Hall Creek and Lake Ballinger drainage sub-basins.

Restoration opportunities (numbered according to Figure 13) include:

13. Control quantity and quality of surface water runoff entering lake.
14. Revise outlet control structure.

Restoration opportunities are discussed in greater detail in a separate restoration document.

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Appendix A

Data Gaps Table

EDMONDS SHORELINE MASTER PROGRAM UPDATE

Data Gaps Table

Dec-06

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
(i) Shoreline and adjacent existing land use patterns	Existing Land Use	LandUse	Marine Shoreline & Lk. Ballinger	Snohomish County Assessor	
	Existing Land Use	landuse	City of Edmonds	City of Edmonds	
	Future Land Use	zoning	City of Edmonds	City of Edmonds	
Extent of Existing Structures	Bulk heads	Armoring_ln	Marine Shoreline	Snohomish County	Not inventoried for Lk Ballinger
		Levees	Not Applicable		
	Piers and docks		Lk Ballinger	?	Unknown
		pier_doc_ln	Marine Shoreline	Snohomish County	
	Boat launches	boatlaunch	Marine Shoreline & Lk. Ballinger	IAC?	
		ramp_lau_ln	Marine Shoreline	Snohomish County	
		ramp_lau_pt	Marine Shoreline	Snohomish County	
	Pipes, outlets	pipe_pt	Marine Shoreline	Snohomish County	Lk Ballinger
	Other structures	other_pt	Marine Shoreline	Snohomish County	
	City Outfalls	city_outfalls	Marine Shoreline	City of Edmonds	Lk Ballinger
	Building footprints	Aerial Photo	Marine Shoreline & Lk. Ballinger	City of Edmonds	
Impervious Surfaces	Impervious surfaces	landcover01	Marine Shoreline & Lk. Ballinger	Snohomish County	
Vegetation	Aerial photography	Aerial Photo	City of Edmonds	City of Edmonds	

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
	Riparian vegetation	pds_lake	Lk Ballinger	Snohomish County	Unknown
		pds_marine	Marine Shoreline	Snohomish County	
		riparian_ln	Marine Shoreline	Snohomish County	
Shoreline Modifications	Armoring	Armoring_ln	Marine Shoreline		
	Dikes, revetmens, levees		Not Applicable		
	Groins	other_pt	Marine Shoreline	Snohomish County	
Shoreline Use Patterns - water dependant, water oriented, non-water oriented	Existing Land Use	LandUse	Marine Shoreline & Lk. Ballinger	Snohomish County Assessor	
	Pipes, outlets, outfalls	pipe_pt	Marine Shoreline	Snohomish County	Lk Ballinger
Shoreline Transportation and Utility Facilities	Roads	roads	City of Edmonds	City of Edmonds	
	Railroads	rail	City of Edmonds	City of Edmonds	
	Pipe, outlets	pipe_pt	Marine Shoreline	Snohomish County	Lk Ballinger
	City Outfalls	city_outfalls	Marine Shoreline	City of Edmonds	Lk Ballinger
(ii) Critical Areas					
Wetlands	wetlands	nwi	City of Edmonds	National Wetland Inventory	
		backshor_ln	Marine Shoreline	Snohomish County	
		stream_o	Marine Shoreline	Snohomish County	
		wetlands_edaw	City of Edmonds	City of Edmonds	
		edmonds_wetlands	City of Edmonds	City of Edmonds	
Aquifer Recharge Areas	aquifer recharge areas	Solesource	City of Edmonds	Snohomish County	
		Crop	City of Edmonds	Snohomish County	
Fish & Wildlife Conservation Areas	Coho	Streamnet	City of Edmonds	Streamnet	

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
	Bulltrout	bulltrout	City of Edmonds	Snohomish County	
	Sockeye	Streamnet	City of Edmonds	Streamnet	
	Chinook	Chinook	City of Edmonds	Snohomish County	
	Priority habitats and species	phspoly	City of Edmonds	WDFW	
		hrtgpts	City of Edmonds	WDFW & DNR - Natural Heritage	
	Kelp and eelgrass beds	fkelplin	Marine Shoreline	Snohomish County	
		kelpin	Marine Shoreline	Snohomish County	
		nkelplin	Marine Shoreline	Snohomish County	
		eelpoly	Marine Shoreline	Snohomish County	
		vegetation	Marine Shoreline	King County Brightwater FEIS	
	Forage fish (herring & smelt spawning areas)	ff_pts	Marine Shoreline	Snohomish County	
		smelt	Marine Shoreline	MRS	
		sandlanz	Marine Shoreline	MRS	
	Commercial and recreational shellfish areas	growingareas	Marine Shoreline	MRS	
		crab	Marine Shoreline	MRS	
		geoduck	Marine Shoreline	MRS	
		shrmppan	Marine Shoreline	MRS	
		clamhard	Marine Shoreline	MRS	
Geologically Hazardous Areas	Erosion Hazard Areas	erosion_hazard	City of Edmonds	City of Edmonds	
	Landslide hazard areas	landslide_hazard	City of Edmonds	City of Edmonds	
		steep_slope	City of Edmonds	City of Edmonds	
		soil_slope	City of Edmonds	City of Edmonds	
	Volcanic hazard areas	GPKHAZ	City of Edmonds	Snohomish County	
	Soil Liquifaction Areas	soil_liquifaction	City of Edmonds	City of Edmonds	

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
	Eroding shorelines / feeder bluffs	banksurvey_ln	Marine Shoreline	Snohomish County	
		driftcells	Marine Shoreline	Snohomish County	
Geology	geology	geology	City of Edmonds	Washington DNR	
Soils	Soils	soils	City of Edmonds	NRCS SSURGO	
Substrate	Substrate	substrate	Marine Shoreline	King County Brightwater FEIS	
Frequency Flooded Areas	FEMA floodways and floodplain	FEMA_flood	City of Edmonds	Snohomish County	
ESA Corridors	Chinook	Chinook	City of Edmonds	Snohomish County	
		pentec	City of Edmonds	City of Edmonds	
Shorelines of Statewide Significance	SMMP Maps	Shorla	City of Edmonds	Snohomish County	
(iii) Degraded Areas and Sites with Potential for Restoration					
(iv) Areas of Special Interest	Designated Marine Protected Areas		Marine Shoreline	City of Edmonds	
	Priority habitats and species	phspoly	City of Edmonds	WDFW	
Priority Habitats		priority marine resources	Marine Shoreline	Snohomish County	
		hrtgpts	City of Edmonds	WDFW	
	parcels	parcels	City of Edmonds	Snohomish County	
Rapidly Developing Waterfrongs, Clearing and Grading, Bulkheads, Intrusive Development on Priority Habitats, Conversion of Harbor Areas to Nonwater-oriented Uses	bulk heads	armoring_ln	Marine Shoreline	Snohomish County	

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
		pier_doc_ln	Marine Shoreline	Snohomish County	
		dock	Lk Ballinger	Snohomish County	
	Aerial Photography	aerial photography	City of Edmonds	City of Edmonds	
	Existing land use	LandUse	City of Edmonds	City of Edmonds	
	Hazard Waste Sites	Unknown			
Previously Identified Toxic or Hazardous Material Clean-up Sites	Eroding shorelines / feeder bluffs	driftcells	Marine Shoreline	Snohomish County	Lk Ballinger
Eroding Shorelines		banksurvey_ln	Marine Shoreline	Snohomish County	Lk Ballinger
	Existing land use	LandUse	City of Edmonds	City of Edmonds	
(v) Conditions and Regulations in Shoreland and Adjacent Areas that Affect Shorelines, such as Surface Water Management and Land Use Regulations	Zoning	zoning_coe	City of Edmonds	City of Edmonds	
	culverts	fishbarrier	City of Edmonds	City of Edmonds	
	parcels	parcels	City of Edmonds	Snohomish County	
Adjacent Lands/Contributing Drainage Basin Assessment	Drainage Basins	esa_basins	City of Edmonds	Snohomish County	
	Landcover	landcover01	City of Edmonds	Snohomish County	
	Current shoreline jurisdiction	Shorla	City of Edmonds	Snohomish County	
Shoreline Jurisdiction	Potential shoreline jurisdiction	broad_jurisdiction	City of Edmonds	Snohomish County	
	street centerlines	roads	City of Edmonds	City of Edmonds	
(vi) Existing and Potential Shoreline Access Sites	city parks		City of Edmonds	City of Edmonds	
	public lands	mpl	City of Edmonds	WA DNR	
	boat launches	ramp_lau_pt	Marine Shoreline	Snohomish County	
		boatlaunch	City of Edmonds	IAC?	

WAC Requirement 173-26-201 (C)	Corresponding Data Set	Layer Name	Area	Data Source	Data Gap
	Floodplains	FEMA_flood	City of Edmonds	Snohomish County	Channel Migration Zones for Streams within the City
(vii) General Location of Channel Migration Zones and Floodplains	Not Mapped	Not Mapped	City of Edmonds	Not Mapped	The Information in this column
(viii) Gaps in Existing Information	Aerial Photography	aerial photography	City of Edmonds	City of Edmonds	Availability of Historic Photos unknown
(ix) For Rapidly Developing Shorelines, Historical and Aerial Photographs may be Necessary to Document Past Conditions to Assist in Preparing an Analysis of Cumulative Impacts of Development	archaeology maps	Not digitally mapped	City of Edmonds	Unknown	unknown as to archaeology data
(x) Archaeological or Historic Resources in Shoreline Jurisdiction					

Appendix B

Figures

N

0 1.5 3
Miles

Everett
Mukilteo
Mill Cree
Lynnwood
Edmonds
Point Edwards
Woodway
Brier
Lake
Point Wells
Mountlake Terrace
Ballinger
Bothell
Lake Forest Park
Shoreline
Seattle
Kirkland
Lake Washington

Puget Sound
Possession Sound
Puget Sound

99
104
5
405

Legend

- City of Edmonds Boundary
- Other Jurisdictions
- Major Road
- Railroad
- Snohomish/King County Boundary

CITY OF EDMONDS Inc. 1890

City of Edmonds

Shoreline Master Program Update

Vicinity Map

Figure 1

Date of Last Revision: 12-05-06

N

0 0.5 1
Miles

Puget Sound

A
B
C
D
E
F
G
H

Lund's Creek
Meadowdale Creek
Perrinville Creek
Olympic Ave
Fruitdale Creek
Northstream Creek
Hindley Creek
Shell Creek
Shellabarger Creek
Willow Creek
Deer Creek
Hall Creek
Lake Ballinger
McAleer Creek

75Th Pl W
Olympic View Dr
88Th Ave W
64Th Ave W
60Th Ave W
Puget Dr
196Th St SW
Caspers St
9Th Ave N
3Rd Ave N
200Th St SW
68Th Ave W
204Th St SW
Main St
76Th Ave W
208Th St SW
3Rd Ave S
5Th Ave S
9Th Ave S
Walnut St
66Th Ave W
99
220Th St SW
100Th Ave W
95Th Pl W
Edmonds Way
73Rd Pl W
228Th St SW
84Th Ave W
5
58Th Ave W
236Th
104
226Th St SW
244Th St SW

Point Edwards
Point Wells

Legend

- Planning Segment Break
- Planning Segment
- Edmonds City Limits
- DRAFT SMP Jurisdiction
- Major Road
- Street
- Railroad
- Stream

Shoreline Planning Reaches
- Reach 1
- Reach 2
- Reach 3
- Reach 4

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City of Edmonds

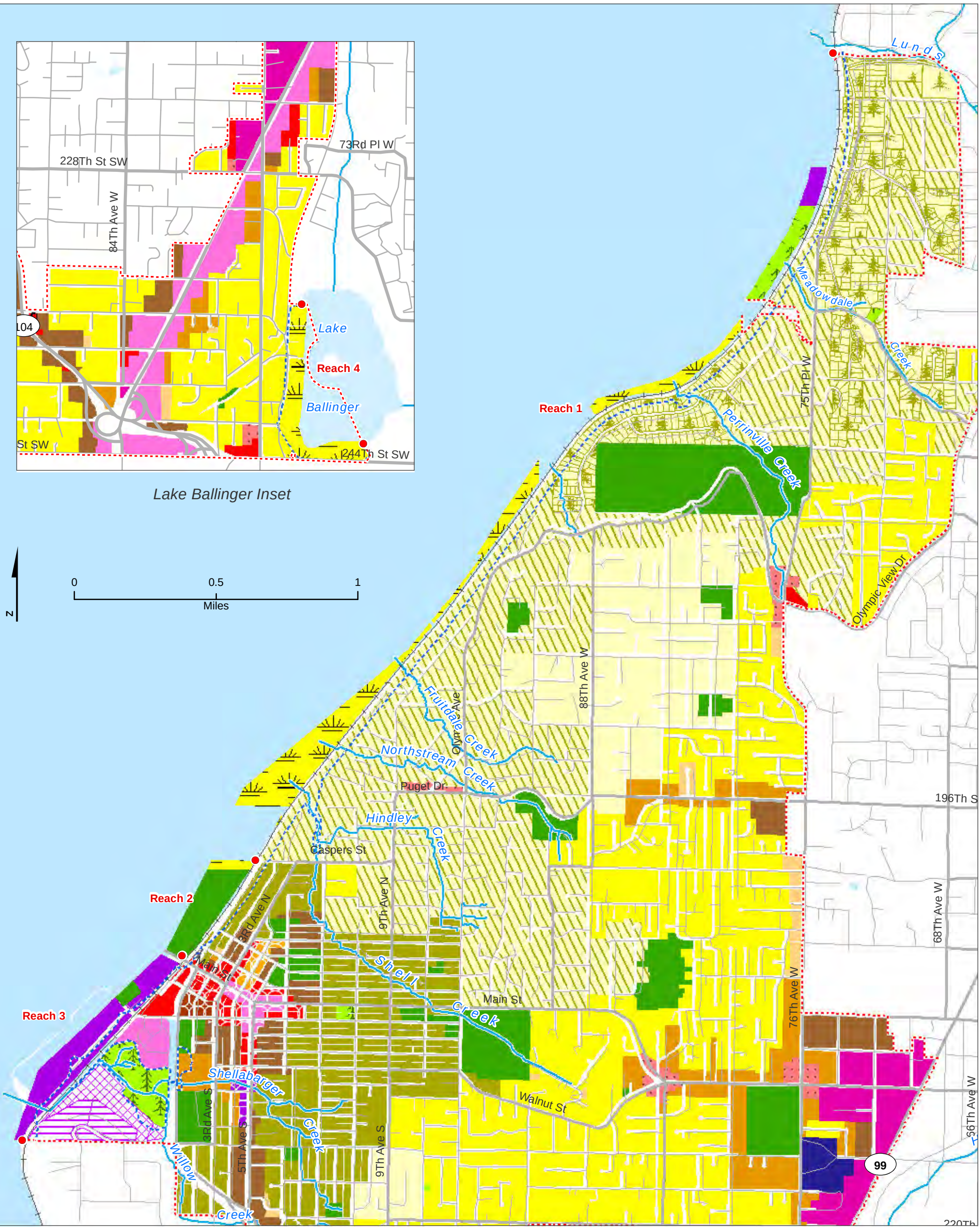
Shoreline Master Program Update

Shoreline Planning Segments & Planning reaches

Figure 2

Date of Last Revision: 12-05-06

Lake Ballinger Inset



Legend

- RS-6
- RS-8
- RS-10
- RS-12
- RSW-12
- RS-20
- RS-MP
- RM-3
- RM-2.4
- RM-1.5
- RM-EW
- BD1
- BD2
- BD3
- BD4
- BD5
- OR
- BP
- BN
- FVMU
- BC
- BC-EW
- CG
- CG2
- CW
- MP1
- MP2
- MU
- P
- OS
- Reach Breaks
- Overwater Structure
- Edmonds City Limits
- Major Road
- Railroad
- Street
- Stream

City of Edmonds

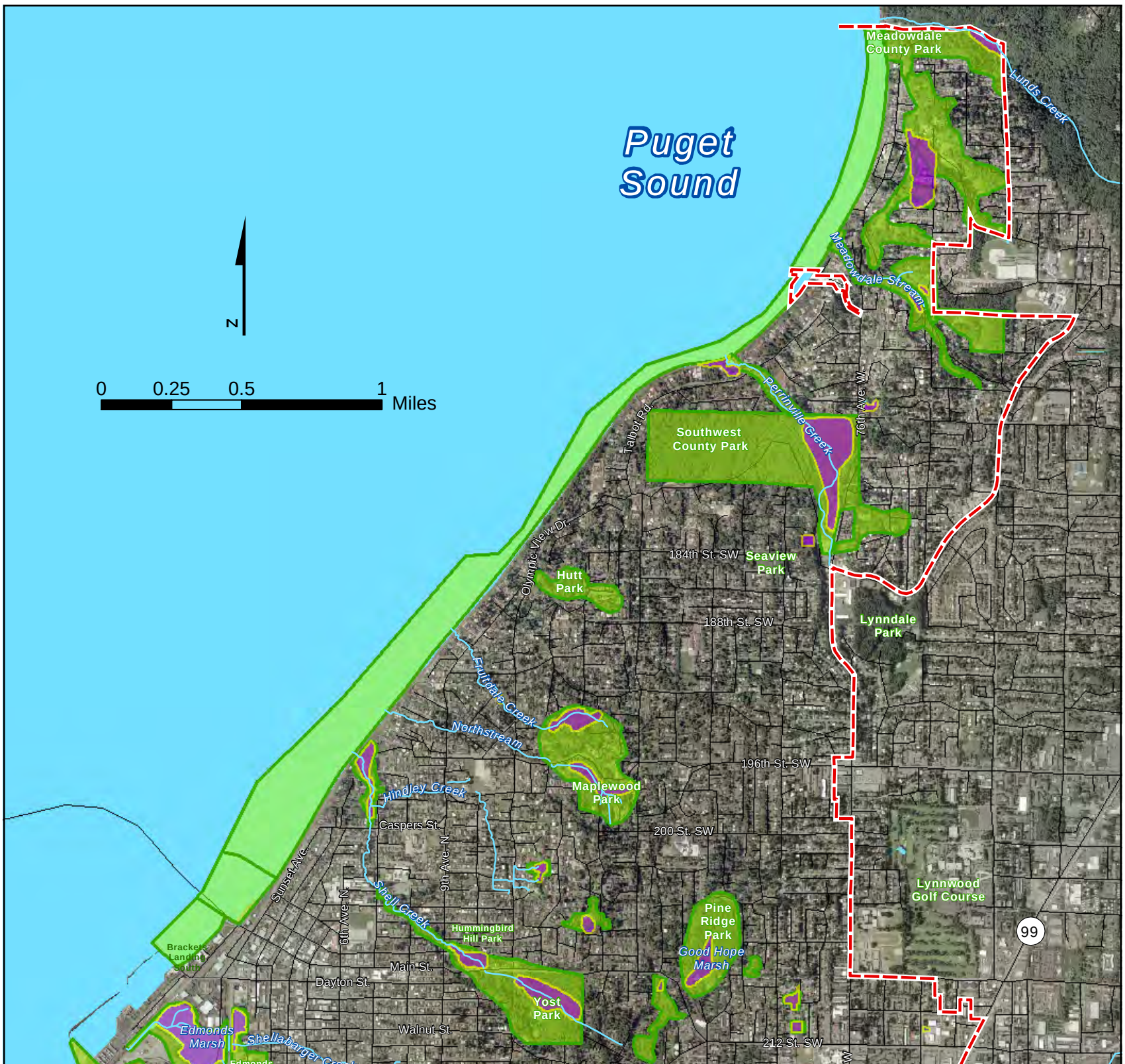
Shoreline Master Plan Update

Zoning

Figure 3

Date of Last Revision: 05-26-2011

Figure X-X



Legend

Potential Fish & Wildlife Habitat Conservation Areas

- Fish & Wildlife Habitat Conservation Areas
- Streams (Riparian Habitat Areas)
- Areas With Potential Wetlands
- Edmonds City Limits
- Roads

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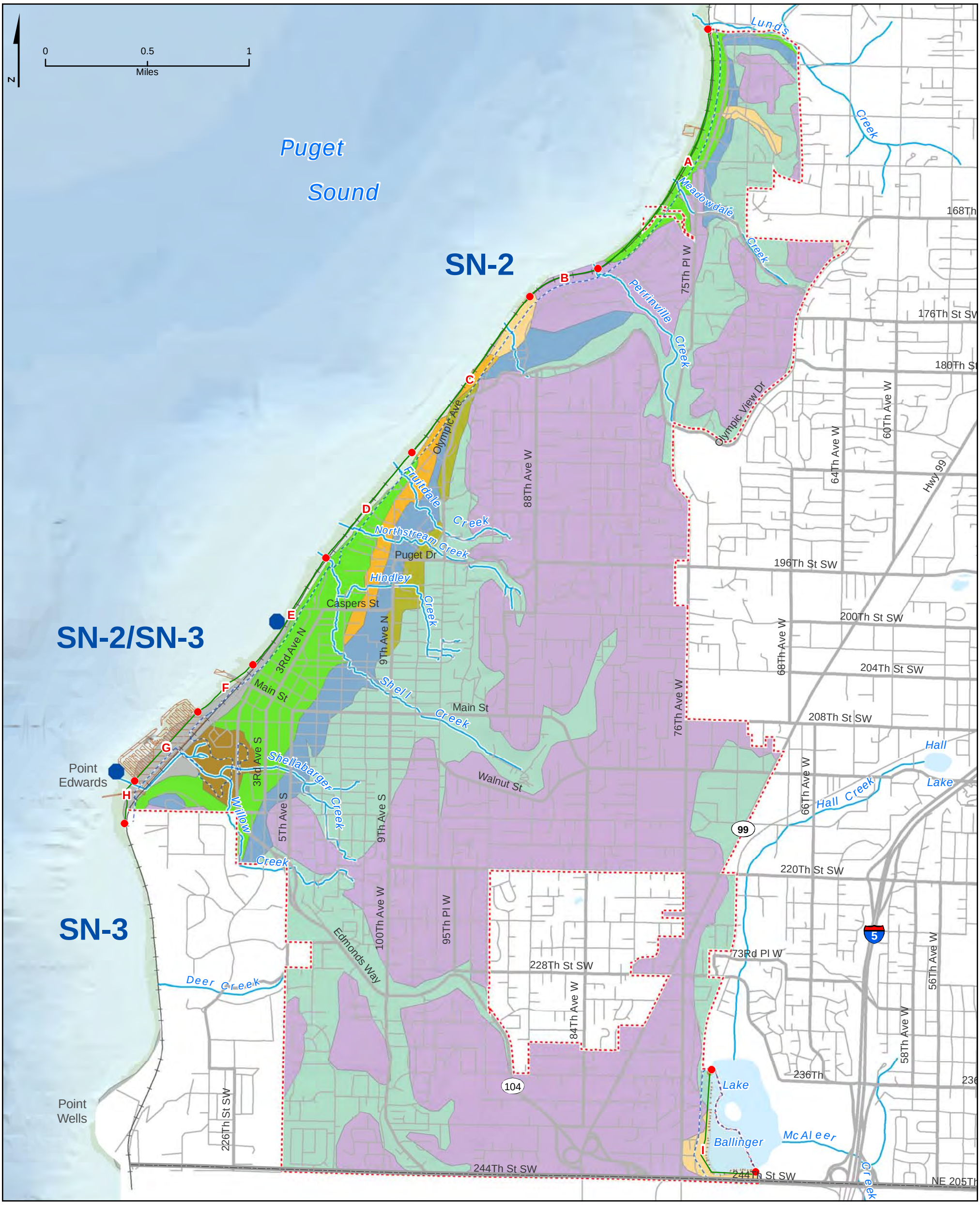
City of Edmonds

Shoreline Master Program Update

From Edmonds Critical Areas Ordinance Map

Figure 4

Date of Last Revision: 12-05-06



Legend

Geology Unit

- Qa - alluvium
- Qc(w) - continental sedimentary deposits or rocks
- Qcg - continental sedimentary deposits or rocks, conglomerate
- Qf - artificial fill, including modified land
- Qga - advance continental glacial outwash, Fraser-age
- Qgo - continental glacial outwash, Fraser-age
- Qgt - continental glacial till, Fraser-age
- Qgu - glacial drift, undivided
- Qls - mass-wasting deposits, mostly landslides

Drift Cells

- Drift Cell End Point

Shore Drift Patterns

- **SN-2** - *South to North*
- **SN-2/SN-3** - *No Appreciable Net Shore Drift*
- **SN-3** - *South to North*
- Segment Break

- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- Street
- Railroad
- County Boundary
- Stream
- Water Bodies
- Over/In Water Structure

Data Sources:
Geology 1:100,000, Washington DNR 2005 - *Geology data is provisional pending updated data.
Drift Cells: Shorelands & Environmental Assistance Program, Washington State Department of Ecology
(Created 2002, based on 1991 data)

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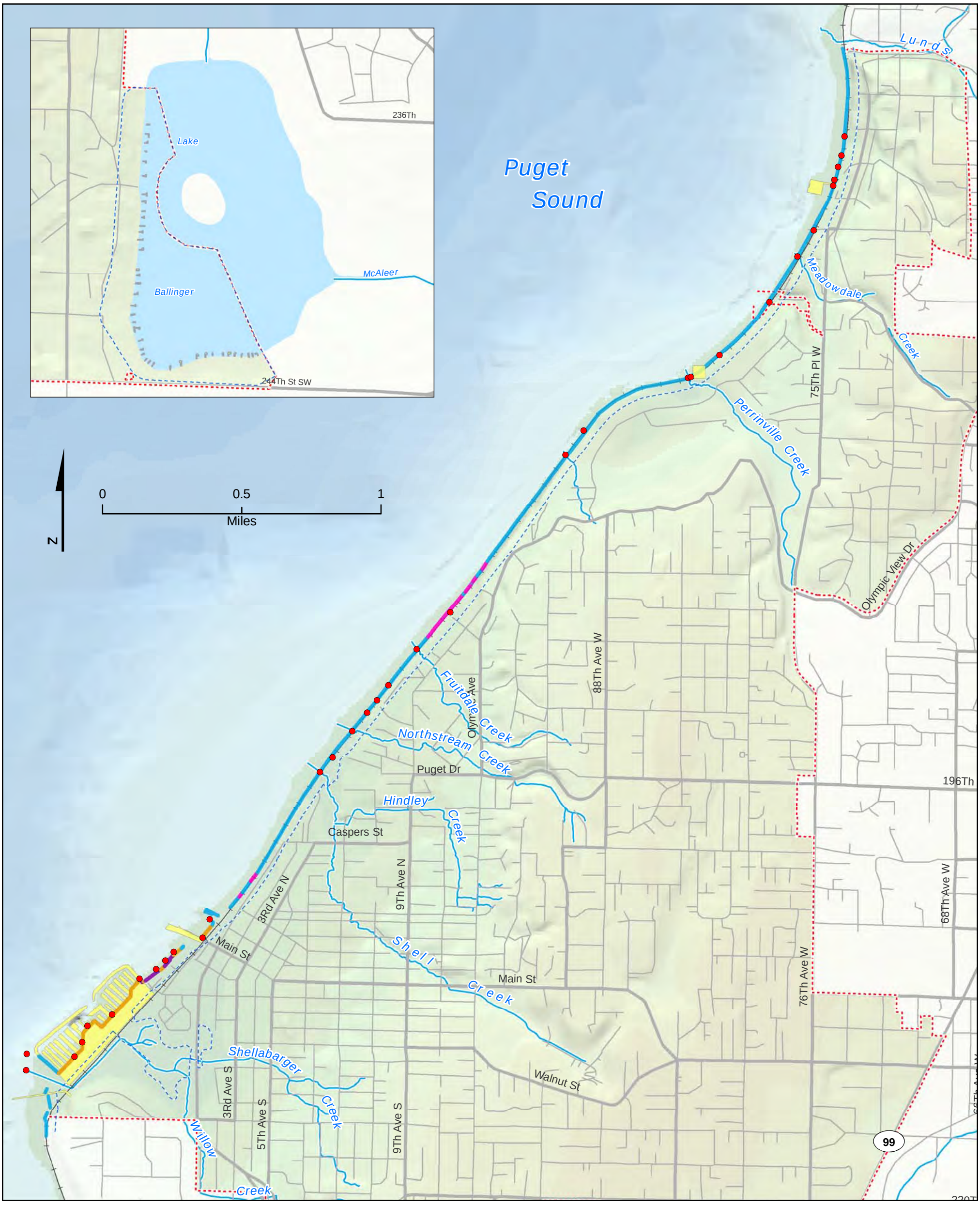
City of Edmonds

Shoreline Master Program Update

Geology & Drift Cells

Figure 5

Date of Last Revision: 12-05-06



Legend

Shoreline Armoring
- Sloped, Rock
- Vertical, Concrete
- Vertical, Rock
- Vertical, Wood

- City Outfall
- Over/In-Water Structure
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- County Boundary

- Major Road
- Street
- Railroad
- Stream
- Water Bodies

Data Sources:
Over/In Water Structures, Snohomish County Shoreline Inventory (2002), aerial photos digitizing (2006) Shoreline Armoring, Snohomish County Shoreline Inventory (2002)

Outfall Locations, City of Edmonds 2003 (Data only includes City of Edmonds drainage pipes)

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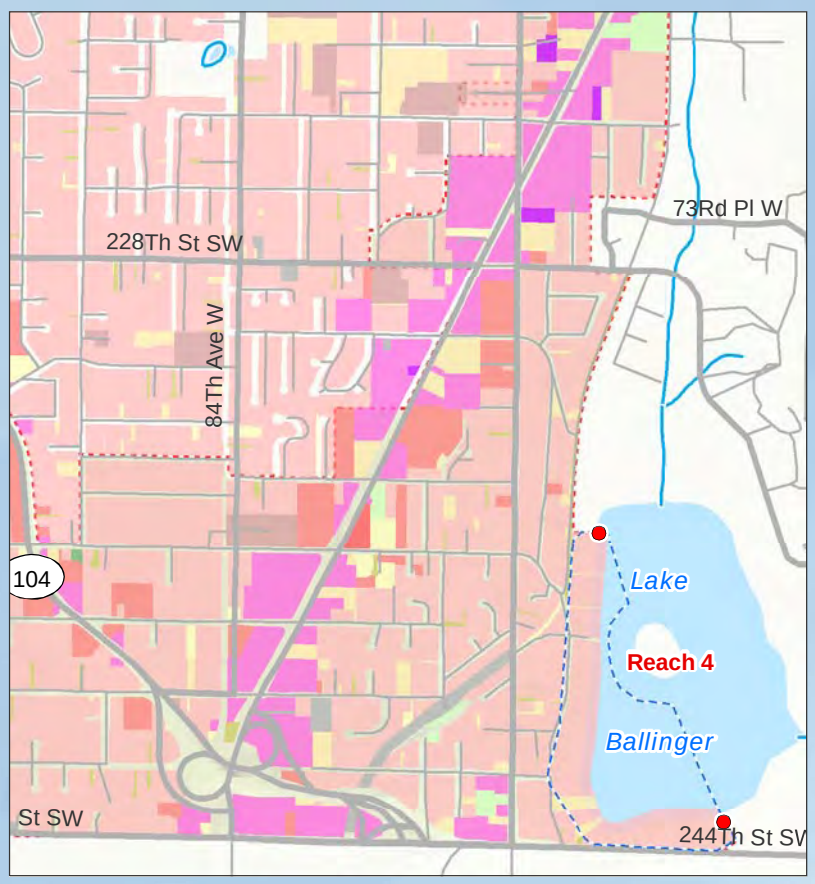
City of Edmonds

Shoreline Master Program Update

Shoreline Modifications

Figure 6

Date of Last Revision: 12-05-06



Lake Ballinger Inset

Legend

- Commercial
- Industrial - Manufacturing
- Institutional
- Mixed Use
- Natural Resource Production
- Parks
- Residential - Mobile Home
- Residential - Multi-Family
- Residential - Single Family
- Right-of-Way
- Undeveloped
- Unknown
- Utility/Transportation
- Water Bodies
- Designated Marine Protected Area
- Planning Reach Break
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- Street
- Railroad
- Stream
- Water Bodies
- Over/In Water Structure

CITY OF EDMONDS Inc. 1890

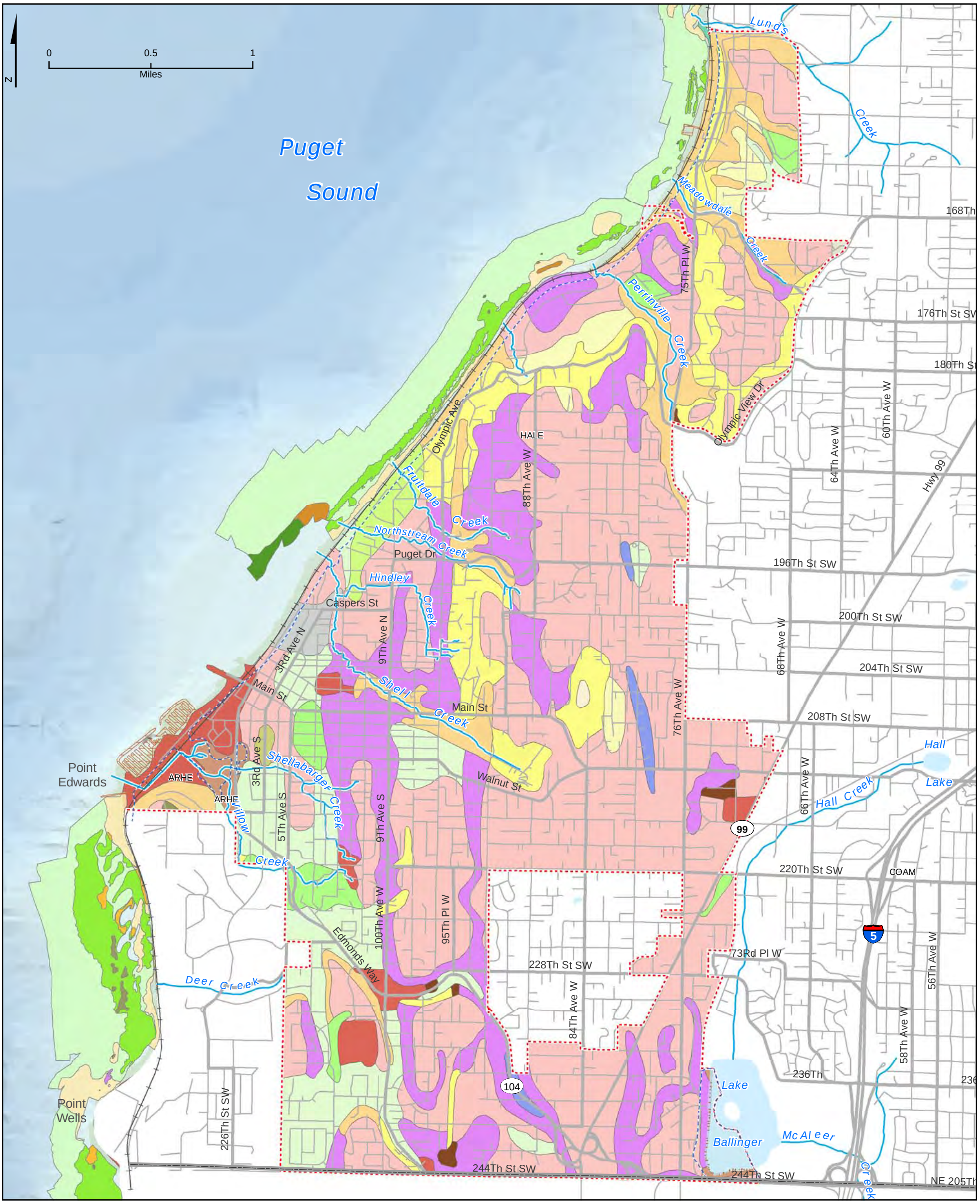
City of Edmonds

Shoreline Master Program Update

Existing Land Use

Figure 7

Date of Last Revision: 12-05-06



Legend

Soil Unit

- Alderwood gravelly sandy loam, 2 to 8% slopes
- Alderwood gravelly sandy loam, 8 to 15% slopes
- Alderwood gravelly sandy loam, 15 to 25% slopes
- Alderwood-Everett gravelly sandy loams, 25 to 70% sl.
- Alderwood-Urban land complex, 2 to 8% slopes
- Alderwood-Urban land complex, 8 to 15% slopes
- Custer fine sandy loam
- Everett gravelly sandy loam, 0 to 8% slopes
- Everett gravelly sandy loam, 8 to 15% slopes
- Everett gravelly sandy loam, 15 to 25% slopes
- Fluvaquents, tidal
- Kitsap silt loam, 0 to 8% slopes
- Kitsap silt loam, 8 to 25% slopes
- McKenna gravelly silt loam, 0 to 8% sl.
- Mukilteo muck
- Pits
- Urban land

Shoreline Substrate

- Mixed Coarse
- Mixed Coarse with Eelgrass
- Mixed Coarse with Kelp
- Sand
- Sand with Eelgrass
- Sand with Kelp
- Sand with Kelp & Eelgrass
- Wood Debris

- DRAFT SMP Jurisdiction
- Edmonds City Limits
- County Boundary
- Major Road
- Street
- Railroad
- Stream
- Water Bodies
- Over/In Water Structure

Data Sources: Soils, NRCS SSURGO 2005 Substrate, King County Brightwater FEIS 2003.

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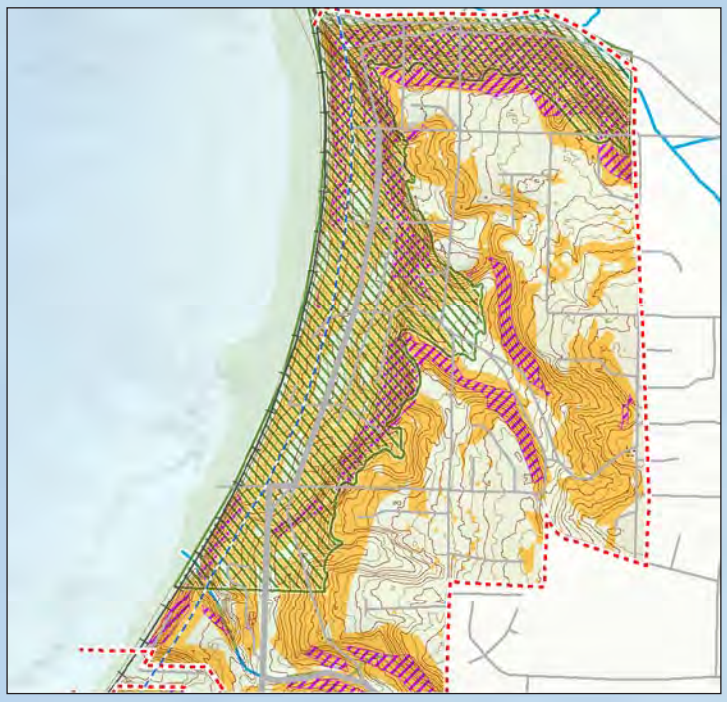
City of Edmonds

Shoreline Master Program Update

Soils, Sediment, & Substrate

Figure 8

Date of Last Revision: 12-05-06



North Edmonds Inset

Puget Sound

Lund's Creek

Meadowdale Creek

Perrinville Creek

Fruitdale Creek

Northstream Creek

Hindley Creek

Shell Creek

Shellabarger Creek

Willow Creek

Deer Creek

Hall Creek

Hall Lake

Lake Ballinger

McAleer Creek

Point Edwards

Point Wells

Olympic Ave

Olympic View Dr

Puget Dr

Caspers St

Main St

Walnut St

Edmonds Way

244Th St SW

236Th

228Th St SW

220Th St SW

208Th St SW

204Th St SW

200Th St SW

196Th St SW

176Th St S

180Th S

168T

NE 205T

73Rd Pl W

75Th Pl W

76Th Ave W

88Th Ave W

84Th Ave W

68Th Ave W

66Th Ave W

64Th Ave W

60Th Ave W

58Th Ave W

56Th Ave W

3Rd Ave N

3Rd Ave S

5Th Ave S

9Th Ave N

9Th Ave S

100Th Ave W

95Th Pl W

226Th St SW

Hwy 99

99

104

5

N

0 0.5 1

Miles

Legend

- Edmonds City Limits
- Major Road
- Street
- Railroad
- DRAFT SMP Jurisdiction
- 10ft Contour
- 20ft Contour
- Stream
- County Boundary
- Landslide Hazard
- Erosion Hazard
- Steep Slope

Data Sources:
10ft Contours, Landslide Areas, Steep Slopes, Erosion Hazards - City of Edmonds (2006)

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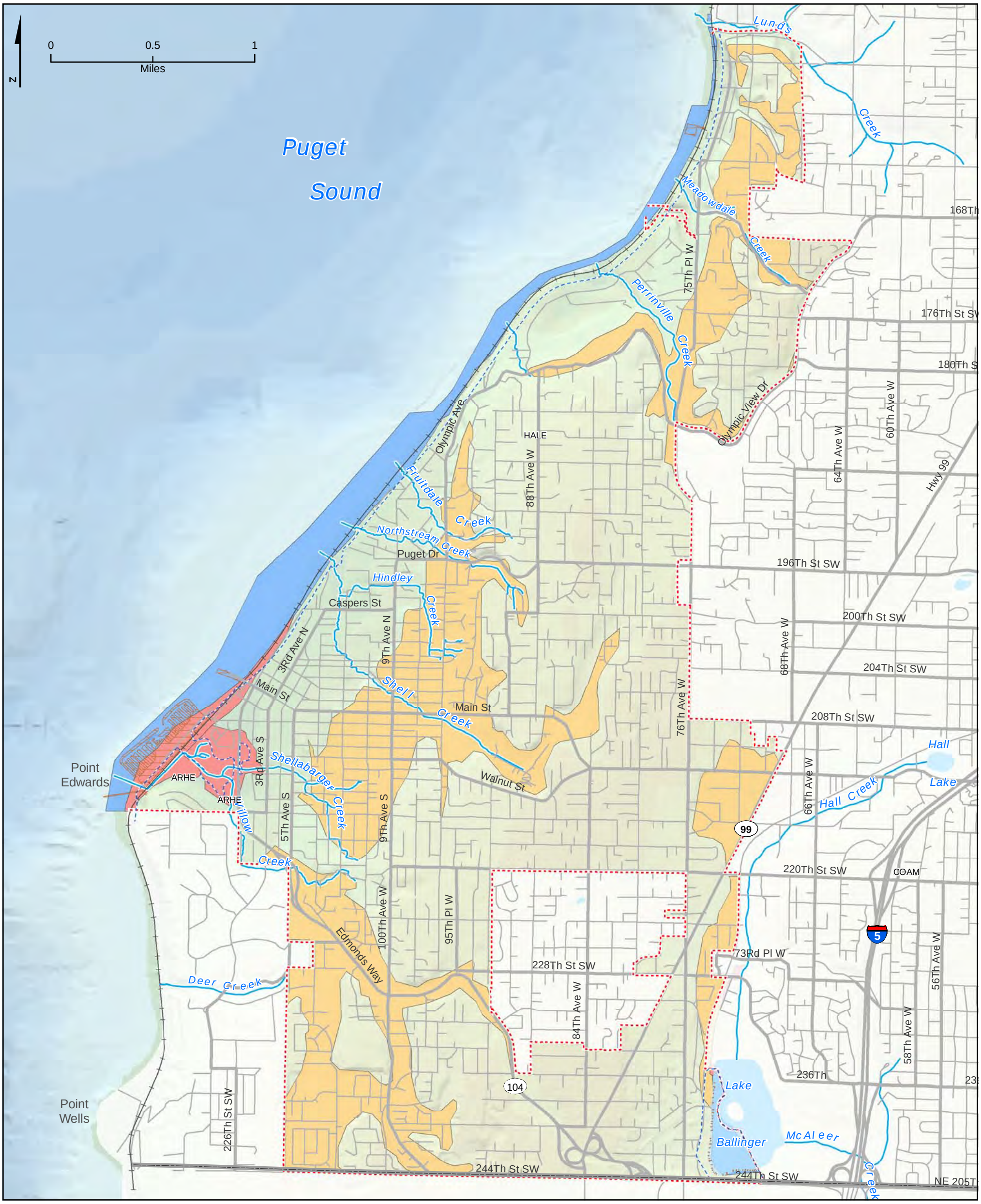
City of Edmonds

Shoreline Master Program Update

Geological Hazardous Areas

Figure 9

Date of Last Revision: 12-05-06



Legend

Liquefaction Hazard
- High
- Moderate
- Water

- Over/In-Water Structure
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- Street
- Railroad
- Stream
- County Boundary

Data Sources:
Soil Liquefaction Areas, City of Edmonds 2006

CITY OF EDMONDS Inc. 1890

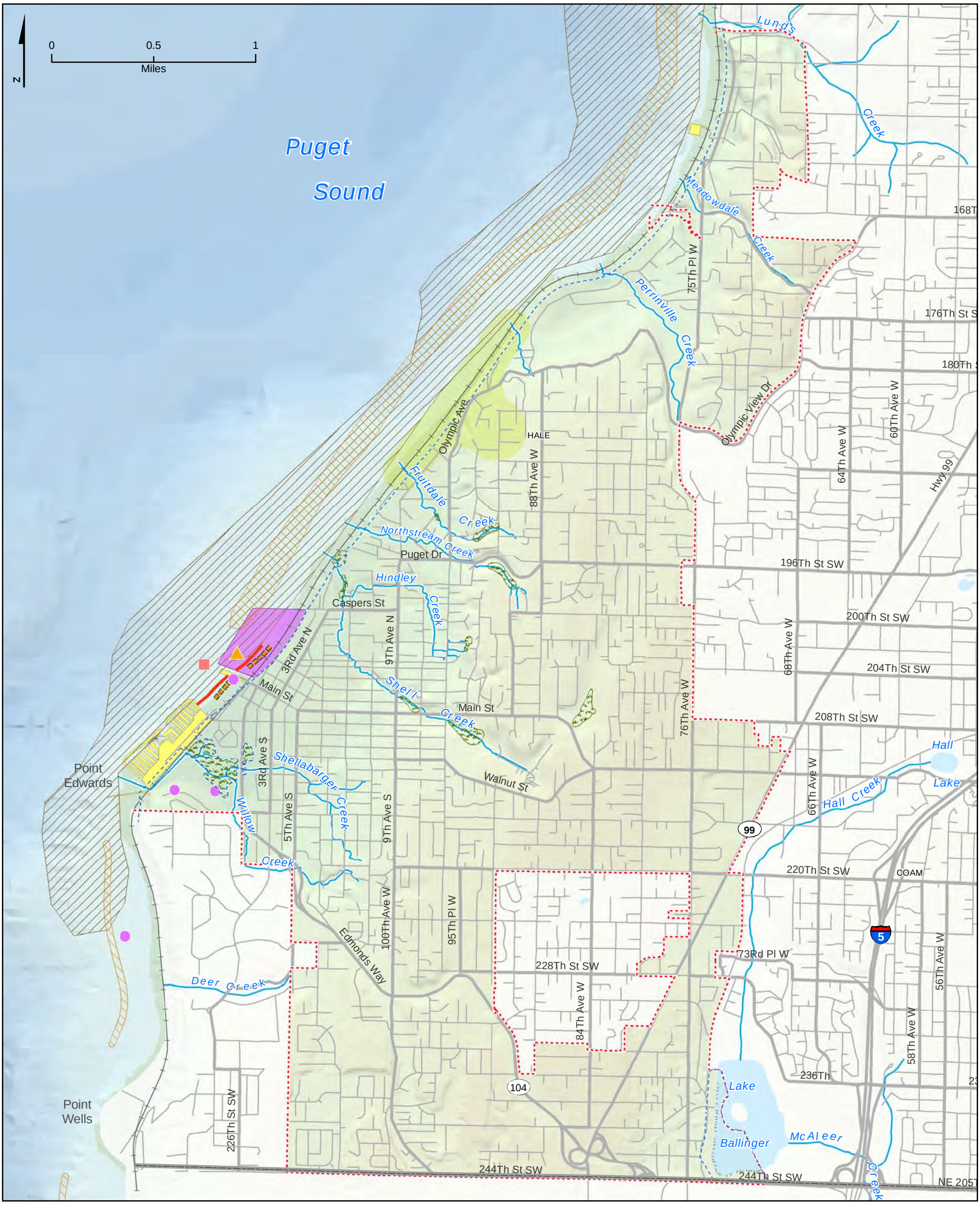
City of Edmonds

Shoreline Master Program Update

Soils & Liquefaction

Figure 10

Date of Last Revision: 12-05-06



Legend

- Seabird Colony
- WDFW Haulout Location
- Important Wildlife Resource
- Surf Smelt Spawning Area
- Sand Lance Spawning Area
- Bald Eagle Territory
- Dungeness Crab
- Geoduck
- Over/In-Water Structure
- Wetland
- Designated Marine Protected Area
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- Street
- Railroad
- Stream
- County Boundary

Chinook salmon and bull trout distribution extends along entire Edmonds shoreline. Federally designated critical habitat extends along the marine shoreline from extreme high water to -30 m mean lower low water. Federally designated bull trout critical habitat extends from mean higher high water to -10 m lower low water. Seabird colony, bald eagle breeding territory, surf smelt and sand lance spawning areas, seal and sea lion haulout, Dungeness crab, geoduck, and wetlands from Priority Habitats and Species database, WDFW 2003.

CITY OF EDMONDS Inc. 1890

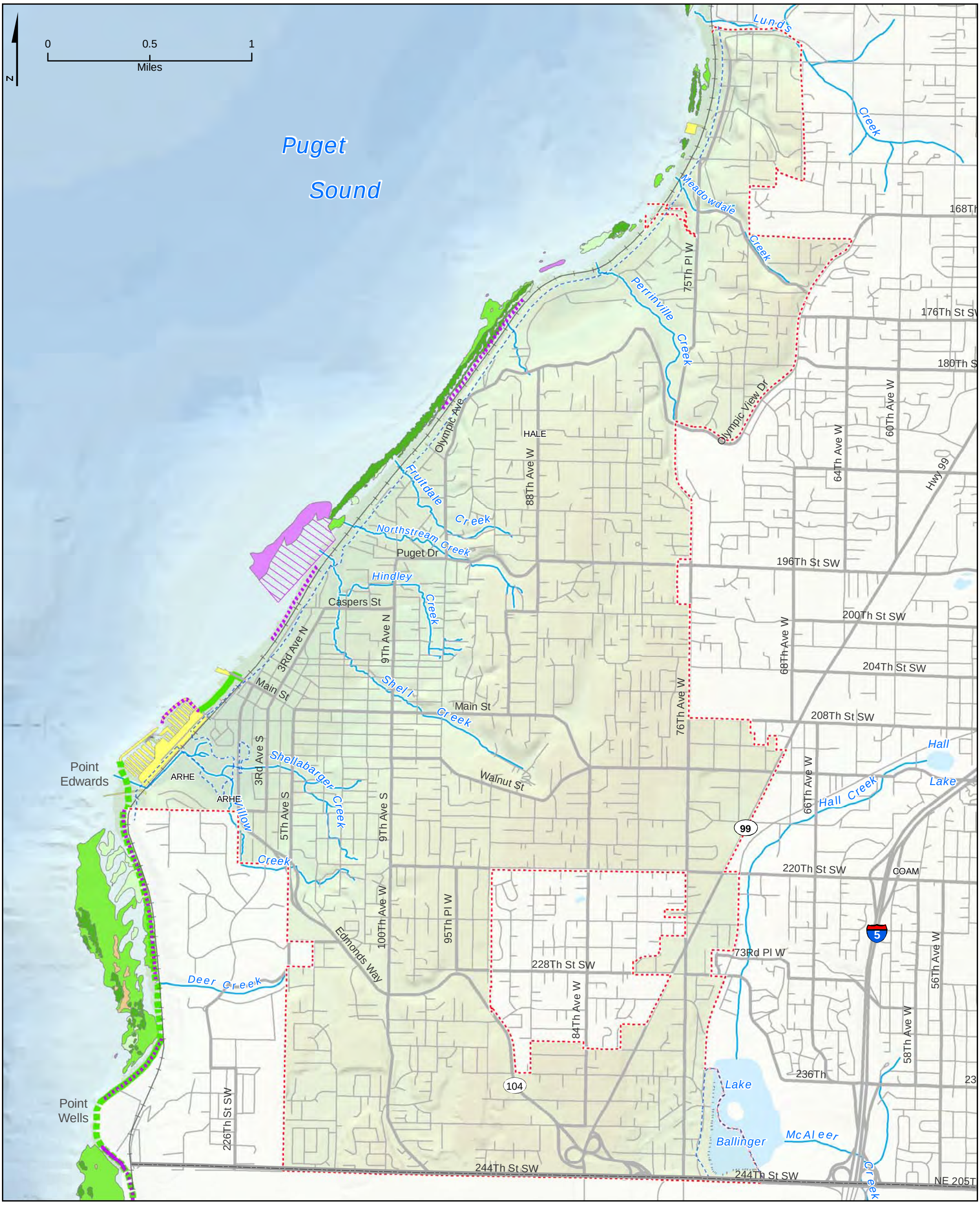
City of Edmonds

Shoreline Master Program Update

Biological Resources

Figure 11

Date of Last Revision: 12-05-06



Legend

- Continuous Kelp
- Patchy Kelp
- Continuous Eelgrass
- Patchy Eelgrass
- Sparse Eelgrass
- Moderate Eelgrass
- Dense Eelgrass
- Kelp
- Kelp (No Sonar Data Collected)
- Kelp & Eelgrass
- Over/In-Water Structure
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- Street
- Railroad
- Stream
- County Boundary

Polyline Eelgrass and Kelp from WDNR ShoreZone Inventory 2001.

Polygon Eelgrass and Kelp from King County Brightwater FEIS 2001.

CITY OF EDMONDS Inc. 1890

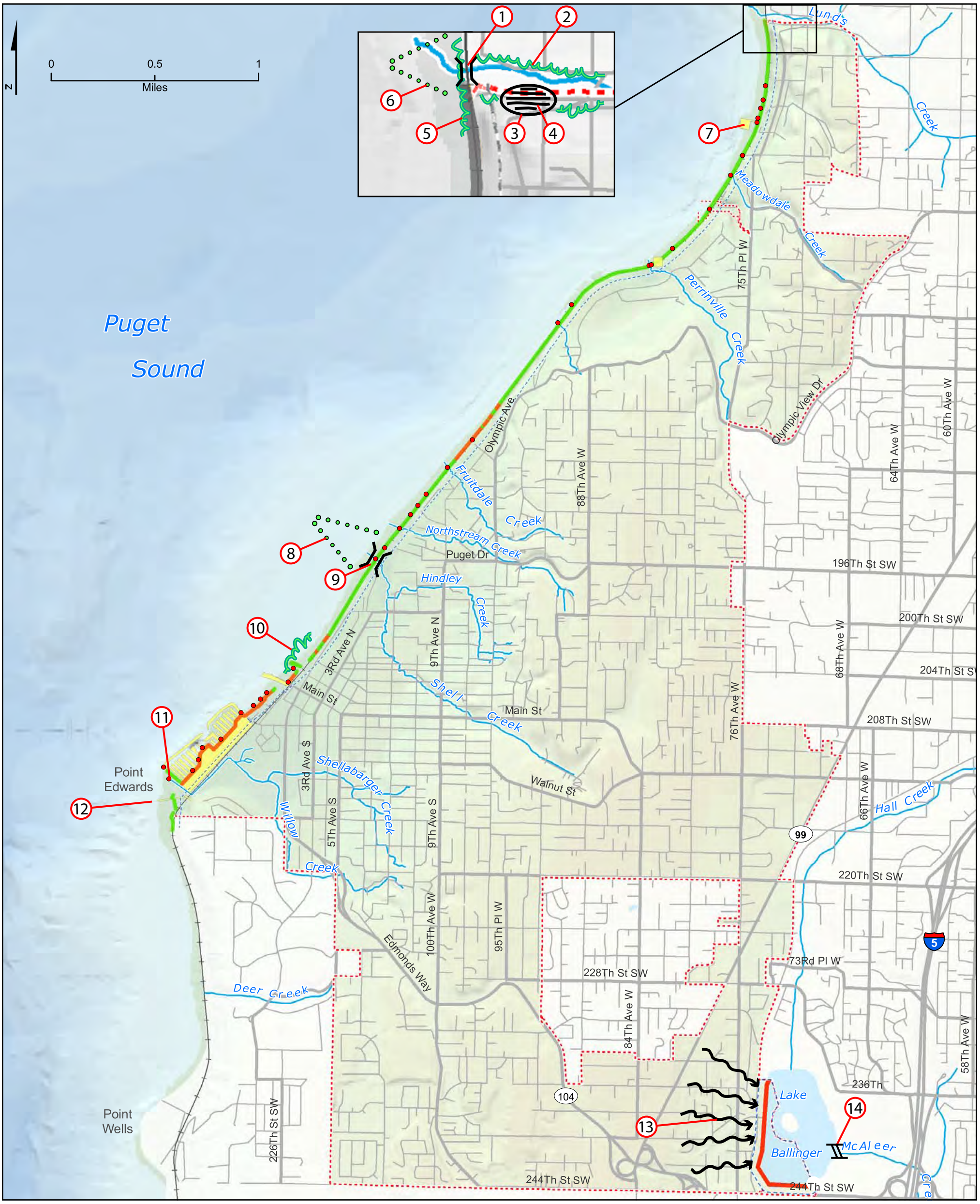
City of Edmonds

Shoreline Master Program Update

Kelp & Eelgrass

Figure 12

Date of Last Revision: 12-05-06



Legend

- City Outfall
- Shoreline Armoring
  - Sloped
  - Vertical
- Beach Nourishment
- Off-Channel Pond
- Over/In Water Structure
- DRAFT SMP Jurisdiction
- Edmonds City Limits
- Major Road
- New Crossing (wider box culvert or trestle)
- Woody Debris
- Street
- Railroad
- Stream
- Water Bodies
- Riparian Vegetation

Data Sources:
Over/In Water Structures, Snohomish County Shoreline Inventory (2002), aerial photos digitizing (2006) Shoreline Armoring, Snohomish County Shoreline Inventory (2002)
Outfall Locations, City of Edmonds 2003 (Data only includes City of Edmonds drainage pipes)

CITY OF EDMONDS Inc. 1890

City of Edmonds

Shoreline Master Program Update

Potential Restoration Projects

Figure 13

Date of Last Revision: 12-05-06

City of Edmonds
Shoreline Master Program

Restoration Plan

Table of Contents

Introduction

This restoration plan has been prepared in accordance with the Washington State Department of Ecology (Ecology) *Shoreline Master Program Guidelines* (*Guidelines*). The *Guidelines* direct local government review and updates of shoreline master programs (SMPs). A significant feature of the *Guidelines* is the requirement that local governments include within their SMPs a "real and meaningful" strategy to address restoration of shorelines (WAC 173-26-186(8)). The *Guidelines* emphasize that any *development must achieve no net loss of ecological functions.* The *Guidelines* go on to require a *goal of using restoration to improve the overall condition of habitat and resources* and make "planning for and fostering restoration" an obligation of local government. From WAC 173-26-201(2)(c):

> Master programs shall also include policies that promote restoration of ecological functions, as provided in WAC 173-26-201(2)(f), where such functions are found to have been impaired based on analysis described in WAC 173-26-201(3)(d)(i). It is intended that local government, through the master program, along with other regulatory and non-regulatory programs, contribute to restoration by planning for and fostering restoration and that such restoration occur through a combination of public and private programs and actions. Local government should identify restoration opportunities through the shoreline inventory process and authorize, coordinate and facilitate appropriate publicly and privately initiated restoration projects within their master programs. **The goal of this effort is master programs which include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area of each city and county**. [Emphasis added]

WAC 173-26-2012(f) states further that "…master programs provisions should be designed to achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program." For guidance on preparation of a Restoration Plan, the City of Edmonds (City) looked to WAC 173-26-186, WAC 173-26-201(2)(c) and (f) and *Restoration Planning and the 2003 Shoreline Management Guidelines*, an Ecology report, as well as *Systematic Approach to Coastal Ecosystem Restoration*, developed by the National Oceanic and Atmospheric Administration (NOAA) (Diefenderfer 2003), in addition to other resources listed at the end of this chapter. Restoration planning should be focused on tools such as economic incentives, broad funding sources such as Salmon Restoration Funding and Water Resource Inventory Area (WRIA) habitat restoration programs, volunteer programs, and other strategies. Furthermore, because restoration planning must reflect the individual conditions of a shoreline, restoration planning provisions contained in the *Guidelines* expressly note that a restoration plan will vary based on:

- Size of jurisdiction
- Extent and condition of shorelines
- Availability of grants, volunteer programs, other tools
- The nature of the ecological functions to be addressed

Restoration Planning Requirements

The *Guidelines* (WAC 173-26-201(2)(f)) state that SMP restoration plans shall consider and address the following subjects:

i. Identify degraded areas, impaired ecological functions, and sites with potential for restoration;

ii. Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;

iii. Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;

iv. Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs;

v. Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals;

vi. Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals.

These requirements are intended to provide the framework to restore impacted, altered or missing ecological functions resulting from past development of the shoreline. Restoration planning is not intended to directly mitigate past or future development impacts on the City's shorelines. Restoration is intended to improve overall environmental conditions unrelated to upcoming projects planned in the shoreline environment. Nonetheless, restoration projects may leverage opportunities that result from development, and restoration planning needs be aware of projects and programs so as to not duplicate efforts or potentially waste valuable resources.

Definition of Restoration

The term *restoration* has a number of definitions, all of which share similar ideas. They often refer to the return of an area to a previous condition by improving the biological structure and function (Diefenderfer 2003). Examples of definitions of restoration put forth by various authors and agencies include: bringing back a former, normal, or unimpaired state; a return to a previously existing natural condition; reestablishing vegetation; and returning a damaged ecosystem to its pre-disturbed state. The *Guidelines* state that:

> "Restore," "restoration," or "ecological restoration" means the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including but not limited to revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.

The Society of Wetland Scientists (2000) defines wetland restoration, which is similar to shoreline restoration, as actions taken in a converted or degraded natural wetland (read "shoreline") that result in the reestablishment of ecological processes, functions, and biotic/abiotic linkages and lead to a persistent, resilient system integrated within its landscape. In an effort to be clear and consistent in the discussion of restoration, five key elements of the concept of restoration are adopted from the Society of Wetland Scientists:

1. Restoration is the reinstatement of driving ecological processes.

2. Restoration should be integrated with the surrounding landscape.

3. The goal of restoration is a persistent, resilient system.

4. Restoration should generally result in movement toward the historic (pre-contact) type of environment but may not always result in the historic biological community and structure.

5. Restoration planning should include the development of structural and functional objectives and performance standards for measuring achievement of the objectives.

In this SMP, restoration is used broadly to include conservation and enhancement actions. Conservation is different from restoration as described above in that it protects areas relatively free of degradation. Enhancement, which improves shoreline functions, but may not result in restoration of underlying process, may be more viable than restoration in some instances.

Restoration Approach

A systematic approach to restoration planning, implementation, and monitoring increases the accessibility of the plan and increases the long-term usability of the restoration framework. The five components of a systematic approach to a restoration project are planning, implementation, performance assessment, adaptive management, and dissemination of results (Diefenderfer 2003).

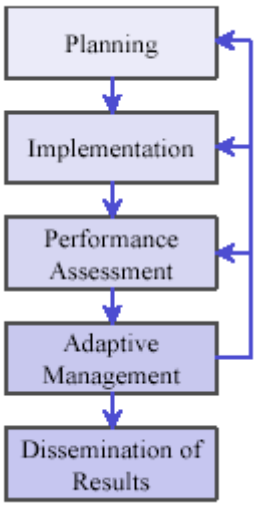


Figure 1. Five components of a coastal restoration project (Diefenderfer 2003)

NOAA's *Systematic Approach to Coastal Ecosystem Restoration* is a usable guidance tool for each of these five components and states:

> "The planning process starts with a vision, a description of the ecosystem and landscape, and goals. A conceptual model and planning objectives are developed, a site is selected, and numerical models contribute to preliminary designs as needed. Performance criteria and reference sites are selected and the monitoring program is designed. Cost analysis involves budgeting, scheduling, and financing. Finally, documentation is peer reviewed prior to making construction plans and final costing" (Diefenderfer 2003).

This restoration plan should be considered within this overall framework. The restoration chapter is designed to meet the requirements for restoration planning outlined in the *Guidelines*, in which restoration planning is an integrated component of SMPs that include inventorying shoreline conditions and regulation of shoreline development. The restoration plan builds on the *City of Edmonds Shoreline Master Program Update Draft Shoreline Inventory and Characterization* (*Shoreline Inventory and Characterization*) report (Sea-Run Consulting et al. 2006), which provides a comprehensive inventory and analysis of shoreline conditions in Edmonds, including rating specific functions and processes of each shoreline segment. The *Shoreline Inventory and Characterization* report documents baseline environmental conditions in the City's shoreline jurisdiction.

This restoration plan provides a vision for ecological restoration, and includes goals, policies, objectives, and opportunities. It also establishes strategies for implementation, including recognition of existing and ongoing programs, and it provides a framework for long-term monitoring of shoreline restoration and shoreline conditions. While this restoration plan includes broad objectives, specific implementation measures, budgets, schedules, and individual monitoring programs will be needed for individual restoration projects as they occur.

To ensure that restoration goals are being achieved, it is important for the City to evaluate the performance effectiveness of this plan and to adapt to changing conditions. At a minimum, this restoration plan (as well as the entire SMP) will be reevaluated according to the schedule adopted by the state Legislature. The City will conduct reevaluation of the success of the SMP and its restoration goals consistent with the comprehensive plan update schedule. At times of reevaluation, the inventory conditions and restoration metrics will be considered in comparison to the 2002-2006 conditions reviewed for this SMP. Updates to inventory information and the results of reevaluation processes will be disseminated to other restoration planning agencies to facilitate regional monitoring of environmental conditions.

Adaptive management is the process of continually improving management policies and practices to respond to results. Shoreline planning and restoration is an iterative process. As data are gathered and compared to past years' data, one will be able to come to a clearer understanding of environmental processes and stressors. As understanding increases, the City will have the opportunity to adjust policies, regulations and restoration priorities to adapt to changes in conditions and information. At a minimum, the City will take corrective actions if the mandate of no net loss of shoreline ecological resources is not being met.

Restoration Vision Statement

The vision statement establishes the overarching idea of the future restored ecosystem and provides a basis for the framework, including the restoration goals and objectives. This vision statement seeks to make clear the intent of addressing ecological restoration:

- The Edmonds shoreline landscape and the ecosystem that makes use of the coastal habitat are community assets to be restored, protected, and preserved for the common good.
- The Edmonds shoreline ecosystem is an integral part of the Puget Sound ecosystem and should be managed in concert with the ecosystem goals in the Puget Sound Management Plan (Puget Sound Water Quality Action Team 2001).
- All citizens are entitled to ready access to waters whose condition support high quality recreation and high quality habitat providing for a diverse population of marine life.
- Puget Sound is an important resource that supports a variety of economic activities from tourism to navigation to commercial fishing.
- The restoration plan seeks to maintain and protect existing functions and processes of the Edmonds shoreline ecosystem, where possible.
- The restoration plan looks for opportunities to restore and enhance functions and processes of the Edmonds shoreline ecosystem, where possible.

- The restoration plan seeks to evaluate potential restoration projects on best available science.
- The restoration plan adopts an adaptive management approach to implementation, funding, and evaluation.

Restoration Goals, Policies, and Objectives

For restoration, the City's SMP identifies three goals for restoring the Edmonds shoreline:

1. Improve water quality.

2. Restore degraded and lost habitat and corridors to improve ecological functions.

3. Improve connectivity of the shoreline environments in terms of both space and time.

The SMP also identifies 13 polices for restoring the Edmonds shoreline:

1. Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes.

2. Protect and restore wetland and restore salt marsh habitat to improve shoreline ecological functions.

3. Remove intertidal fill; restore beach deposits and processes and ecological functions.

4. Remove/replace creosote-treated logs, pilings, and debris.

5. Increase availability of large woody debris and opportunities for recruitment in the nearshore zone.

6. Protect and restore native species of vegetation, fish, and wildlife.

7. Remove or improve fish- and wildlife-passage barriers.

8. Manage and treat stormwater to improve water quality, decrease peak flow events, and increase implementation of low impact development (LID) practices.

9. Protect naturally eroding bluffs and associated ecological functions.

10. Protect and restore wildlife corridors.

11. Ensure that shoreline restoration projects do not degrade critical areas and water quality.

12. Establish incentives that could provide opportunities for new development to restore impaired shoreline ecological functions.

13. Work with the Burlington Northern Santa Fe Railway to encourage nearshore restoration projects on the railroad right-of-way.

While these goals and policies identify the direction of needed improvements, objectives identify specific actions—ideally measurable—that can be taken to achieve the stated goals. For example, to meet the goal of improving water quality, an objective would be to remove creosote pilings. Objectives that meet the restoration goals and policies of the SMP are listed in Table 1. These objectives assist with defining actions or projects to restore the natural processes and ecological functions identified in the *Shoreline Inventory and Characterization* as not properly functioning.

Later in this document, opportunities and strategies are identified as possible means of implementing the objectives. At this level, no measurable performance standards are applied to goals. For example, the overall goal is to improve water quality to meet the vision of a restored ecosystem, not to improve it by "X" amount. Individual restoration projects that may be implemented as part of this plan are expected to include specific measurable goals.

The goals and objectives included here are developed for the Edmonds shoreline and are consistent with the recommendations in guidance from the Puget Sound Nearshore Partnership (Fresh et al. 2004, Goetz et al. 2004), as well as that for nearshore habitats in the *Final Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (WRIA 8 Steering Committee 2005), which includes Edmonds.

Table 1 shows the relationships of the goals, objectives, natural processes and ecological functions. The first column shows the goals, the second column shows the objectives associated with those goals and the third column shows the natural process and ecological function that will be enhanced by completing the objectives. Objectives are found under multiple goals affecting different natural processes and ecological functions. Potential metrics for monitoring each objective are listed in the right hand column.

Table 1: Restoration Goals and Objectives			
Restoration Goal	**Objective**	**Natural Process** *Ecological Function*	**Potential Metrics**
Improve water quality	Remove/replace unused creosote pilings; remove creosote beach logs	**Sediment Transport** *Toxic compound removal* *Vegetation support*	# creosote pilings Water and sediment quality measurements
	Protect and restore wetlands and salt marsh habitat	**Hydrologic Processes** **Sediment Transport** **Nutrients** *Water storage* *Sediment storage* *Toxic compound removal* *Nutrient removal*	Wetland acreage Wetland functions Wetland ratings Water quality measurements
	Manage and treat stormwater and wastewater properly	**Hydrologic Processes** **Sediment Transport** **Nutrients** *Water storage* *Sediment storage* *Toxic compound removal* *Nutrient removal*	Water quality measurements Storm flows
	Protect and restore native vegetation	**Hydrologic Processes** **Nutrients** *Water storage* *Sediment storage* *Nutrient removal* *Toxic compound removal*	% Impervious surface in basin Acreage of vegetation Extent of invasive species Water quality measurements
	Remove intertidal fill	**Sediment Transport** *Water storage* *Sediment storage* *Nutrient removal*	Acreage or number of restored/remaining impaired areas

Table 1: Restoration Goals and Objectives			
Restoration Goal	**Objective**	**Natural Process** *Ecological Function*	**Potential Metrics**
Restore degraded and lost habitat and corridors to improve ecological functions Improve connectivity of the shoreline environments in terms of both space and time	Protect and restore native vegetation	**Hydrologic Processes** **Sediment Transport** **Vegetation** **Nutrients** **Habitat** *Support vegetation* *Woody debris recruitment* *Organic material availability* *Rearing habitat* *Resting habitat* *Predation avoidance habitat* *Migration corridors* *Food production* *Food delivery*	Acreage of vegetation by type (riparian, eelgrass, kelp) Degree of diversity Species supported Connectivity/areas of isolation Extent of tree canopy Linear feet of bulkhead Extent of invasive species
	Protect and restore wetlands salt marsh habitat, and estuarine and lagoon functions	**Hydrologic Processes** **Sediment Transport** **Vegetation** **Nutrients** **Habitat** *Support vegetation* *Woody debris recruitment* *Organic material availability* *Rearing habitat* *Resting habitat* *Predation avoidance habitat* *Osmoregulatory adjustment* *Migration corridors* *Food production* *Food delivery*	Wetland acreage Wetland functions Wetland ratings Connectivity/areas of isolation

Table 1: Restoration Goals and Objectives			
Restoration Goal	**Objective**	**Natural Process** *Ecological Function*	**Potential Metrics**
	Protect naturally eroding bluffs, sand spits and accretion land forms	**Sediment Transport** **Vegetation** **Habitat** *Support vegetation* *Woody debris recruitment* *Organic material availability* *Beach habitat* *Predation avoidance habitat* *Migration corridors*	Linear feet of active feeder bluff Rate of sediment delivery to beach Acreage of vegetation in bluff areas Linear feet of bulkhead
	Remove intertidal fill/restore beach deposits and processes	**Sediment Transport** **Vegetation** **Nutrients** **Habitat** *Support vegetation* *Woody debris recruitment* *Organic material availability* *Rearing habitat* *Resting habitat* *Predation avoidance habitat* *Migration corridors* *Food production* *Food delivery*	Acreage or number of restored/remaining impaired areas Linear feet of bulkhead Number of stream mouth migration barriers removed Shoreline connectivity/areas of interruption
	Manage and treat stormwater and wastewater properly	**Hydrologic Processes** **Sediment Transport** **Nutrients** *Water storage* *Sediment storage* *Toxic compound removal* *Nutrient removal*	Water quality measurements Storm flows

Restoration Opportunities

This restoration plan recognizes that the Edmonds shorelines are highly altered and retain few elements that are fully functioning through natural processes. The Edmonds shoreline of Lake Ballinger is fully developed with single-family housing, yards, and docks. The Puget Sound shoreline in the City does retain large areas of functioning eelgrass and kelp beds in the littoral zone (lower intertidal to shallow subtidal elevations). Overall, however, the middle to upper intertidal zone is modified by the presence of the Burlington Northern Santa Fe (BNSF) railroad, the Port of Edmonds, the Washington State Ferries terminal, and the former Union Oil dock. The Edmonds Marsh is impacted and constrained by the former Union Oil development, the BNSF railroad, Harbor Square, and State Route 104. Preservation is the first priority for achieving no net loss of existing eelgrass or kelp bed function. In addition, limited opportunities for restoration of other littoral habitats do exist and, given the currently degraded nature of the City's shorelines, there is a high potential that the restoration goal of increasing shoreline habitat function can be met.

Table 2 lists specific opportunities for each shoreline segment that have been identified in the *Shoreline Inventory and Characterization* and others that have been provided through other sources (some of these opportunities are shown geographically in Figure 13 of the *Shoreline Inventory and Characterization*). These are opportunities for restoration that correspond to the restoration goals, policies and objectives.

Opportunities, listed by shoreline segment, are in the left-hand column. The second column lists the related restoration objectives. Identified restoration activities and monitoring activities, where known, are listed in the third and fourth columns, respectively. The fifth column indicates whether funding for the restoration opportunity has been secured. The sixth column provides a preliminary timeline for when work related to the restoration opportunity might take place. "Indeterminate" means that the timeline for the restoration opportunity—if work related to the opportunity occurs at all—is dependent upon other factors, and is therefore difficult to predict. "Long-term" signifies that no action plan is currently in place for a given restoration opportunity. Finally, in accordance with the *Guidelines*, the sixth column indicates the preliminary priority of restoration opportunities. Opportunities are designated as "high," "medium," or "low" priority. Restoration opportunities that are currently funded were designated as "high" priority. Restoration opportunities that would either meet three or more of restoration element policies, or may receive funding were designated as "medium" priority. Restoration opportunities that would either meet two or fewer restoration element policies or have no current prospect of future funding were designated as "low" priority.

Regarding opportunity prioritization, controlling environmental factors (such as hydrology, water quality, sediment type, etc.) provide the foundation for habitat structures (i.e., species and their abundance), and the structure supports habitat functions (i.e., production, food support, rearing, etc.)(Thom 2003). That is, restoration of habitat functions may be ineffective if habitat structures and controlling factors are not also restored. Thom (2003) states: "There is no universally accepted method for setting priorities for nearshore sites for restoration or for determining what strategies are best applied to each site. We have found that restoration of controlling factors is the key to successful and long-term restoration."

So, overall priority should be given to protection and restoration of natural processes that are needed to support ecosystem and habitat functions. However, where restoration of those processes is not currently feasible (e.g., sediment supply interruption by the railroad right-of-way and bulkhead), non-natural measures may be taken to enhance ecological function on a non-self sustaining basis (e.g., by artificial addition of sediments into a coastal drift cell).

Table 2 is an extensive list that likely exceeds near-term funding opportunities, and yet, is not exhaustive. Additional restoration opportunities may continue to be identified through local and regional shoreline monitoring and planning actions. Further discussion of ongoing programs, implementation strategies, and project evaluation to determine appropriate priority is provided in sections following the table. As such, Table 2 is a snapshot and it is expected that actual restoration opportunities and priorities will evolve over time as restoration projects are completed and new information becomes available. The City may periodically identify additional restoration opportunities that are consistent with the objectives of this restoration chapter.

Table 2: Restoration Opportunities						
Restoration Opportunity	**Restoration Objective**	**Restoration Activity**	**Monitoring Activities**	**Funding Secured?**	**Timeline**	**Priority**
Marine Shoreline						
Throughout: Enhance eelgrass	Expand eelgrass extent/productivity by establishing new plots	Restoration of eelgrass and macroalgae beds at existing ferry terminal proposed for "Edmonds Crossing" (new ferry terminal) development	Measure survival and expansion of transplanted plots	No	Indeterminate/Long-term	Medium/Low
Lunds Gulch: Replace the existing box culvert beneath the railroad with a wider box culvert (may be out of Edmonds' jurisdiction) **1***	Protect/restore nearshore and estuary habitat for enhanced coho and chum production; decrease sedimentation; improve fish passage; decrease pedestrian contact	No ongoing activity identified	Monitor fish usage	No	Long-term	Medium
Lunds Gulch: Enhance riparian vegetation (may be out of Edmonds' jurisdiction) **2***	Protect/restore stream habitat for enhanced coho production	Some planting underway by local volunteers	Monitor plant survival; control invasives	No	Long-term	Medium
Lunds Gulch: Create an off-channel pond in county park (may be out of Edmonds' jurisdiction) **3***	Protect/restore lacustrine habitat for enhanced coho production; provide high-flow refugia	No ongoing activity identified	Monitor fish usage	No	Long-term	Low

Table 2: Restoration Opportunities						
Restoration Opportunity	**Restoration Objective**	**Restoration Activity**	**Monitoring Activities**	**Funding Secured?**	**Timeline**	**Priority**
Lunds Gulch: Add large woody debris (LWD) to off-channel pond (may be out of Edmonds' jurisdiction) **4***	Protect/restore lacustrine habitat for enhanced coho production	No ongoing activity identified	Monitor fish usage	No	Long-term	Low
Lunds Gulch: Enhance/restore marine riparian vegetation **5***	Protect and restore native vegetation waterward of railroad	No ongoing activity identified	Perform vegetation transects after planting (1, 3, 5, 7, and 10 years)	No	Long-term	Medium
Lunds Gulch: Conduct beach nourishment activities **6***	Restore beach deposits and processes; protect/restore nearshore habitat-forming processes	No ongoing activity identified	Monitor sediment transport and evolution of beach profile; check with aerial photos after initiating activities	No	Long-term	Low
Meadowdale Creek: Acquire and remove existing Meadowdale Marina structure **7***	Remove/replace creosote-contaminated pilings; protect/restore nearshore habitat	No ongoing activity identified	Inspect after removal; perform vegetation transects for eelgrass (1, 3, 5, 7, and 10 years)	No	Long-term	Low
Shell Creek: Conduct beach nourishment activities at the mouth of Shell Creek **8***	Restore beach deposits and processes; protect/restore nearshore habitat-forming processes	No ongoing activity identified	Monitor sediment transport and evolution of beach profile; check with aerial photos after initiating activities	No	Long-term	Low
Shell Creek: Replace railroad crossing with trestle or improved culvert **9***	Protect/restore nearshore and estuary habitat	No ongoing activity identified	Monitor fish usage	No	Long-term	Medium

Table 2: Restoration Opportunities						
Restoration Opportunity	**Restoration Objective**	**Restoration Activity**	**Monitoring Activities**	**Funding Secured?**	**Timeline**	**Priority**
Underwater Park: Add more structures	Structures increase habitat diversity and serve as substrata for algal colonization	Planning by local dive groups and City Parks and Recreation Dept.	Monitor vegetation establishment and fish use of new structures	No	Long-term	Low
Bracketts Landing: Marine riparian vegetation restoration and enhancement; opportunity for public education/interpretive exhibit describing Edmonds-wide efforts **10***	Protect and restore native vegetation	No ongoing activity identified	Perform vegetation transects after planting (1, 3, 5, 7, and 10 years)	No	Long-term	Medium
Bracketts Landing: Conduct beach nourishment activities just north of jetty	Restore beach deposits and processes; protect/restore nearshore habitat-forming processes	No ongoing activity identified	Monitor sediment transport and evolution of beach profile; check with aerial photos after initiating activities	No	Long-term	Low
Existing Ferry Terminal: Removing portions of the terminal that sit atop creosote pilings	Remove/replace creosote-contaminated piling; protect/restore nearshore habitat	Proposed activity for "Edmonds Crossing" (new ferry terminal) development	Inspect after removal; perform vegetation transects for eelgrass (1, 3, 5, 7, and 10 years)	No	Indeterminate	Medium
South County Senior Center: Reconfiguration of parking lot to restore beach habitat **11***	Restore beach deposits and processes; protect/restore nearshore habitat-forming processes	No ongoing activity identified	Monitor sediment transport and evolution of beach profile; check with aerial photos after initiating activities	No	Long-term	Medium

Table 2: Restoration Opportunities						
Restoration Opportunity	**Restoration Objective**	**Restoration Activity**	**Monitoring Activities**	**Funding Secured?**	**Timeline**	**Priority**
Edmonds Marsh: Channel improvements	Protect/restore freshwater and estuarine habitat	City of Edmonds Capital Improvement Project	Monitor saltwater marsh vegetation	Yes	2007, 2008	High
Edmonds Marsh: Culvert replacement	Protect/restore nearshore and estuary habitat	Proposed activity for "Edmonds Crossing" (new ferry terminal) development	Monitor fish usage	No	Indeterminate	Medium
Willow Creek: Restore creek to open channel **12***	Protect/restore freshwater and estuarine habitat; increase opportunities for recruitment	Proposed activity for "Edmonds Crossing" (new ferry terminal) development; culvert replacement proposed in Sound Transit JARPA mitigation plan	Monitor fish usage	No	Indeterminate	Medium
Point Edwards: Remove existing pier **13***	Remove/replace creosote-contaminated pilings; protect/restore nearshore habitat	Proposed activity for "Edmonds Crossing" (new ferry terminal) development	Inspect after removal; perform vegetation transects for eelgrass (1, 3, 5, 7, and 10 years)	No	Indeterminate	Medium

Table 2: Restoration Opportunities						
Restoration Opportunity	**Restoration Objective**	**Restoration Activity**	**Monitoring Activities**	**Funding Secured?**	**Timeline**	**Priority**
Lake Shoreline						
Lake Ballinger: Control quantity and quality of runoff entering lake **14***	Manage and treat stormwater to improve water quality, decrease peak flow events, and increase implementation of low impact development (LID) practices	Ongoing implementation of the Stormwater Management Manual for Puget Sound; stormwater system improvements as street improvements are constructed	Monitor water quality (water quality is currently being monitored through a City of Edmonds Capital Improvement Project)	Partially	2007-2013/Long-term	Medium/Low
Lake Ballinger: Revise outlet control structure (may be out of Edmonds' jurisdiction) **15***	Protect/restore freshwater habitat; increase opportunities for recruitment	No ongoing activity identified	Monitor fish usage	No	Long-term	Medium

* Numbers correspond to Figure 14 of the *City of Edmonds Shoreline Master Program Update Draft Shoreline Inventory and Characterization*, which geographically identifies potential restoration projects

Existing and Ongoing Programs

The following list of agencies and organizations with nearshore interests is by no means complete. It does, however, include those agencies and organizations that appear to have the most interest in nearshore areas and restoration in and around the City.

Snohomish County Marine Resources Committee

In 1998, passage of the Northwest Straits Marine Conservation Initiative established the Northwest Straits Commission and seven Marine Resource Committees, including the Snohomish County Marine Resource Committee (MRC). The Snohomish County MRC is a citizen-based effort to identify regional marine issues, foster community understanding and involvement, recommend positive action and develop support for various protection and restoration measures. The Snohomish County MRC works toward fulfilling the following performance standards:

a. Broad county participation in MRCs

b. A scientifically-based, regional system of Marine Protected Areas (MPAs)

c. A net gain in highly ecologically productive nearshore, intertidal and estuarine habitat in the Northwest Straits, and no significant loss of existing, high-value habitat; improvements in state, tribal, and local tools to map, assess, and protect nearshore habitat and prevent harm from upland activities

d. Net reduction in shellfish harvest areas closed due to contamination

e. Measurable increases in factors supporting recovery of bottom fish (such as rockfish)—including numbers of fish of broodstock size and age, average fish size, and abundance of prey species—as well as sufficient amounts and quality of protected habitat

f. Increases in other key marine indicator species (including those identified in the 1997 West report on Puget Sound marine resources)

g. Coordination of scientific data (for example, through the Puget Sound Ambient Monitoring Program), including scientific baseline, common protocols, unified GIS, and sharing of ecosystem assessments and research

h. Coordination with entities on an effective outreach and education effort with measurements of the numbers of people contacted as well as changes in behavior

Shared Strategy for Puget Sound

The Shared Strategy for Puget Sound (Shared Strategy) is a collaborative effort to protect and restore salmon runs across Puget Sound. Shared Strategy engages local citizens, tribes, technical experts and policy makers to build a practical, cost-effective recovery plan endorsed by the people living and working in the watersheds of Puget Sound. The Draft Puget Sound Salmon Recovery Plan, revised in December 2005, is available for review at http://www.sharedsalmonstrategy.org/index.htm.

Puget Sound Nearshore Partnership

The Puget Sound Nearshore Partnership (PSNP) group is a cooperative effort among government organizations, tribes, industries, and environmental organizations to preserve and restore the health of Puget Sound's nearshore that generally runs from the top of bluffs on the land across the beach to the point where light penetrates the Puget Sound's waters sufficient to support attached marine vegetation (approximately 30 feet deep).

A General Investigation Reconnaissance Study conducted by the United States Army Corps of Engineers in 2000 identified a direct link between properly functioning (healthy) nearshore habitat and the physical condition of the shoreline. The study identified four areas that need restoration and improvement:

1. Restoring shoreline processes to a more natural state,

2. Providing beaches with essential sand and gravel materials,

3. Removing, moving, and modifying artificial structures (bulkheads, riprap, etc.), and

4. Using alternative measures to protect shorelines from erosion.

The timeframe for implementing projects is longer term, with projects beginning in 2008. By June 2006, PSNP will produce a strategic needs assessment for comprehensive, geospatially explicit, process-based restoration of Puget Sound's nearshore ecosystem. The PSNP Science Team is working to narrow the uncertainty inherent in restoration, by improving our understanding of the most critical restoration needs at various scales of analysis in Puget Sound. To do so, PSNP is reviewing and synthesizing a number of existing key data sets, collecting new information and adopting the most effective theories on the linkages between landscape ecology and restoration.

The current understanding of relationships between nearshore processes, structures and functions is illustrated in a nearshore conceptual model (Puget Sound Nearshore Project 2003). This conceptual model continues to be refined as scientists test new hypotheses about nearshore processes, structure and function. Preliminary outputs of this analysis are informing those engaged in nearshore habitat restoration as part of their species recovery plans through this web site and guidance to the Salmon Recovery Funding Board. In turn, actions taken by salmon recovery lead entities may serve to evaluate hypothesized relationships between restoration actions and effects on ecosystem processes and salmon populations. It is expected that over time, the relationship between local species-specific efforts and regional process-based approaches will converge to the point that the restoration goals identified by species recovery entities and those of PSNP are one and the same for many projects. Collaboration and sharing of resources will serve to bring about a common endpoint as the ecological integrity of Puget Sound is improved to the benefit of salmon, shellfish, marine birds, and other components of the ecosystem.

Puget Sound Nearshore Policy Group
Staff to the Puget Sound Action Team partnership convened a regional group to conduct a policy discussion that sets a vision for salmon recovery in Puget Sound's nearshore and marine environments. This vision will lead to actions that protect and restore Puget Sound's shorelines, marine areas and estuaries for salmon recovery.

This high-level policy group is central to development of a nearshore chapter in Shared Strategy's salmon recovery plan for Puget Sound. This group is working to establish policy direction and identify needed commitments to actions that will protect and restore Puget Sound's shorelines, marine areas, and estuaries for salmon recovery. This nearshore chapter will address regional threats to the nearshore environment and regional-scale management opportunities.

The specific objectives of the nearshore policy group are to:

1. Develop a set of regional strategies for salmon recovery in the nearshore;

2. Identify needed commitments for actions and pathways to gain those commitments;

3. Develop prescriptions for additional activities that should occur to protect and restore nearshore and marine ecosystems in the Puget Sound region; and

4. Develop an overall vision of nearshore and marine contributions to salmon recovery and integrate this vision with all other chapters of the Shared Strategy's recovery plan.

The nearshore policy group has technical support from personnel who are working with regional experts and other individuals involved in developing planning area chapters. Staff members and others are working to assess and analyze relationships among management actions that might be needed to protect and restore the nearshore and marine ecosystem processes and functions that will support viable salmon populations.

Puget Sound Partnership
In December 2005, Governor Christine Gregoire appointed 21 leaders in the Puget Sound region in commerce, research, and government as members of the Puget Sound Partnership (Partnership). She gave the group a 10-month charge to "develop recommendations for preserving the health and ecosystem of Puget Sound, and to help educate and enlist the public in achieving recovery of the Sound by 2020." The Partnership delivered its recommendations in December 2006 (Puget Sound Partnership 2006). While the entire effort of the Partnership focuses on protection and restoration of the Puget Sound ecosystem, these topics are central to two of five immediate action recommendations for the Governor: protect Puget Sound habitat and implement priority projects to restore damaged forests, rivers, shorelines, and marine waters. To protect Puget Sound habitat, the Partnership recommends substantially increasing compliance

with existing laws, primarily by increasing resources to state and local governments and acquiring land from willing sellers in watershed, estuarine, and marine shoreline areas. To restore damaged habitat, the Partnership recommends increased funding necessary to implement projects identified in recovery plans for salmon and other species and nearshore evaluation and other programs.

Several of the points made in the Partnership's recommendations bear on strategies applicable to this restoration plan:

- Regulatory and restoration actions that focus on a single species or location fail to recognize the importance of natural processes in contributing to habitat function. Process-based strategies improve the chances of a successful restoration.

- Implement high-priority restoration projects such as recovery plans for salmon and other species, and nearshore evaluation and other programs.

- Implement other critical restoration actions such as preventing the spread of invasive species, removal of derelict vessels and fishing gear, and removal of creosote logs.

- Improve the success of habitat mitigation from the current rate of 50 percent to approaching 100 percent.

The Partnership's recommendations provide a focus to coordinate restoration efforts around Puget Sound.

In 2007, legislation was adopted that made the Partnership a new state agency, replacing the Puget Sound Action Team. The Partnership will be responsible for integrating the work of state, local and federal governments, as well as local watershed planning and salmon recovery efforts.

Puget Sound Technical Recovery Team

The Puget Sound Technical Recovery Team (TRT) provides the overall scientific conceptual approach for assessing salmon recovery planning. This approach identifies the four characteristics of a population and their role in maintaining population viability. These characteristics are abundance, productivity, spatial structure and diversity. TRT liaisons help watershed groups implement their technical approach to the nearshore component of their draft habitat plans to ensure that it is consistent with the logic laid out in the Watershed Guidance.

Washington State University Shore Stewards Program/Water/Beach Watchers

Washington State University started a Shore Stewards Program in Snohomish County as part of the Water/Beach Watchers in 2005. The Beach Watcher program provides education and best practices for shoreline landowners, and participants receive a metal

Shore Stewards sign for their property. In addition to working directly with shoreline landowners, program administrators also periodically conduct public workshops, as they did in the Edmonds/Woodway area in 2006. While the number of Edmonds shoreline landowners currently participating in the program is limited, local participation is expected to increase in the future as this young program becomes more established.

WRIA 8

Watersheds often encompass broad land areas and cross various governmental jurisdictions. The Watershed Planning Act (RCW 90.82) created a mechanism to focus water-related planning on a local, watershed basis by forming the Planning Unit, composed of various interests and governments. The shorelines of Edmonds are located in Cedar River/Lake Washington Water Resource Inventory Area 8 (WRIA 8). Included in the new administrative body are counties, municipalities, utilities and tribal governments, collectively knows as Initiating Governments. The composition of the Planning Unit must include a wide range of water resource interests and representatives of state, county, and tribal governments whose policies and resources may be affected by the proposed plan. The purpose of the Planning Unit is to formulate a plan containing recommendations on water quality and quantity management, protection and restoration of instream flows, protection of fish habitat and alternative strategies for managing water, to be sent to local and state governments for adoption. The Planning Unit instituted two subgroups; the Steering Committee, to help it move forward with administrative issues; and a Technical Committee to sort through the details of resource data required to make informed water management decisions. The final plan for WRIA 8 is now available on their website.

By enacting the Watershed Planning Act in 1998, the State of Washington sought to coordinate watershed planning efforts statewide. The legislation provided for three phases—organizational, assessment, and planning—and provided funding for local execution of these phases. This act created 62 WRIAs across the state in which these activities would take place. Also in 1998, the state enacted the Salmon Recovery Planning Act (RCW 77.85) to encourage and require an enhanced effort at protecting and restoring habitat for Puget Sound Chinook salmon and other fish species then recently listed as endangered. To clarify roles and responsibilities, to promote interagency cooperation, and to coordinate efforts and simplify implementation procedures, 12 agencies within state government signed a memorandum of understanding for the coordinated implementation of these two laws.

City of Edmonds

The City of Edmonds has a number of existing programs and projects with potential benefits for the shoreline environment (restoration projects are included on "Table 2. Restoration Opportunities"). These projects and programs include:

- Waterfront acquisition – Acquire any remaining waterfront parcels to complete access to Puget Sound. This action is intended to increase public ownership of the waterfront along Puget Sound.

- Tideland acquisition – Acquire tidelands whenever feasible, working with local citizens to secure for public use as identified in the *City of Edmonds Comprehensive Park and Open Space Plan*. This action is intended to meet the need for continued waterfront access.

- Edmonds Marsh environmental master plan – Produce comprehensive environmental master plan for the Edmonds Marsh. Final document will include an ecological assessment and environmental impact study with input from the public and local organizations. Plan will directly correlate with goals and recommendations included in WRIA 8 Chinook Salmon Conservation Plan.

- Edmonds Marsh channel improvements – An environmental study regarding the current state of the marsh and its impacts from storm water runoff is proposed. The study would be reviewed by federal and state agencies and routed through the master plan process as well. Following approval of the study, dredging of the channel would commence as approved by the agencies. Dredging of the existing channels would improve the hydraulic capacity of the channel. The marsh has also experienced a recent influx of freshwater cattails migrating towards the west. This is presumably resulting from the fact that the drainage channels in the wetlands have filled with silt and therefore are not allowing the salt water to flow back as far as it used to flow. Dredging may therefore enhance diversity (saltwater marsh vegetation) in the marsh as well.

- Environmental education – Various environmental education activities and programs are offered to schools, scout groups, community organizations and the general public through the Discovery Programs Office. The mission is "to provide interpretive and environmental education opportunities for the citizens of Edmonds, our school-age children, and visitors to our parks and beaches. Additionally, the program promotes stewardship of Puget Sound, its shorelines, and the surrounding watershed." Programs include Beach Ranger visits to classrooms and low-tide beach walks, Discover the Forest at Yost Park, Earth Day, beach cleanups, spring and summer nature day camps, and special events such as the Watershed Fun Fair.

- Lake Ballinger monitoring – Roughly half of Lake Ballinger lies within Edmonds city limits. Lake was at one time deemed the most polluted in the state. Monitoring efforts are performed to evaluate environmental health of the lake and the necessity for further enhancement efforts.

Transportation Projects

Two transportation projects developing in the region—the Sound Transit commuter rail improvements and the Edmonds Crossing terminal improvements—include potential restoration projects.

Sound Transit Commuter Rail
The mitigation plan for the Everett-to-Seattle Commuter Rail Project Third Easement (Herrera Environmental Consultants, Inc. 2005) contains a restoration project identified in "Table 2. Restoration Opportunities": culvert replacement on Willow Creek. The construction of a new box culvert under the railroad track at Willow Creek would convey creek and tidal flows. This action would facilitate daylighting of the creek.

Edmonds Crossing
The Edmonds Crossing project proposes several environmental restoration actions as part of the project. These actions include:

- Daylighting Willow Creek – This action would protect and restore freshwater and estuarine habitat, improve upon tidal influence and freshwater outflow, and restore the Edmonds Marsh to estuarine habitat by improving its connection to Puget Sound. The non-railroad portion of the restoration of Willow Creek is described in the Edmonds *Crossing Environmental Impact Statement* (CH2M-Hill 2004) and would consist of open channel upstream to about the salt marsh portion of Edmonds marsh. The EIS left to be worked out during the design phase some hydraulic issues that could influence potential flooding, and there are minor variations on the approach depending on which alternative is selected. In general the creek would be open from the Puget Sound shore for about 300 feet heading east. It would then go through a culvert under the railroad tracks for about 100 feet with an emergency tide gate on the east side of the tracks. It is then open to the east for another 800 feet or so. This downstream 1,200-foot reach is channelized; the plans indicate that the streambed of the upstream reach is natural.

- Removal of the existing Unocal pier at Point Edwards – This action would eliminate contamination, protect and restore nearshore habitat, and improve visual and physical access to Puget Sound.

- Removing portions of the existing ferry terminal that sits on creosote piling – This action would remove pilings, restore aquatic habitat, and minimize the potential offshore diversion of juvenile salmonids.

- Restoration of macroalgae and eelgrass beds near the existing ferry terminal that have been damaged by several decades of propeller wash – This action would connect two macroalgae and eelgrass beds that are presently divided due to ferry propeller-induced scouring.

- Install newer and larger culvert near Pine Street and State Route 104 – This action would improve stream flow as well as fish and wildlife passage.

Burlington Northern Santa Fe Railway
The BNSF railway, as discussed in the Shoreline Inventory and Characterization report, significantly influences the ecological processes and functions of the Edmonds shoreline.

When a restoration effort involving the City might benefit from the participation of BNSF, the City would make every reasonable effort to contact and engage railroad officials.

Restoration Strategies

This section discusses programmatic measures for the City designed to foster shoreline restoration and achieve a net improvement in shoreline ecological processes, functions, and habitats. With projected budget and staff limitations, the City does not anticipate leading most restoration projects or programs. However, the City's SMP represents an important vehicle for facilitating and encouraging restoration projects and programs that could be led by private and/or non-profit entities. The discussion of restoration mechanisms and strategies below highlights programmatic measures that the City could implement, as well as parallel activities that would be led by other governmental and non-governmental organizations.

Restoration Demonstration Project

A small demonstration restoration project that included a variety of techniques could be completed by the City as an example for others. The City could also identify a set of good demonstration restoration projects (which have broad public support), then actively solicit entities to implement one or more of them. Additionally, the City could work with existing programs such as the Sound Transit JARPA mitigation project or the Edmonds Crossing mitigation project to leverage funding and efforts to implement smaller scale demonstration projects.

Volunteer Coordination

Another way the City could accomplish restoration projects is by using community volunteers. Volunteers could be recruited for project implementation and monitoring and the City would provide equipment and expertise. The City would also need to fund a volunteer coordinator to organize projects, solicit various environmental groups and individual volunteers to complete the projects and partner or coordinate with other government entities on projects.

Regional Coordination

The City should continue its active role in the WRIA 8 salmon recovery planning process, an inter-governmental organization facilitating freshwater and shoreline habitat restoration for salmon recovery. The City should also look for other opportunities for involvement in regional restoration planning and implementation.

Development Opportunities

When shoreline development is proposed, the City should look for opportunities to conduct restoration in addition to minimum mitigation requirements. Development may present timing and funding opportunities for restoration that would not otherwise occur and may not be available in the future.

Mitigation practices may also allow for the "banking" of credits from restoration projects that can provide advanced mitigation credit for future unavoidable impacts of development. In certain cases, on-site mitigation opportunities are limited due to building site constraints, limited potential ecological gains, or other site-specific factors. In these instances, the City shoreline administrator may identify an off-site restoration site that could be contributed in lieu of on-site mitigation.

Development Incentives
Development incentives for restoration might include the waiving of some or all of development application fees or waiving City-required infrastructure improvement fees. This could serve to encourage developers to try to be more imaginative or innovative in their development designs to include more habitat preservation or restoration, or public access to shorelines.

Tax Relief/Fee System
The City may consider a tax/fee system to directly fund shoreline restoration measures. One possibility is to have the City work with Snohomish County to craft a preferential tax incentive through the Public Benefit Rating System administered by Snohomish County under the Open Space Taxation Act (RCW 84.34) to encourage private landowners to preserve natural shore-zone features for "open space" tax relief. Ecology has published a technical guidance document for local governments who wish to use this tool to improve landowner stewardship of natural resources. More information about this program can be found at http://www.ecy.wa.gov/biblio/99108.html. The guidance in this report provides "technically based property selection criteria designed to augment existing open space efforts with protection of key natural resource features which directly benefit the watershed. Communities can choose to use any portion, or all, of these criteria when tailoring a Public Benefit Rating System to address the specific watershed issues they are facing."

Another possibility available to the City is a 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 City's shorelines, the City could establish an account that may serve as a source of local match monies for non-profit organizations implementing restoration of the City's shorelines. This fund could be administered by the City shoreline administrator and would be supported by a levy on new shoreline 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 Aquatic Lands Enhancement Account or another source.

Shore Stewards Education
Shore Stewards are shoreline property owners and residents of waterfront communities with shared beach access who voluntarily follow 10 wildlife-friendly guidelines in caring for their beaches, bluffs, gardens and homes. These guidelines help them create and preserve a healthy shoreline environment for fish, wildlife, birds and people. This program was created to help shoreline residents feel more connected to the nearshore

ecosystem because it is found that when people understand the natural processes at work on their beaches, they may play a more active, positive role in the preservation of healthy, fish-friendly wildlife habitats.

The 10 guidelines for shoreline living are:

1. Use water wisely
2. Maintain your septic system
3. Limit pesticide and fertilizer usage
4. Manage upland water runoff
5. Encourage native plants and trees
6. Know permit procedures for shoreline development
7. Develop on bluffs with care
8. Minimize bulkheads, docks and other structures
9. Respect intertidal life
10. Preserve eelgrass beds and forage fish spawning habitat

Shore Stewards was created in 2002 with grant funding by the Island County Marine Resources Committee. The pilot program was launched on Camano Island by Washington State Beach Watchers, who wrote the resource-packed Shore Stewards Guide. Shore Stewards is now expanding to other counties of Puget Sound, including Snohomish County.

Stewardship Certification Process

The Shore Stewards program sets up guidelines for shoreline residents to preserve and enhance the shoreline environment. With a verification component, Shore Stewards could provide certification and tracking. This could be implemented as a Shoreline Tax Incentive when someone participates in the Washington Department of Fish and Wildlife (WDFW) backyard sanctuary program. Since the City recognizes that there are important opportunities to improve shoreline ecological conditions and functions through non-regulatory, volunteer actions by shoreline residents and property owners it might examine the potential for property tax breaks for shoreline property owners who are actively manage their property for habitat protection or enhancement. To encourage volunteer actions that better shoreline ecological functions and values, shoreline property owners actively participating in the WDFW backyard sanctuary program or some similar program could receive, for example, a 5% credit on their City property taxes.

Resource Directory

The City could develop a resource list for property owners that want to be involved in restoration. Examples of grant programs that could be included are:

Landowner Incentive Program (LIP)
The Landowner Incentive Program (LIP) is a competitive grant process to provide financial assistance to private individual landowners for the protection, enhancement, or restoration of habitat to benefit species-at-risk on privately owned lands. The LIP website, http://federalaid.fws.gov/lip/lip.html, has more information about the next application cycle.

Salmon Recovery Funding Board (SRFB) Grant Programs
The Salmon Recovery Funding Board (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. The City should continue making use of the SRFB grant programs through its participation in the activities of the lead entity WRIA 8.

Backyard Sanctuary Program
The City should encourage participation in WDFW wildlife backyard sanctuary program.

Project Evaluation

When a project is proposed for implementation by the City, other agency or by a private party, the restoration project should be evaluated to ensure that the project's objectives are consistent with those of this restoration plan 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.)

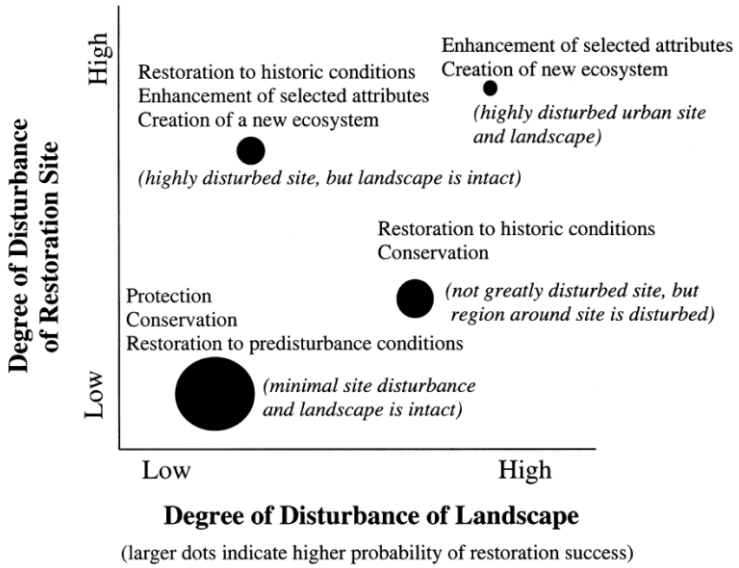


Figure 2 (Thom 2005)

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, the following nine criteria should be considered in assessing priority (the criteria are not listed in any order of importance):

a. Restoration meets the goals and objectives for shoreline restoration.

b. Restoration of processes that form and sustain habitat is generally of greater importance than direct restoration of functions.

c. Restoration avoids residual impacts to other functions or processes.

d. Projects address a known degraded condition.

e. Conditions that are progressively worsening are of greater priority.

f. Restoration has a high benefit to cost ratio.

g. Restoration is feasible, such as being located on and accessed by public property or private property that is cooperatively available for restoration. Restoration should avoid conflicts with adjacent property owners.

h. There is public support for the project.

i. The project is supported by and consistent with other restoration plans, such as that for WRIA 8.

The City shall develop a project "score card" as a tool to evaluate projects consistent with these criteria. As an example, see the project scorecard from the Lower Columbia River Estuary Partnership that uses eight principles (Johnson et al. 2003). The eight principles are:

- Size;
- Complexity;
- Accessibility;
- Connectivity of adjacent habitats;
- Potential quality includes the potential for self-maintenance;
- Substantial improvement of ecosystem functions;

- Benefit to nearshore-dependent threatened and endangered species; and

- Conformance with natural habitat structure, processes, and functions.

Monitoring and Adaptive Management

In addition to project monitoring required for individual restoration and mitigation projects, the City 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. System-wide monitoring will follow this three-pronged approach:

1. Track information using the City's GIS and 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. Number of pilings removed/replaced
    f. Fill area removed/added
    g. Vegetation retention/loss
    h. Bulkheads/armoring additions or changes

    The City 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 City should monitor shoreline conditions to determine whether both project specific and SMP overall goals are being achieved.

2. Periodically review and provide input to ongoing regional monitoring programs, such as:

    a. DNR monitoring (e.g., eelgrass distribution)
    b. Puget Sound Ambient Monitoring Program
    c. University of Washington (the Puget Sound Regional Synthesis Model)
    d. Puget Sound Nearshore Partnership

    Through this coordination with regional agencies, the City should seek to identify any major environmental changes that might be occurring.

3. Re-review status of environmental processes and functions at the time of periodic SMP updates to, at a minimum, validate the effectiveness of the SMP. Re-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 resources. If this standard is found to not be met at the time of review, Edmonds will be required to take corrective actions. The goal for restoration is to achieve a net improvement. The cumulative effect of restoration over the time between reviews should be evaluated along with an assessment of impacts of development that are not fully mitigated to determine effectiveness at achieving a net improvement to shoreline ecological resources.

To conduct a valid reassessment of the shoreline conditions every seven years, it is necessary to monitor, record and maintain key environmental metrics (quantitative measures and calculations used to assess success) to allow a comparison with baseline conditions.

As monitoring occurs, the City 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.

Evaluation of shoreline conditions, permit activity, GIS data, and 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 will be undertaken every seven years.

Uncertainty

This restoration plan proposes project opportunities to restore shoreline conditions. The restoration opportunities included are based upon a detailed inventory and analysis of shoreline conditions (Pentec 2001, Sea-Run Consulting et al. 2006). Nonetheless, exhaustive scientific information about shoreline conditions and restoration options is cost prohibitive at this stage. Additionally, many forms of restoration remain, to a degree, experimental. Monitoring must be an aspect of all restoration projects. Information from monitoring studies (local and Puget Sound-wide) will help demonstrate what restoration is most successful in the particular environment of the City's shorelines. Generally, conservation of existing natural areas is the least likely to result in failure. Alternatively, enhancement (as opposed to complete restoration of functions), has the highest degree of uncertainty.

This SMP provides a comprehensive index of restoration opportunities but does not provide the backup analyses that would allow the City to objectively compare opportunities against each other. As funding becomes available, restoration opportunities could be ranked on several criteria by expected rate and degree of success,

resources/habitats/functions that would benefit, cost, 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).

Potential Funding Sources

Potential sources of grant funding for restoration opportunities on the City's shorelines have been documented in Table 3.

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Acorn Foundation	Acorn Foundation (family foundation that supports projects dedicated to building a sustainable future for the planet and to restoring a healthy global environment)	$5,000-$10,000	**Elizabeth Wilcox** Phone: (510) 834-2995 Email: ccounsel@igc.org
Aquatic Ecosystems	Bullitt Foundation (private philanthropic foundation providing funding to nonprofit organizations working to safeguard the natural environment by promoting responsible human activities and sustainable communities in the Pacific Northwest)	Varies	**Steven Whitney** Email: swhitney@bullitt.org
Aquatic Lands Enhancement Account	Washington Department of Natural Resources	$10,000-$1 million	**Leslie Ryan** Phone: (360) 902-1064 Email: leslie.ryan@wadnr.gov
Audubon Washington	Audubon Washington	Varies	Phone: (360) 786-8020
Basinwide Restoration New Starts General Investigation	United States Army Corps of Engineers	Varies	**Bruce Sexauer** Phone: (206) 764-6959 Email: bruce.r.sexauer@usace.army.mil
Bring Back the Natives	National Fish and Wildlife Foundation	Varies	**Pam McClelland** Phone: (202) 857-0166 Email: mcclelland@nfwf.org

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Centennial Clean Water Fund	Washington State Department of Ecology		**Jeff Nejedly** Phone: (360) 407-6566 Email: jnej461@ecy.wa.gov
City Fish Passage Barrier, Stormwater and Habitat Restoration Grant Program	Washington Department of Transportation	Varies	**Cliff Hall** Phone: (360) 705-7993 Email: hallc@wsdot.wa.gov
Coastal Grant Program	United States Fish & Wildlife Service	$5,000-$50,000	**Coastal Grant Contact** Phone: (703) 358-2201
Coastal Zone Management Administration/ Implementation Awards	Washington State Department of Ecology	$19,000-$29,000	**Bev Huether** Phone: (360) 407-7254 Email: bhue461@ecy.wa.gov
Community-Based Restoration Program	National Oceanic and Atmospheric Administration	$1,000-$500,000	**Chris Doley** Phone: (301) 713-0174 Email: chris.doley@noaa.gov
Cooperative Endangered Species Conservation Fund	United States Fish & Wildlife Service	$1,000-$14,000	**Dan Morgan** Phone: (703) 358-2061 Email: Dan_Morgan@fws.gov
Doris Duke Charitable Foundation	Doris Duke Charitable Foundation	Multi-year grants that range from $125,000-$3.5 million	**Adrienne Fisher** Phone: (212) 974-7000 Email: afisher@ddcs.org

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Estuarine and Salmon Restoration Program	Washington Department of Fish and Wildlife	Varies	**Paul Cereghino** Email: ESRP@dfw.wa.gov
FishAmerica Grant Program	FishAmerica Foundation	Varies	**Johanna Laderman** Phone: (703) 519-9691 Email: jladerman@asafishing.org
Five-Star Restoration Program	Environmental Protection Agency	$5,000-$20,000 (subgrants average $10,000)	**John Pai** Phone: (202) 260-8076 Email: pai.john@epa.gov
FMC Corporation Bird and Habitat Conservation Fund	FMC Corporation and The National Fish and Wildlife Foundation	Varies	**Peter Stangel** Phone: (404) 769-7099 Email: stangel@nfwf.org
Forest Legacy Program – Washington	United States Forest Service, Washington Department of Natural Resources	Varies	**Brad Pruitt** Phone: (360) 902-1102 Email: brad.pruitt@wadnr.gov
Habitat Conservation	United States Fish and Wildlife Service Coastal Program	Varies	**Sally Valdes** Phone: 703-358-2201 Email: sally.valdes@fws.gov
Hugh and Jane Ferguson Foundation	Hugh and Jane Ferguson Foundation (family foundation which supports nonprofit organizations in the Pacific Northwest and Alaska. Dedicated to the preservation and restoration of nature, including wildlife and their required habitats)	$2,000-$7,500	**Therese Ogle** Phone: (206) 781-3472 Email: OgleFounds@aol.com

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Landowner Incentive Program	Washington State Department of Fish and Wildlife, Lands Division	Up to $5,000 for small grants; others up to $50,000	**Ginna Correa or Jeff Skriletz** Phone: (360) 902-2478 or (360) 902-8313 Website: http://wdfw.wa.gov/lands/lip
Matching Aid to Restore States Habitat (MARSH)	Ducks Unlimited	Varies	**Ducks Unlimited** Phone: (916) 852-2000 Email: conserv@ducks.org
Migratory Bird Conservancy	National Fish and Wildlife Foundation	$10,000-$60,000	**Peter Stangel** Phone: (404) 769-7099 Email: stangel@nfwf.org
Native Plant Conservation Initiative	Bureau of Land Management, Forest Service, Fish and Wildlife Service, and National Park Service	$10,000-$50,000	**Caroline Cremer** Phone: (202) 857-0166 Email: caroline.cremer@nfwf.org
Nonpoint Source Implementation Grant (319) Program	Environmental Protection Agency, Washington State Department of Ecology	Varies	**Aleciea Tilley** Email: atill461@ecy.wa.gov
North American Wetlands Conservation Act Grants Program	United States Fish & Wildlife Service	$100,000-$1 million (small grants capped at $50,000)	**Bettina Sparrowe** Phone: (703) 358-1784 Email: r9arw_nawwo@fws.gov
Pacific Grassroots Salmon Initiative	National Fish & Wildlife Foundation	$5,000-$100,000	**Anna Weinstein** Phone: (415) 778-0999 Email: weinstein@nfwf.org

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Planning/Technical Assistance Program	Bureau of Reclamation	Varies	**Dave Nelson** Phone: (503) 872-2801 Email: drnelson@pn.usbr.gov
Puget Sound Program	United States Fish & Wildlife Service	Varies	**Mary Mahaffy** Phone: (360) 753-7763 Email: mary_mahaffy@fws.gov
Puget Sound Wetland Restoration Program	Washington State Department of Ecology	Technical assistance	**Richard Gersib** Phone: (360) 407-7259 Email: rger461@ecy.wa.gov
Regional Fisheries Enhancement Groups	Washington State Department of Fish and Wildlife	$10,000-$40,000	**Kristi Lynett** Phone: (360) 902-2237 Email: lynetksl@dfw.wa.gov
Salmon Recovery Funding Board	Interagency Committee for Outdoor Recreation	Varies	**Rollie Geppert** Phone: (360) 902-2636 Email: Salmon@iac.wa.gov
Section 204: Environmental Restoration Projects in Connection with Dredging	United States Army Corps of Engineers	75% of total project modification costs	**Mona Thomason** Phone: (206) 764-3600 Email: mona.j.thomason@usace.army.mil
Section 206: Aquatic Ecosystem Restoration Program	United States Army Corps of Engineers	65% of total project implementation cost	**Martin Hudson** Phone: (503) 808-4703 Email: martin.hudson@usace.army.mil

Table 3: Funding Opportunities			
Grant Name	**Allocating Entity**	**Grant Size**	**Contact**
Transportation Environmental Research Program (TERP)	Federal Highway Administration	$20,000-$50,000	**Michael Koontz** Phone: 410-962-4586 Email: michael.koontz@fhwa.dot.gov
Transportation Equity Act for the 21st Century (TEA-21)	Washington Department of Transportation	Varies	**Shari Schaftlein** Phone: (360) 705-7446 Email: sschaft@wsdot.wa.gov
Washington State Ecosystems Conservation Program	United States Fish & Wildlife Service	$500-$26,000	**Rich Carlson** Phone: (360) 753-5829 Email: rich_carlson@fws.gov
Wetland Protection, Restoration, and Stewardship Discretionary Funding	Environmental Protection Agency	$5,000-$20,000	**Christina Miller** Phone: (206) 553-6512 Email: miller.christina@epa.gov

Restoration Glossary

Abiotic: Nonliving, such as environmental factors including light, temperature, and atmospheric gases.

Biotic: Produced or caused by living organisms or having to do with life or living organisms.

Disturbance: Any relatively discrete event in time and space that disrupts or alters some portion of an ecosystem. Disturbances are important factors that affect the character and state of ecosystems. Examples from nearshore ecosystems include:

- Winter storms, which move large quantities of organic (e.g., logs) and inorganic (e.g., sand) materials that can reshape beaches.
- Landslides, which deposit sand and gravel from bluffs onto beaches and into nearshore marine waters.
- Shifts in ocean currents, which can result in changes in nutrient availability, water temperature, primary production, and food web relationships.

Ecosystem: Community of organisms and their physical and chemical environment interacting as an ecological unit.

Ecosystem process: Any interaction among physical, chemical and biological elements of an ecosystem that involves a change in character or state of that system. In nearshore ecosystems, some examples include the following:

- Changes in chemical composition of the water or sediment that occur as part of nutrient uptake and transformation.
- Movement and mixing of fresh and salt water through an estuarine delta.
- Sediment transport along the shoreline.

Ecosystem recovery: Taking actions that allow an ecosystem to generate and maintain processes that result in desirable ecosystem structure (e.g., habitats for valued species) and functions (e.g., forage fish production).

Habitat: The physical, chemical and biological characteristics of a specific spatial unit or geographic area of the environment occupied by specific biota (e.g., we refer to "Pacific sand lance habitat" and "sand beach ecosystems"). To define habitat, it is necessary to know the spatial extent in the ecosystem of a specific habitat for the plant or animal considered, and the attributes of the habitat that support growth and survival of that organism.

Nearshore: The estuarine/delta, marine shoreline and areas of shallow water from the top of the coastal bank or bluffs to the water at a depth of about 30 meters below Mean Lower Low Water. (This is the average depth limit of light penetration.) This zone incorporates those geological and ecological processes, such as sediment movement, freshwater inputs, and subtidal light penetration, which are key to determining the distribution and condition of aquatic habitats. By this definition, the nearshore extends landward into the tidally influenced freshwater heads of estuaries and coastal streams.

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City of Edmonds

Shoreline Master Program Update

Cumulative Impacts Analysis

1. Introduction

The Washington State Shoreline Master Program Guidelines state that local Shoreline Master Programs (SMPs) are required to "evaluate and consider" the cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions promoted by the Shoreline Management Act (SMA). The guidelines further state that "to ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts among development opportunities."

Specifically, the guidelines state that the evaluation of cumulative impacts should consider:

i. current circumstances affecting the shorelines and relevant natural processes;
ii. reasonably foreseeable future development and use of the shoreline; and
iii. beneficial effects of any established regulatory programs under other local, state, and federal laws.

Additionally, the guidelines indicate that an appropriate cumulative impact analysis (CIA) will also consider the effects of unregulated activities and development exempt from permitting on shoreline ecological functions and other shoreline functions and uses. Also, the guidelines indicate that particular attention should be paid to policies and regulations concerned with the platting or subdividing of property, laying of utilities, and mapping of streets that establish a pattern for future development.

Finally, the guidelines note that methods for determining reasonably foreseeable future development may vary depending on local circumstances, including demographic and economic characteristics as well as the nature and extent of shorelines.

2. Current Circumstances Affecting the Shorelines and Relevant Natural Processes

The City of Edmonds (the City) Shoreline Inventory and Characterization describes in-depth the current circumstances affecting the City's shorelines and relevant natural processes. For planning purposes, that document divided up the City's shorelines into four distinct reaches (Figure 2 – Shoreline Planning Segments & Planning reaches form the Shoreline Inventory and Characterization is included with this document for ease of use). The first three reaches are continuous and together cover the City's shoreline situated along Puget Sound. The fourth reach consists of the City's shoreline along Lake Ballinger. This section begins with a brief description of each of those four reaches and reproduces the list of biological functions and features that have been impaired in each

reach as found in the Shoreline Inventory and Characterization (section 8). Then, a summary discussion regarding the ecological functions at risk is provided.

Reach Descriptions and Impaired Biological Functions and Features

Reach 1
Reach 1 encompasses the section of the City's shoreline along Puget Sound that begins at the City's northern limits (in the Lund's Gulch area) and extends south to Caspers Street. This reach is approximately 19,351 feet in length, and therefore makes up approximately 64% of the City's shoreline jurisdiction. A defining feature of this reach is the pair of Burlington Northern Santa Fe (BNSF) railroad tracks that run parallel to the shoreline in the upper portion of the beach. Because of the tracks, the entire shoreline in this reach is armored with rock walls. Waterward of the tracks, the beach is generally narrow, steep, and made up of coarse substrate. Landward of the tracks, the land generally slopes upward before flattening out. Several creeks flow down these slopes before flowing into Puget Sound via culverts. This reach has little riparian vegetation.

As mentioned, a primary use of the shoreline in Reach 1 is rail transportation. The other principal land use in this reach is single-family housing, which is situated on the uplands above the beach.

In the Shoreline Inventory and Characterization (section 8.1), the following biological functions or features of this shoreline reach are listed as being impaired:

- Fish and wildlife accessibility between the marine nearshore and the terrestrial backshore: blocked by the BNSF railroad bed and restricted to a few small culverts
- Nutrient transport and cycling: reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore, and further reduced by restricting the estuarine transitional area to small-diameter culverts that impound creek flows and block detritus and woody debris from moving between the ravine and the beach
- Estuarine and creek-mouth habitat area: significantly reduced, and habitat function, significantly impaired
- Marine riparian vegetation: eliminated by railroad fill or cleared for right-of-way maintenance and upland residential views
- Beach substrate composition and slope: coarsened and steepened by erosion and lack of replenishment from upland or aquatic sources
- Longshore drift: altered by in-water structures (seawalls, bulkheads, culverts, and a pier) that prevent sediment from naturally recruiting to the beach

For more detailed information on the current circumstances of Reach 1, see the Shoreline Inventory and Characterization (sections 7.1-7.5).

Reach 2
Reach 2 consists of the section of the City's shoreline along Puget Sound to the south of Caspers Street and to the north of Main Street. The length of this section of shoreline is approximately 2,253 feet, and therefore comprises roughly 7% of the City's shoreline jurisdiction. The BNSF tracks continue to be a defining feature in this reach. Because of their presence, most of this reach is armored with rock walls. The slope landward of the tracks is generally more moderate than in Reach 1. No streams are found in this reach. Riparian vegetation is scant throughout the reach.

As in Reach 1, the major uses of this reach are rail transportation and single-family housing. Another significant use of the shoreline in this reach is public recreation, due to the presence of Brackett's Landing North (Edmonds Underwater Park).

In the Shoreline Inventory and Characterization (section 8.2), the following biological functions or features of this shoreline reach are listed as being impaired:

- Fish and wildlife accessibility between the marine nearshore and the terrestrial backshore: blocked by the BNSF railroad bed and urban development
- Upper intertidal and adjacent terrestrial habitat: degraded or lost due to urban development
- Nutrient transport and cycling: reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore
- Marine riparian vegetation: eliminated by railroad fill or cleared for right-of-way maintenance and upland residential views
- Longshore drift: altered by in-water structures (Washington State Ferries pier and seawall, groin at Brackett's Landing North) that prevent sediment from naturally recruiting to the beach

For more in-depth information on the current circumstances of Reach 2, see the Shoreline Inventory and Characterization (sections 7.5-7.6).

Reach 3
Reach 3 extends south of Main Street to the City's southern limits (at Point Edwards). It is approximately 4,716 feet in length, and therefore includes approximately 16% of the City's shoreline jurisdiction. Major features in this reach include the Washington State Ferries pier, the Port of Edmonds Marina, and the Unocal pier. The shoreline in this reach is mostly armored. The transition from the shore to uplands is marked by little or no bank. Some creeks and a major wetland (Edmonds Marsh) occur in this reach. Little riparian vegetation is present.

Land uses in this reach are more varied than in Reaches 1 and 2. Land uses include parks, transportation, commercial, and natural resource production.

In the Shoreline Inventory and Characterization (section 8.3), the following biological functions or features of this shoreline reach are listed as being impaired:

- Fish and wildlife accessibility between the marine nearshore, Edmonds Marsh, and the terrestrial backshore: blocked by the BNSF railroad bed, Edmonds Marina, and commercial waterfront development, restricted to a paved corridor and culvert between Edmonds Marsh and South Marina Park
- Nutrient transport and cycling: significantly reduced by clearing vegetation from the backshore and bulkheading/filling of the upper intertidal zone and backshore, and further reduced by restricting the estuarine transitional area to a small-diameter culvert and tide gate on Willow Creek that impounds creek flows and blocks detritus and woody debris between the marsh and the beach
- Estuarine and creek-mouth habitat area: significantly altered and reduced, and habitat function, significantly impaired
- Marine riparian vegetation: eliminated by port development, commercial development, and railroad fill, and cleared for right-of-way maintenance and upland residential/commercial views
- Beach substrate composition and slope: coarsened and steepened by erosion and lack of replenishment from upland or aquatic sources
- Longshore drift: altered by in-water structures (seawalls, bulkheads, culverts, and the former Unocal pier) that prevent sediment from naturally recruiting to the beach

For more in-depth information on the current circumstances of Reach 3, see the Shoreline Inventory and Characterization (sections 7.6-7.8).

Reach 4

Reach 4 consists of the City's shoreline along Lake Ballinger, which is located on the western and southern sides of the lake. The length of this reach is around 3,947 feet, and therefore constitutes approximately 13% of the City's shoreline jurisdiction.

Land use in Reach 4 consists of single-family housing. Nearly all the houses in this reach have an accompanying dock or pier. Riparian vegetation consists almost entirely of lawns and ornamental plantings.

In the Shoreline Inventory and Characterization (section 8.4), the following biological functions or features of this shoreline reach are listed as being impaired:

- Hydrologic function of the lake outlet, which is currently managed as a stormwater catchbasin control

- Hyporheic function, which has reached its capacity as a nutrient sink for nitrogen and phosphorus

- Nutrient transport and cycling, significantly reduced by increasing sediment and nutrient loading from watershed development, stormwater runoff, and former septic/sewage inputs; replacing native wetland and riparian vegetation with ornamental vegetation (e.g., grass) and adding bulkheads, docks, and piers to the shoreline

- Lake inlet and outlet deltas, significantly altered or eliminated by control structures

- Fish and wildlife accessibility between the lake and McAleer Creek, blocked by the outlet control structure

- Fish and wildlife biological communities, significantly altered by habitat alteration (i.e., conversion of a wetland into a lake) and introduction of non-native species (e.g., catfish, yellow perch, and largemouth bass)

- Lake sediment, significantly altered by substantial sediment inputs from urban development within the Hall Creek and Lake Ballinger drainage sub-basins

For more in-depth information on the current circumstances of Reach 4, see the Shoreline Inventory and Characterization (section 7.9).

Summary Discussion – Ecological Functions at Risk

As discussed above, several functions and features of the City's shorelines are impaired. This section briefly summarizes the at risk ecological functions of the City's shorelines.

Puget Sound shorelines (in reaches 1, 2, & 3)

- Sedimentation – The sedimentation processes of these shorelines are significantly degraded. The presence of the railroad bed prevents upland sediment from reaching the beach and resulting in its coarse substrate and steep slope. Also, in-water structures prevent longshore drift sediment from recruiting to the beach.

- Habitat provision – This function of the shoreline is diminished due to a loss of habitat related to construction of the railroad bed, vegetation clearing, and uplands development. Moreover, access between the marine nearshore and the terrestrial backshore is impaired due to the presence of the railroad bed, and for aquatic organisms, the presence of small artificial connectors.

- Nutrient transport and cycling – This function is degraded due to the clearing of backshore vegetation, bulkheading/filling of the upper intertidal zone and backshore, and restricted estuarine transitional areas.

- Woody debris production and distribution – Production is degraded due to vegetation clearing and uplands development. Distribution is degraded due to the bulkheading/filling of the upper intertidal zone and backshore, and the limited estuarine transitional areas.

Edmonds Marsh (in reach 3)

- Habitat provision – This function of the Edmonds Marsh is diminished due to prior wetland filling and creek re-channelization. The value of the remaining habitat is diminished because of the reduced access resulting from the presence of the railroad bed, Edmonds Marina, and commercial waterfront development in between the marsh and the shoreline, as well as from the restriction of aquatic access to a single artificial culvert.

- Water quality function – Altered due to the presence of tide gate, which causes the marsh to be brackish in the winter and saline in the summer (when the tide gate is opened).

- Nutrient transport and cycling – Reduced due to the restricted estuarine transitional area between the marsh and Puget Sound.

- Woody debris production and distribution – Reduced due to the restricted estuarine transitional area between the marsh and Puget Sound.

Lake Ballinger (reach 4)

- Nutrient transport and cycling – Significantly reduced by sediment and nutrient loading, stormwater runoff, former wastewater inputs, vegetation alteration, and the presence of artificial shoreline structures.

- Hydrological function – Significantly altered by the stormwater control system.

- Habitat provision – Significantly altered by the stormwater control system, which has converted the former wetland into a lake, altered or eliminated inlet and outlet deltas, and blocked fish passage between the lake and McAleer Creek. Habitat has also been altered by the introduction of non-native species.

- Water quality function – Reduced by sediment, contaminant, and nutrient inputs.

3. Reasonably Forseeable Future Development and Use of the Shoreline

In this section, the reasonably foreseeable future development and use in each of the four reaches is described. Next, some additional remarks regarding the reasonably foreseeable future development and use in the City are given. Then, the cumulative impacts that might potentially result from actions related to the reasonably foreseeable development and other shoreline alterations are presented in a tabular format. The table lists the

alterations with potential cumulative impacts, lists the ecological functions and processes at risk, gives the shoreline reaches at risk, provides mitigating draft SMP policies and regulations, and finally provides some possible non-regulatory mitigation measures. In the final part of this section is a discussion of the modifications made to regulations as a result of this CIA.

Reasonably Foreseeable Future Development and Use

Reach 1
As mentioned in the previous section, land use in Reach 1 consists primarily of the BNSF railway and the single-family housing landward of the tracks. Due to the failing condition of the railroad armoring in many locations, it is likely that portions of it may be repaired in the future.

Regarding the single-family housing in the uplands, the 2006 City of Edmonds Comprehensive Plan designates the land in this area as Single Family—Resource. The corresponding zoning is either Single Family, 12,000 square foot lots or Single Family, 20,000 square foot lots. While it is possible that a minimal number of the 190 or so existing residential parcels in the shoreline jurisdiction might be further subdivided, the comprehensive plan designation and zoning regulations would prevent any dramatic increase in development intensity. It is also worth mentioning that BNSF ownership and use of the railroad right-of way precludes the construction of residential docks in this area and negates the need for these residences to construct their own bulkheads. Activities related to vegetation (such as clearing) would be expected to continue on these residential parcels.

Development in the far north of the City, in the Lund's Creek area, is prevented by the Meadowdale Beach County Park. Although this park is currently zoned as Single Family, 20,000 square foot lots, this land is designated as Park in the City's comprehensive plan.

Waterward of the railroad tracks, a small section of land where the dilapidated Laebugten's Wharf now stands is designated in the comprehensive plan as Mixed Use Commercial and correspondingly zoned Commercial Waterfront. In the future, it is likely that Laebugten's Wharf will be removed. However, it is unlikely that any new structures would be permitted at this site. Additionally, waterward of the railroad tracks several parcels have been platted. However, these parcels are non-buildable.

Reach 2
As in Reach 1, the BNSF railway is a major feature of this reach. To accommodate the future expansion of commuter trains operated by Sound Transit, BNSF plans to construct a second railroad track in the parts of this reach that feature just one track. Also, due to the failing condition of the railroad armoring in a few locations, it is possible that portions of it may be repaired.

The bulk of the developable parcels in Reach 2 are designated as Single Family—Urban 1 in the comprehensive plan. These parcels are correspondingly zoned Single Family,

6,000 square foot lots. These lots are virtually built out. Development activity would therefore consist primarily of structure remodel or replacement. As was the case with the single-family residences in reach 1, BNSF ownership and use of the railroad right-of way precludes the construction of residential docks in this area and negates the need for these residences to construct their own bulkheads. Activities related to vegetation (such as clearing) would be expected to continue on these residential parcels.

A small number of parcels in Reach 2 are designated by the comprehensive plan as Downtown Mixed Commercial and Downtown Residence—Office and zoned Downtown Mixed Commercial and Office—Residential, respectively. There parcels are already are for the most part already intensely developed and future development will largely be restricted to structure remodel or replacement.

Waterward of the railroad, the area around Brackett's Landing North is designated by the comprehensive plan as Park/Open Space and zoned Public Use. Thus, development in this area is precluded. And while a small portion of the shoreline waterward of the tracks is platted and zoned Waterfront Single Family, 12,000 square foot lots, this is not a development concern because the land is non-buildable.

Reach 3
Reach 3 comprehensive plan designations include Park/Open Space, Shoreline Commercial, Master Plan Development, and Multi Family—High Density. These areas are correspondingly zoned Public Use, Open Space, Commercial Waterfront, Master Plan Hillside Mixed Use, and Multi Family, 2,400 square feet of lot area per unit.

This reach will likely see intense development and redevelopment activity in the near future. One of the major sources of this development activity will be the Edmonds Crossing project. This project is an effort to provide a long-term solution to current operation and safety conflicts in the downtown area for ferry, rail, automobile, bus, and pedestrian transportation modes. Part of this effort is the proposed move of the existing ferry terminal to a location further south and its conversion into a multimodal transportation complex. State Route 104 would be rerouted to serve the new complex.

Several other development actions may occur in this reach as well. As was the case in Reach 2, BNSF is planning to install a second railroad track in areas where only one track currently exists. Also, the Port of Edmonds is considering several projects involving the construction, renovation, and removal of buildings and facilities. Such development projects are likely to in turn spur other new development projects in the vicinity.

Reach 4
As already mentioned, land use in Reach 4 consists of single-family housing and associated infrastructure. The City's comprehensive plan designates the 49 or so parcels in this reach as Single Family—Resource. All these parcels are correspondingly zoned Waterfront Single Family, 12,000 square foot lots. These parcels are virtually built out. Development activity in this reach would be limited to the remodel or replacement of

existing houses and ancillary structures (such as docks). Activities related to vegetation (such as clearing) would be expected to continue on these residential parcels.

Additional Remarks on Reasonably Foreseeable Future Development and Use

On activities exempt from shoreline permits
Some of the reasonably foreseeable development activity in the City would be exempt from shoreline permits. This is because the SMA exempts from shoreline permitting several development actions including: single-family residences, normal protective bulkheads of single-family residences, normal maintenance and repair of existing structures, salt water docks worth less than $2,500, fresh water docks worth less than $10,000, and emergency construction.

However, because of a variety of constraints, not much development of entirely new structures exempt from shoreline permits is expected. The most significant constraint is the BNSF railway, which precludes many of the parcels along the Puget Sound shoreline from developing docks or bulkheads.

Therefore, it is likely that most of the exempt development activity would be limited to work related to the repair or replacement of existing structures. However, development activity related to existing structures is not expected to produce adverse cumulative impacts due to the beneficial effects of other regulatory programs (see section 4), such as the critical areas code.

As an additional note on exempt shoreline development activities, of growing concern in the Puget Sound area is the increased intensity of use of residential lots (through the remodel and replacement of existing residences). However, in the City of Edmonds, such increased intensity of use is not currently foreseeable. This is because development standards in the shoreline area have not recently been amended. For example, maximum lot coverage (an important determinant of impervious surface area) remains unchanged at 35%. Moreover, at least several of the houses in the shoreline jurisdiction are located in portions of parcels outside of the shoreline jurisdiction.

In sum, exempt shoreline development is expected to be minimal, and whatever activity might occur will be subject to other regulations. Therefore, development activities exempt from shoreline permits are not expected to result in a net loss of shoreline ecological function.

On the establishment of future development patterns
As noted in the beginning of this document, the Washington State SMP Guidelines indicate that particular attention should be paid to policies and regulations concerned with the platting or subdividing of property, laying of utilities, and mapping of streets that establish a pattern for future development. Of these factors, as discussed above, the subdivision of property will likely be the only factor contributing to the future development pattern in the shoreline area. However, any subdivision activity is expected

to be minimal, and therefore should not result any development pattern markedly different from the existing pattern.

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
Alteration: Placement/Replacement of shoreline armoring Potential Cumulative Impacts: Loss of beach areas, impoundment of sediment, modification of groundwater regimes, lowering of beach elevations, concentration and redirection of wave energy to adjacent areas, alteration of substrate, loss of riparian vegetation	Process: Wave action Functions: Sediment erosion, deposition, and transport; turn over of thermal stratification Process: Large woody debris production and distribution Functions: Shoreline stabilization, habitat provision, water flow pattern complexity, food production Process: Sedimentation Functions: Land formation, provision of nutrients and	Puget Sound shorelines (reaches 1, 2, & 3) Lake Ballinger (reach 4)	Policies: *Shoreline use element:* 24.20.050.C.15 The rehabilitation of "natural systems" (e.g. the improvement in water quality, removal of beach obstructions, etc.) should be encouraged when opportune. *Conservation element:* 24.20.060.C.2 Development in shoreline areas should be managed so that any adverse impacts on aquatic and land plants and animals are avoided or mitigated to result in no net loss of ecological function. *Restoration element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *General Modification Policies* 24.50.010.A.1 Locate and design all new development in a manner that prevents or minimizes the need for shoreline modifications. 24.50.010.A.2 Ensure that shoreline modification, where permitted, are as	Encourage the use of low impact development techniques.

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
	minerals Process: Nutrient Transport and Cycling Functions: Provision of nutrients, provision of water quality		compatible as possible with natural shoreline processes and character. 24.50.010.A.3 Regulate shoreline modifications to assure that modifications individually and cumulatively do not result in a net loss of ecological functions. Mitigation may be required to meet the no net loss standard. 24.50.010.A.4 Give preference to those types of shoreline modifications that have a less impact on ecological functions and require mitigation of identified impacts resulting from shoreline modifications. 24.50.010.A.5 Incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes in the placement and design of shoreline modifications. To avoid and reduce ecological impacts, the mitigation sequence in ECDC 24.40.020.E.3 shall be utilized. *Shoreline Stabilization Policies*: 24.50.020.B.5 Consider the effect that proposed shore defense works have on ecosystem-wide processes (e.g. sand movement) and functions (e.g. habitat).	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			Make provisions to avoid and minimize impacts where feasible. Mitigation must be provided to achieve no net loss. Regulations: *Flood Hazard Reduction:* 24.40.030.B.4 New structural flood control works shall be placed landward of associated wetlands and designated habitat conservation areas, except for works that improve ecological functions, such as wetland restoration. *General Shoreline Modification Regulations:* 24.50.010.B.2 Structural shoreline modification measures shall be permitted only if nonstructural measures are unable to achieve the same purpose. *Shoreline Stabilization Regulations*: 24.50.020.C.2 Structural stabilization methods shall be permitted when necessary for reconfiguration of the shoreline for mitigation or enhancement purposes. 24.50.020.C.3 New development that would require shoreline stabilization which causes	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			significant negative impacts to adjacent or down-current properties and shoreline areas should not be allowed. 24.50.020.C.4 New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the normal, useful life of the structure, as demonstrated by a geotechnical analysis. 24.50.020.C.5.a – 5.d New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner. 5.a.ii The erosion control structure will not result in a net loss of shoreline ecological functions. 5.b.ii The erosion control structure will not result in a net loss of shoreline ecological functions. 5.d To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW…	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			Shoreline Stabilization Siting and Design Regulations: ECDC 24.50.020.D.1.a Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.	
Alteration: Placement/Replacement of overwater structures Potential Cumulative Impacts: Changed levels of light, shoreline energy regimes, substrate type and stability, and water quality can result in alterations in the presence, abundance, and diversity of plant and animal species in the nearshore area	Process: Light transmittal Functions: Water temperature moderation, energy source for photosynthesis, visibility Process: Wave action Functions: Sediment erosion, deposition, and transport; turn over	Puget Sound shorelines (reaches 1 & 3) Lake Ballinger Nearshore and freshwater aquatic habitat	Policies: *Shoreline use element:* 24.20.050.*C.4* Overwater structures other than ferry terminal passenger shelters, docks, piers, walkways, breakwaters and other similar structures should be prohibited with the exception of minor appurtenant buildings, buoys, divers resting floats, and art sculpture. *Conservation element:* 24.20.060.C.2 Development in shoreline areas should be managed so that any adverse impacts on aquatic and land plants and animals are avoided or mitigated to result in no net loss	Encourage the use of low impact development techniques.

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
	of thermal stratification		of ecological function. *Restoration element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *Moorage Piers, Docks and Floats Polices*: 24.50.030.B.4…shall be designed and constructed to avoid or to minimize and mitigate the impacts to ecological functions, critical areas resources such as eelgrass beds and fish habitats and processes such as currents and littoral drift. *Boating Facilities Policies:* 24.60.020.B.4 Boating facilities shall be located, designed, constructed and operated in a manner that will minimize damage to shoreline processes and functions. When impacts cannot be avoided, impacts must be mitigated to assure no net loss of ecological function necessary to sustain shoreline resources.	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			Regulations: *Moorage Piers, Docks, and Floats Regulations:* 24.50.030.C.1.b Covered moorage is prohibited. 24.50.030.C.3.a – 3.d Regulations to minimize impacts or nearshore areas and avoid reduction in ambient light level. 24.50.030.C.5 Prohibited substances. *Boating Facilities Regulations:* 24.60.020.C.1.b Covered moorage is prohibited 24.60.020.C.2 Marinas or launch ramps shall not be permitted within the following marine shoreline habitats because of their scarcity, biological productivity and sensitivity unless no alternative location is feasible, the project would not result in a net loss of shoreline ecological functions… 24.60.020.C.9 Prohibited substances.	
Alteration:	Process:	Puget Sound	Policies:	Public outreach

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
Vegetation clearing <u>Potential Cumulative Impacts</u>: Losses in production and delivery of woody debris to shoreline, decreased amount and quality of shoreline habitat, decreased water quality, altered water temperatures, erosion, losses of favorable microclimates	Large woody debris production and distribution <u>Functions</u>: Shoreline stabilization, habitat provision, water flow pattern complexity, food production <u>Process</u>: Light transmittal <u>Functions</u>: Water temperature moderation, energy source for photosynthesis, visibility <u>Process</u>: Sedimentation <u>Functions</u>: Land formation, provision of nutrients and minerals	shorelines (reaches 1, 2, & 3) Lake Ballinger	*Shoreline use element:* 24.20.050.C.15 The rehabilitation of "natural systems" (e.g. the improvement in water quality, removal of beach obstructions, etc.) should be encouraged when opportune. *Views and Aesthetics element:* 24.20.090.C.3 Public views from the shoreline upland areas should be enhanced and preserved. Enhancement of views should not be construed to mean excessive removal of vegetation which partially impairs views. *Conservation element*: 24.20.060.C.2 Development in shoreline areas should be managed so that any adverse impacts on aquatic and land plants and animals are avoided or mitigated to result in no net loss of ecological function. *Restoration element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *Shoreline Vegetation Conservation:* 24.40.050.A.3 Where new developments	and education on shorelines. Restore degraded shoreline areas with native riparian vegetation where possible.

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
	Process: Nutrient Transport and Cycling Functions: Provision of nutrients, provision of water quality		and/or uses are proposed, native shoreline vegetation should be conserved to maintain shoreline ecological functions and/or processes and mitigate the direct, indirect and/or cumulative impacts of shoreline development… Regulations: *Shoreline Vegetation Conservation Regulations:* 24.40.050.B.1.d Alteration of native shoreline vegetation only allowed when Restoration activities conducted in accordance with an approved plan designed to improve ecological functions and values. 24.40.050.B.2 The removal or disturbance of existing vegetation and the alteration of topography shall be limited to the minimum necessary to accommodate approved shoreline development.	
Alteration: Increased impervious surface area	Process: Hydrologic cycle	Puget Sound shorelines (reaches 1, 2, & 3)	Policies: *Circulation element:* 24.20.040.C.2 Where new streets are needed to	Encourage the use of low impact development techniques.

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
Potential Cumulative Impacts: Low dissolved oxygen in water bodies; increased contaminants, nutrients, and toxics in water; scouring of land from increased runoff volume, increased erosion	Functions: Water, nutrient, pathogen, sediment transport, and water quality Process: Tidal action Functions: Salinity, water flow patterns, water volume	Lake Ballinger (reach 4) Edmonds Marsh	serve uses in the shoreline area, these streets should be the minimum size necessary to provide safe and efficient vehicular, pedestrian, and bicycle access, including access for emergency vehicles, to the properties to be served. *Conservation element*: 24.20.060.C.2 Development in shoreline areas should be managed so that any adverse impacts on aquatic and land plants and animals are avoided or mitigated to result in no net loss of ecological function. *Restoration element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *Restoration element:* 24.20.110.C.8 Manage and treat stormwater to improve water quality, decrease peak flow events, and increase implementation of low impact development (LID) practices. *Transportation and Parking Policies:* 24.60.080.B.4. Avoid unnecessary duplication	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			or roads by making use of existing roads where practicable. *Utilities:* 24.60.090.B 2. New public or private utilities should be located inland from the land/water interface, preferably out of the shoreline jurisdiction, unless this location is reasonably necessary for the efficient operation of the utility facility or service. 24.60.090.B.6. Utilities should be located in existing rights-of-way and corridors whenever feasible. 24.60.090.B.7. Utilities serving new development should be located underground, wherever feasible. <u>Regulations</u>: *Water Quality, Stormwater, and Nonpoint pollution regulations:* 24.40.060.B.4 New development is encouraged to employ Low Impact Development principles and practices such as setbacks, retaining land cover, and reducing impervious areas, and use special caution to avoid infiltration of stormwater in shoreline	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			areas along marine bluffs *Transportation and Parking Regulations:* 24.60.080.C.1 Transportation and parking facilities shall be planned, located, and designed so that 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. 24.60.080.C.8 Parking layouts must be designed efficiently to use the minimum amount of space necessary to provide the required parking and safe and reasonable access… 24.60.080.C.9. Transportation facilities shall be constructed of materials that will preclude or minimize adverse affects on water quality or aquatic plants and animals over the long term… Elements within or over water shall be constructed of materials approved by applicable state agencies for use in water for both submerged portions and other components to avoid discharge of pollutants from splash, rain or runoff. No part of a	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			transportation facility that may come in contact with the water may be treated with or consist, in whole or in part, of creosote, oil based paints, toxic chemicals or other substances that would be harmful to the aquatic environment, unless specifically permitted and authorized by appropriate state and federal regulatory agencies. *Recreational Development – Shoreline Area Regulations:* 24.60.060.D.10.a Structures will not result in more than ten percent (10%) building coverage or 4,000 square feet, whichever is greater and total impervious surface will not exceed twenty percent (20%), or 10,000 square feet, whichever is greater. *Utilities Regulations:* 24.60.090.C.2 Except where infeasible, all utility lines, pipes, conduits, meters, vaults and similar infrastructures and appurtenances must be placed underground consistent with the standards of the serving utility. 24.60.090.C.4 Utilities shall be located	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			adjacent to or within existing utility or circulation easements or rights-of-way whenever feasible. Joint use of rights-of-way and corridors is encouraged.	
Alteration: Increased vehicular traffic Potential Cumulative Impacts: Decreased water quality, decreased air quality	Process: Water quality maintenance Functions: Provision of water quality Process: Air quality maintenance Functions: Provision of air quality	Puget Sound shorelines (reaches 2 & 3) Edmonds Marsh	Policies: *Circulation element:* 24.20.040.C.2 Whenever practicable, safe pedestrian and bicycle movement on and off roadways in the shoreline area should be encouraged as a means of personal transportation and recreation 24.20.040.C.4 Public waterborne transportation linked to public and private forms of ground transportation should be encouraged to minimize auto usage, and to eliminate barriers between public waterborne transportation and ground transportation in conformance with the Americans with Disabilities Act. 24.20.040.C.7 Public transit systems should be linked to the urban waterfront. *Transportation and Parking Policies:* 24.60.080.B.2 Transportation system plans and	Public outreach and education on shorelines. Encourage vehicles waiting at the ferry terminal to turn off engines.

CUMULATIVE IMPACTS ANALYSIS TABLE				
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			transportation projects within shorelines should provide safe travel ways for non-motorized traffic such as pedestrians and bicyclists. Space for such uses should be required along roads on shorelines, where appropriate, and should be considered when rights-of-way are being vacated. <u>Regulations</u>: *Transportation and Parking Regulations:* 24.60.080.C.1 Transportation and parking facilities shall be planned, located, and designed so that 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. 24.60.080.C.5 Road routes shall make provisions for pedestrian, bicycle, and other non-motorized modes of travel whenever feasible.	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
Alteration: Dredging Potential Cumulative Impacts: Habitat disruption, increased water turbidity, altered hydrology	Process: Sedimentation Functions: Land formation, provision of nutrients and minerals Process: Marine and freshwater habitat Functions: Water quality	Puget Sound shorelines (reaches 1, 2, & 3) Lake Ballinger (reach 4)	Policies: *Restoration element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *Aquatic Environment:* 24.30.030.D.11 Dredging and dredge material disposal should be limited to the minimum amount necessary. Dredging operations should minimize impacts to other shoreline uses and functions. *Dredging and dredge material policies:* 24.50.060.B.1 Site and design new development to avoid or, if that is not possible, to minimize the need for new and maintenance dredging. 24.50.060.B.2 Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of ecological functions. 24.50.060.B.4 Plan and conduct dredge and	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			dredge disposal operations in a manner that avoids or minimizes interference with navigation and significant ecological impacts. Impacts which cannot be avoided should be mitigated in a manner that assures no net loss of shoreline ecological functions. 24.50.060.B.5 Minor dredging for fill materials as part of ecological restoration or enhancement, beach nourishment, public access or public recreation should be permitted if consistent with this Program. <u>Regulations</u>: *Dredging and dredge material regulations:* 24.50.060.C.1.a – 1.g Regulations for when dredging may be permitted, including; 1.f. Restoration or enhancement of shoreline ecological functions and processes benefiting water quality and/or fish and wildlife habitat. 1.g Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			restoration of ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high water mark. The project must be either associated with a MRCA or CERCLA habitat restoration project or, if approved through a shoreline conditional use permit, any other significant habitat enhancement project. 23.50.060.C.2 The existing physical alignment and ecological function and processes shall be maintained, except to improve hydraulic function, water quality, fish or wildlife habitat, or fish passage. 23.50.060.C.3 New development shall be sited and designed avoid or, if that is not possible, to minimize the need for new and/or maintenance dredging. 23.50.060.5.a – 5.h …when permitted dredging shall 5.b Include all feasible mitigating measures to protect habitats and to minimize adverse impacts such as turbidity, release of nutrients, heavy metals, sulfides, organic materials, or toxic substances, depletion of oxygen, disruption of food chains, loss of	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			benthic productivity, and disturbance of fish runs and important localized biological communities. 5.c Be scheduled so as to not materially interfere with the migratory movements of anadromous fish. 5.e. Not interfere with geohydraulic processes. 5.f. Be found, through analysis by qualified professional, to be nonpolluting or shall have no significant negative pollution impact. 5.h Not result in erosion of the shoreline or undermine the stability of neighboring properties. 24.50.060.E.12 – Natural Environment: Dredging is prohibited except that dredging is permits as an essential element of an approved shore restoration or enhancement project subject to the policies and regulations of the Program.	
<u>Alteration</u>: Filling <u>Potential Cumulative Impacts</u>:	<u>Process</u>: Sedimentation <u>Functions</u>: Land formation,	Puget Sound shorelines (reaches 1, 2, & 3)	<u>Policies</u>: *Restoration element:* 24.20.110.C.1 Protect and/or restore	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
Reduced sediment storage, decreased water quality, habitat disruption, altered hydrology	provision of nutrients and minerals <u>Process</u>: Marine nearshore and freshwater habitat <u>Functions</u>: Water quality	Lake Ballinger (reach 4) Edmonds Marsh Shell Creek Wetland	freshwater, nearshore, and estuarine habitat and habitat-forming processes. 24.20.110.C.3 Remove intertidal fill; restore beach deposits and processes and ecological functions. *Aquatic Environment:* 24.30.030.D.12 Filling should be avoided if practicable and limited to the minimum amount necessary. Filling operations should minimize impacts to other shoreline uses and functions. *Shoreline stabilization:* 24.50.020.B.3.c Structural stabilization will not be permitted for the indirect purpose of creating land by filling. *Landfill:* 24.50.040.B.1 Landfill 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	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			restoration of landforms and habitat are encouraged. 24.50.040.B.2 Allow landfills waterward of the ordinary high water mark, in those limited circumstances where permitted, only when necessary to facilitate water-dependent uses or ecological restoration projects that are consistent with this program and the City of Edmonds Comprehensive Plans. Where feasible, public access to the shoreline and the water should be incorporated into the design. Regulations: *Landfill Regulations:* 24.50.040.C.1.a – 1.f Landfill water ward of the ordinary high water mark may be permitted as a conditional use in limited instances for the following purposes only, with due consideration given to specific site conditions, and only in conjunction with approved shoreline use and development activities that are consistent with this program: 1.c Cleanup and disposal of contaminated sediments as part of an interagency	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			environmental clean-up plan. 1.f Mitigation action, environmental restoration, beach nourishment or enhancement projects. 24.50.040.C.2.a – 2.f Landfills shall be permitted only where it is demonstrated that: 2.a The project has been located, designed, and constructed in a manner that minimizes impacts to ecological processes and functions and where impacts cannot be avoided, mitigation is provided to achieve no net loss. 2.b The fill will not result in erosion of the shoreline or undermine stability of neighboring properties. 2.f Placement of landfill will be timed so as to minimize damage to water quality and aquatic life. 24.50.040.C.3 The applicant must stabilize exposed fill areas with vegetation. 24.50.040.E.12 Natural Environment: Landfill may be allowed as a conditional use when necessary to protect or restore	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			shoreline ecological functions subject to the policies and regulations of this program.	
Alteration: Land surface modification Potential Cumulative Impacts: Reduced sediment storage, decreased water quality, altered hydrology	Process: Hydrologic cycle Functions: Water, nutrient, pathogen, and sediment transport Process: Sedimentation Functions: Land formation, provision of nutrients and minerals Process: Upland shore habitat Functions: water quality	Puget Sound shorelines (reaches 1, 2, & 3) Lake Ballinger (reach 4) Edmonds Marsh Shell Creek wetlands	Policies: *Restoration Element:* 24.20.110.C.1 Protect and/or restore freshwater, nearshore, and estuarine habitat and habitat-forming processes. *Natural Environment :* 24.30.040.D.4 New development or significant vegetation removal that would reduce the capability of vegetation to perform normal ecological functions should not be allowed. Subdivision of property in a configuration that would, to achieve its intended purpose, require significant vegetation removal or shoreline modification that adversely impacts ecological functions should not be allowed. *Urban Conservancy Environment:* 24.30.050.D.5 New development should be designed and located to preclude the need for shoreline armoring, vegetation removal, flood control, and other shoreline modifications.	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			Shoreline Residential : 24.30.060.D.3. Structurally engineered shoreline modifications and stabilization should be prohibited except in cases of emergency as defined. *General Modification Policies:* 24.50.010.A.1 Locate and design all new development in a manner that prevents or minimizes the need for shoreline modifications. 24.50.010.A.2 Ensure that shoreline modification, where permitted, are as compatible as possible with natural shoreline processes and character. 24.50.010.A.3 Regulate shoreline modifications to assure that modifications individually and cumulatively do not result in a net loss of ecological functions. Mitigation may be required to meet the no net loss standard. 24.50.010.A.4 Give preference to those types of shoreline modifications that have a less impact on ecological functions and require mitigation of identified impacts resulting from	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			shoreline modifications. 24.50.010.A.5 Incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes in the placement and design of shoreline modifications. To avoid and reduce ecological impacts, the mitigation sequence in ECDC 24.40.020.E.3 shall be utilized. Regulations: *Critical Areas:* 24.40.020.J Additional authority. In addition to any other authority the city may have, the city is hereby authorized to condition or deny a proposed use, modification or activity or to require site redesign because of hazards associated with the use, modification or activity on or near an environmentally sensitive and/or critical area, and/or the effect of the proposal on the environmentally sensitive area and/or critical area. *Shoreline Vegetation Conservation:* 24.40.050.B.1.a – 1.d Alteration of native shoreline vegetation shall only be allowed as set forth below:	

CUMULATIVE IMPACTS ANALYSIS TABLE				
Shoreline Alterations with Potential Cumulative Impacts	**Ecological Processes and Associated Functions at Risk**	**Shoreline Resources at Risk**	**Mitigating Draft SMP Policies and Regulations (selected regulation excerpts included)**	**Possible Non-Regulatory Mitigation Measures**
			1.b Removal of noxious weeds as listed by the state in WAC 16-750, provided such activity shall be conducted in a manner consistent with best management practices and native vegetation is promptly reestablish in the disturbed area. 1.c Modification of vegetation in association with a legal, nonconforming use provided that said modification is conducted in a manner consistent with this Master Program and results in no net loss to ecological functions or critical fish and wildlife conservation areas. 1.d Restoration activities conducted in accordance with an approved plan designed to improve ecological functions and values. 24.40.050.B.2 The removal or disturbance of existing vegetation and the alteration of topography shall be limited to the minimum necessary to accommodate approved shoreline development. *General Shoreline Modification Regulations:* 24.50.010.B.1 Shoreline modification activities that do not support a permitted shoreline use are considered "speculative" and are prohibited by this Master Program,	

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			unless it can be demonstrated to the satisfaction of the Shoreline Administrator that such activities are in the public interest and necessary and for the maintenance of shoreline environmental resource values. 24.50.010.B.3 Shoreline modification activities, with the exception of restoration or enhancement efforts, are prohibited in wetlands, and undeveloped spits, hooks, bars, barrier beaches, or similar accretion terminals or accretion shore forms. 24.60.090.C.10 Utility developments shall be located and designed so as to avoid, to the extent practicable, the need for any structural or artificial shoreline modification works for the life of the project.	

Modifications to Regulations as a Result of the Cumulative Impacts Analysis

The policies and regulations evaluated in this draft of the cumulative impact analysis were developed to ensure no net loss of ecological functions and protection of other shoreline functions and/or uses and these regulations and policies have been iteratively reviewed by the Department of Ecology for consistency with this requirement. As a result of this review process, no modifications to the regulations were necessitated as a result of this cumulative impacts analysis.

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

Several other established regulatory programs (besides the SMP) yield beneficial effects on the City's shorelines. Some regulatory programs with beneficial effects are briefly described below. For more information on the shoreline regulatory framework, refer to the Shoreline Inventory and Characterization (section 2).

Local

City of Edmonds Comprehensive Plan
The City of Edmonds Comprehensive Plan provides the overall strategy for the physical layout of the City. One of its purposes is "to anticipate and influence the orderly and coordinated development of land and building use of the City and its environs and conserve and restore natural beauty and other natural resources."

City of Edmonds Community Development Code
The City of Edmonds Community Development Code (ECDC) Titles 16 and 17 contain the zoning ordinance for the City. The zoning designations are consistent with the comprehensive plan.

The ECDC also contains the environmentally critical areas code (Title 23) for the City. The purpose of this code is to "designate and classify ecologically sensitive and hazardous areas and to protect these areas and their functions and values, while also allowing for reasonable use of private property." The code covers wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. The code yields beneficial effects on the City's shorelines because its provisions extend to the critical areas which exist in or are in the vicinity of the City's shoreline jurisdiction. The code attempts to achieve its purpose by requiring that "any action taken pursuant to this title shall result in equivalent or greater functions and values of the critical areas associated with the proposed action, as determined by the best available science." Mitigation is only allowed when applicants first demonstrate an inability to avoid or reduce impacts.

State

Shoreline Management Act
The goal of the SMA (RCW 90.58) is to "prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The SMA gives preference to uses that protect water quality and the natural environment, water-dependent uses, and preserve or enhance public access or recreational opportunities. Cities, including the City of Edmonds, and counties prepare SMPs based on state guidelines, yet geared to fit the specific circumstances of the individual jurisdictions. SMPs include both plans and regulations for shoreline areas.

Growth Management Act
Many of Washington's cities and counties, including the City, plan according to the Growth Management Act (GMA). While the goals and policies of the SMA are themselves a goal of the GMA, other goals of the GMA are particularly relevant in shoreline jurisdictions as well. Those goals include "Encourage economic development consistent with resources and facilities throughout the state," "Maintain and enhance natural resource-based industries," and "Protect the environment and enhance quality of life." To meet the goals of the GMA, jurisdictions planning under the GMA are required to designate and protect critical areas, as well as to use the best available science in developing policies and regulations to protect their functions and values. Also, the land use element of comprehensive plans is required to consider stormwater management and discharges into waters of the state.

State Environmental Policy Act
The State Environmental Policy Act (SEPA) aims to maintain and improve environmental quality. SEPA does so by requiring procedures designed to insure that governmental agencies give proper consideration of environmental matters when making decisions on development actions. If initial governmental review of a proposed action indicates that the action will have probable and significant adverse environmental impacts, preparation of a detailed environmental impact statement is required. The review of projects in the shoreline area triggering SEPA will afford the City's shorelines additional environmental protection.

Water pollution control laws
The state also has water pollution control laws (RCW 90.48) with beneficial effects on the City's shoreline. In enacting these laws, the legislature declared that it is "public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state."

Federal

Federal Water Pollution Control Act
The Federal Water Pollution Control Act regulates discharges of pollutants into federally designated waters, which include Lake Ballinger, Edmonds Marsh, and the marine waters along the City's shoreline abutting Puget Sound.

Endangered Species Act
The Endangered Species Act protects shoreline flora and fauna by requiring all projects permitted, funded, or authorized by the federal government to protect threatened and endangered species.

Magnuson-Stevens Fisheries Conservation and Management Act
The Magnuson-Stevens Fisheries Conservation and Management Act requires federally funded, authorized, or permitted projects that may adversely affect Essential Fish Habitat to be consulted upon by NOAA Fisheries.

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Miles

Puget Sound

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Lund's Creek
Meadowdale Creek
Perrinville Creek
Olympic Ave
Fruitdale Creek
Northstream Creek
Hindley Creek
Shell Creek
Shellabarger Creek
Willow Creek
Deer Creek
Hall Creek
Lake Ballinger
McAleer Creek

75Th Pl W
Olympic View Dr
88Th Ave W
64Th Ave W
60Th Ave W
Puget Dr
196Th St SW
Caspers St
9Th Ave N
3Rd Ave N
200Th St SW
68Th Ave W
204Th St SW
Main St
76Th Ave W
208Th St SW
3Rd Ave S
5Th Ave S
9Th Ave S
Walnut St
66Th Ave W
99
220Th St SW
100Th Ave W
95Th Pl W
Edmonds Way
73Rd Pl W
228Th St SW
84Th Ave W
5
58Th Ave W
236Th
104
226Th St SW
244Th St SW

Point Edwards
Point Wells

Legend

- Planning Segment Break
- Planning Segment
- Edmonds City Limits
- DRAFT SMP Jurisdiction
- Major Road
- Street
- Railroad
- Stream

Shoreline Planning Reaches
- Reach 1
- Reach 2
- Reach 3
- Reach 4

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City of Edmonds

Shoreline Master Program Update

Shoreline Planning Segments & Planning reaches

Figure 2

Date of Last Revision: 12-05-06