

Natural Environment Element

Background and Analysis

Purpose and Relationship to GMA

The purpose of the Natural environment element is to expand upon the community's commitment to stewardship of natural resources, as expressed in the Vision Statement, and to provide a policy basis for City decisions which affect the natural environment.

The Natural Environment Element is not a required element under the Growth Management Act, but the GMA contains the following goal concerning the environment:

"Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water."

Moreover, the Act contains specific requirements for the designation and protection of "critical areas," defined by the Act as 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. The Act requires jurisdictions to adopt policies and implementing regulations to ensure the protection of critical areas. In addition, the Central Puget Sound Growth Management Hearings Board has ruled that "the land speaks first", thus assigning pre-eminence to protection of these areas and avoidance of incompatible development. Three inter-related requirements implement the GMA mandate: 1) the requirement to "include the best available science" when designating and protecting critical areas; 2) the requirement to give special consideration to the preservation or enhancement of anadromous fisheries; and 3) the requirement to adopt development regulations that protect the functions and values of critical areas.

In compliance with the Act, the Bothell City Council adopted the Interim Critical Areas Ordinance (ICAO) in December, 1991. The ICAO was revisited for compliance with the Plan, modified and adopted as the final Critical Areas Ordinance (CAO) in March, 1996. As of the 2004 Plan Update, amendments to the critical areas regulations were being considered to address the requirements of the GMA to include best available science and give special consideration to the preservation or enhancement of anadromous fisheries: these amendments were expected to be adopted in 2005.

In 1995 the Growth Management Act was amended to add the goals and policies of the state Shoreline Management Act as one of the goals of the GMA. The amendment also required that goals and policies of individual jurisdictions' Shorelines Master Programs be considered an element of those jurisdictions' comprehensive plans. The City of Bothell has elected to meet this requirement by incorporating the goals and policies of the Bothell Shorelines Master Program into a separate element called the Shorelines Master Program Element.

In March of 1999, the United States National Oceanic and Atmospheric Administration, Fisheries Service listed the Chinook, or King, Salmon as a threatened species under the Federal Endangered Species Act (ESA) due to declining populations and diminishing returns of spawning adult fish. In

December of 1999, the United States Department of Fish and Wildlife Service listed the Bull Trout as a threatened species under the Federal Endangered Species Act (ESA) due to declining populations. Chinook Salmon habitat within the Planning Area includes the Sammamish River and North Creek. Bull Trout typically prefer habitat conditions that are not currently present within the planning area. It is not known if Bull Trout inhabit the planning area.

A special rule, termed a "4(d) Rule", was issued by the National Marine Fisheries Service (NMFS) on June 20, 2000. This rule contains performance criteria for a wide range of city operations and activities whose intent is to reduce harm to Chinook Salmon and its habitat. City programs and activities affected by the rule include parks maintenance, stormwater control, habitat restoration, habitat acquisition, adaptive management, road maintenance, municipal, commercial, industrial, and residential (MRCI) development, public education and other programs.

In February of 2000, the City entered into an inter-local agreement with King County and 25 other jurisdictions within the Greater Lake Washington Watershed to conduct Watershed Resource Inventory Area (WRIA) planning. This WRIA planning activity allows jurisdictions to pool resources for the hiring of staff, experts, and consultants to provide an overall watershed-wide plan for the preservation and recovery of Chinook and other salmon species. The WRIA plan is anticipated to be completed in 2005.

Planning Area Profile

The natural environment of any community is a system of related components - air, water, soil, plants and animals. Each natural component impacts the others in some way and all are affected by human activities. A primary intent of environmental and land use regulations is to ensure that the relationship between human activities and the natural environment is a mutually supportive one that balances competing objectives to the maximum extent possible.

Like the Puget Sound region in general, the land form of the planning area was created by repeated glacial created advance and retreat and subsequent erosion and sedimentary accretion. The Planning Area today consists of portions of five steep-sided north-south trending hills—Norway Hill, Finn Hill, West Hill, Beckstrom Hill and Bloomberg Hill.

Substantial portions of these hills are susceptible to landslides, due to soil type, steepness and pervasive springs. Rainfall typically collects in numerous small wetlands prior to draining off the hills through small streams. These streams may be intermittent or permanent, and commonly have carved ravines in the hillsides.

Drainage from the hills tends to collect in larger wetlands in the valleys before releasing to the Planning Area's primary watercourses. These include Juanita Creek, Swamp Creek, Horse Creek, North Creek and the Sammamish River.

The steep hillsides and waterways comprise a potential network of open space corridors which allow wildlife to move relatively freely among nesting and foraging areas, and provide humans with visual relief from the built environment. The Land Use Element contains policies which promote preservation of these open space corridors and urban separators.

The following pages consist of maps depicting the general location and extent of the various types of critical areas within the Planning Area. These maps include;

Figure NE-1	Landslide Prone Deposits
Figure NE-2	Erosive Soils
Figure NE-3	Liquefaction Prone Deposits
Figure NE-4	Wetlands, Streams and Drainage Basin Boundaries
Figure NE-5	Frequently Flooded Areas
Figure NE-6	Composite Critical Areas

Critical areas are present throughout the Planning Area. Approximately 20 per cent of the Planning Area constitutes critical areas and their buffers as defined by the Critical Areas Ordinance.

Development of Goals, Policies, and Actions

The following Goals, policies and actions were collaboratively developed by the City Council, Planning Commission, Shorelines Board and interested citizens. These were originally adopted in 1994 as part of the overall Comprehensive Plan, and amended in 1996 and 2004. Please reference the Land Use Element, Shorelines Element, and the Parks and Recreation Element for goals, policies and actions affecting open space within the natural environment.

These goals and policies also incorporate language to conserve plants and animals listed as threatened or endangered under the Endangered Species Act.

Natural Environment Goals, Policies and Actions

Goals

- NE-G1 To achieve a harmonious relationship between the built and natural environments.
- NE-G2 To promote community-wide stewardship of the natural environment for future generations through identification, protection, preservation/conservation, and enhancement of those natural environment features which are most sensitive to human activities and which are critical to fish and wildlife survival and proliferation.
- NE-G3 To preserve open space corridors to provide lands that are useful for recreation, wildlife habitat, trails and connections of critical areas.

Policies

Applicable to multiple features of the Natural Environment

- NE-P1 Encourage the concentration of urban land uses in areas with minimal environmental constraints in order to reduce the amount and/or rate of urban intrusion into natural areas.
- NE-P2 Consider the natural carrying capacity of lands in the review of any proposal involving an intensification of land use.
- NE-P3 Adopt and maintain critical areas regulations which include best available science to protect natural topographic, geologic, vegetation, fish and wildlife habitat, and hydrologic features, with special consideration given to conservation or protection measures necessary to preserve or enhance anadromous fisheries.
- NE-P4 When an alteration to a critical area is proposed, such alteration shall be avoided, minimized or compensated for in the following sequential order of preference:
- Avoiding the impact altogether;
 - Minimizing the impact;
 - Rectifying the impact;
 - Minimizing or eliminating the hazard, where the critical area poses a hazard (such as a landslide area);
 - Reducing or eliminating the impact over time;
 - Compensating for the impact;
 - Monitoring the mitigation and taking remedial action where necessary.
- NE-P5 Prohibit the introduction of invasive plant and animal species in natural areas which would tend to degrade the natural systems present and require the use of indigenous plant species whenever restoration or enhancement occurs.

- NE-P6 The City should consider options, when presented, to preserve passive and active open space.
- NE-P7 By 2009 or sooner, update the Shorelines Master Program. Review Shorelines designations along North Creek and the Sammamish River for consistency with the goals and policies of this Natural Environment Element, other Planning Area-wide elements and subarea plans.

Fish and wildlife

- NE-P8 Preserve, protect, restore and enhance the Sammamish River and North Creek and their tributaries as fish and wildlife habitat by implementing the goals and policies as contained in this Element, the Parks and Recreation Element, the Shorelines Master Program Element, the Land Use Element, best available science, and the following special objectives:

For the Sammamish River:

- Protect, restore and create cold water resources in the Sammamish River and its tributaries.
- Investigate alternative methods to address the impacts to salmon of increased temperatures in the Sammamish River.
- Improve fish access through the Sammamish River system.
- Enhance channel complexity, connectivity, and riparian conditions.
- Reduce surface and groundwater withdrawals that reduce river flow and groundwater seeps and provide for a more natural hydrologic regime.
- Reduce runoff and fine sediments entering the river.
- Understand and reduce impact of low dissolved oxygen and contaminants on salmon in the Sammamish River.

For North Creek and its tributaries:

- Provide unimpeded access to all potential natural spawning and rearing habitats for all life stages of salmon.
- Protect existing stream channel complexity and floodplain and longitudinal connectivity and restore channel and floodplain connectivity where necessary.
- Protect and restore a more natural hydrologic regime.
- Reduce runoff and fine sediments.
- Reduce accelerated streambank erosion.
- Maintain and restore a more natural temperature regime.
- Protect and restore riparian habitats.
- Reduce nutrient and chemical pollutant loading and reduce impacts on salmon.

- NE-P9 The City of Bothell recognizes the listing of Chinook Salmon and Bull Trout as threatened species under the Endangered Species Act and acknowledges the possibility that other plant and animal species may be listed in the future. Bothell should participate in regional efforts to recover listed species including watershed planning, restoration efforts, and other recovery actions.
- NE-P10 Stream and wetland buffer requirements may be increased to protect species identified as threatened or endangered by the state or federal government or to provide the buffers

established under any special rules promulgated to protect a listed species or by including best available science.

- NE-P11 Preserve and protect critical areas and buffers in as natural a state as possible, emphasizing avoidance of alterations to these areas. Identify and create a system of fish and wildlife habitat, including habitat for any species listed as threatened or endangered by the state or federal government, with connections between large habitat blocks and open spaces. Minimize habitat fragmentation by linking wildlife habitats via corridors. Connect wildlife habitats with each other within the City and the region to achieve a continuous network. Development proposals shall identify critical areas and unique and significant wildlife habitat areas and habitat areas associated with any species listed as threatened or endangered by the state or federal government and ensure that buildings, roads, and other improvements are located on less sensitive portions of the property.
- NE-P12 Work with other cities, King and Snohomish Counties, and state agencies to deal effectively with regional natural environment issues such as surface and ground water quality and quantity, the maintenance and enhancement of the Sammamish River and North Creek as fish habitat, and the identification of fish and wildlife conservation areas that cross jurisdictional boundaries.
- NE-P13 Require “fish sensitive” site design, construction and maintenance practices throughout the city that incorporate best management practices (BMPs). “Fish sensitive” site design, construction and maintenance may include but is not limited to removing or preventing fish passage barriers, improving fish habitat as part of a development proposal or a capital improvement project, preserving existing forested areas, reducing the amount of impervious surface coverage in roads and parking areas, constructing special storm water control facilities, restoring culverted (piped) streams, enhancing existing streams, planting drought-resistant landscaping, limiting or prohibiting pesticide use and other elements that create properly functioning conditions. “Fish sensitive” best management practices are specific construction and maintenance methods, practices, and techniques that have been shown to have minimal impact on fish habitat.
- NE-P14 Protect, preserve, and, where possible, enhance water quality in the Sammamish River, Horse Creek, North Creek, and their tributaries. Retrofit existing surface water quality facilities to current surface water quality standards whenever re-development or expansion of existing development occurs.
- NE-P15 Participate in Sammamish River watershed and other local and regional efforts to enhance or restore the Sammamish River and North Creek ecosystems to improve habitat conditions for fish and wildlife.
- NE-P16 Encourage improvements to the fisheries habitat of watercourses when abutting properties are developed.
- NE-P17 Create special development incentives for development proposals which daylight and restore a previously culverted (piped) stream.
- NE-P18 Strive to improve water quality, fisheries habitat and wildlife resources consistent with adopted state and federal standards.

- NE-P19 Establish and protect appropriately sized buffers around streams, wetlands, and rivers based on best available science. Preserve stream corridors wide enough to maintain natural biologic and hydrologic function as determined by best available science in all development proposals by use of native growth protection tracts or other appropriate mechanisms.
- NE-P20 Protect, preserve, and where possible, enhance water quality and endeavor to improve the continued viability of streams and their tributaries, thereby supporting the fisheries and wildlife resources dependent on them. Give special consideration to conservation and protection measures to preserve and enhance anadromous fisheries.
- NE-P21 Public improvements and private developments shall implement surface water runoff best management practices and best available science to reduce the impact of development activities on natural drainage systems.
- NE-P22 Participate with other cities and King and Snohomish Counties in adaptive management, monitoring, and evaluation of the effectiveness of restoration, enhancement, and recovery strategies for plants and animals listed as threatened or endangered.
- NE-P23 Protect groundwater recharge areas that benefit anadromous fisheries through the critical areas regulations.
- NE-P24 Use bridges as the preferred method of crossing a watercourse that has habitat suitable for fish use or may be rehabilitated for fish use in the future. Prohibit the use of culverts in fish bearing streams where fish barriers would result. Consider allowing culvert systems (such as bottomless culverts) that would provide streambeds similar to natural channels where loss of habitat would not be significant and the cost of a bridge would not justify its benefits to fish passage, flood control or other resources.
- NE-P25 Support public education to protect and improve surface and ground water resources.
- NE-P26 Protect the quantity and quality of cool groundwater supplying the Sammamish River and North Creek and its tributaries. Require development potentially affecting natural groundwater flows to follow existing topography; minimize changes in grade, cleared area and volume of cuts and fills; and minimize potential for blockages from foundations, retaining walls and rockeries.

Wetlands

- NE-P27 Due to the environmental value of wetlands as well as their economic value in reducing the need for storm water facilities, ensure that development results in no net loss of wetland functions and values, and no net loss of wetland area except in limited circumstances where the lost wetland area provides minimal functions and the mitigation action results in equal or greater wetland hydrological and biological functions, including wetland habitat functions which provide equal or greater benefits to the functioning of the sub-basin, such as riparian wetland habitat restoration and enhancement, all as determined by a site-specific function assessment. Promote the long term increase and enhancement of wetlands.

- NE-P28 Consider effective ways of wetland mitigation such as mitigation banking for public capital improvement projects that are linear, such as road and utility projects.

Native vegetation

- NE-P29 Work with adjoining county and city jurisdictions to create and maintain natural and developed greenbelts and open space areas as "urban separators" in keeping with the Growth Management Act and as a physical way to delineate and define Bothell's community boundaries.
- NE-P30 Encourage restoration of degraded riparian buffers and deforested areas and removal of impervious surfaces.
- NE-P31 Preserve trees within streams, wetlands and their associated buffers.
- NE-P32 Encourage the planting of suitable native trees and native vegetation within degraded streams, wetlands and buffers. Encourage the planting of suitable native trees and native vegetation on steep slopes.

Soils, slopes and geologically hazardous areas

- NE-P33 Encourage environmentally sensitive site design that respects existing topography, sensitive lands and critical areas, provides for retention of native vegetation, provides active and passive recreational open space and minimizes impervious surface coverage. The City should create special design and building standards based upon best management practices to protect hillsides from impacts associated with development on slopes.
- NE-P34 Update City building and development codes on an on-going basis to incorporate the best and latest standards for minimizing damage caused by seismic activities and take into account such hazards when locating land uses and intensities.
- NE-P35 Wetlands, streams, or other sensitive areas important for control of surface water runoff which have been adversely affected by human activity should not be further degraded.
- NE-P36 Promote soils stability by the use of natural drainage systems and retention of existing native vegetation.
- NE-P37 Establish buffers around the perimeter of undevelopable landslide hazard areas to avoid the potential to undermine such areas and minimize the risk to human life and safety.
- NE-P38 Preserve the special ecological functions of hillsides by developing design and construction standards that help protect hillside ecological functions such as groundwater recharge, natural drainage courses, soil retention, and wildlife habitat and corridors.

Air quality

NE-P39 Promote improved air quality through land use decisions and public facility sitings which create a compact and efficient community design, insofar as such a design reduces the quantity and length of single-occupancy vehicle trips. To further promote improved air quality, explore incentives for the installation of gas fireplaces in lieu of wood fireplaces, particularly in multi-family developments.

Monitoring, updating and enforcement

- NE-P40 Apply adaptive management to critical area regulations to monitor and evaluate their effectiveness and update regulations that do not achieve the level of protection prescribed in the regulations.
- NE-P41 Provide sufficient resources to enforce critical area and other natural resource regulations, including enforcement of both civil and criminal penalties.

Actions

Applicable to multiple features of the Natural Environment

- NE-A1 Periodically update critical areas regulations to incorporate best available science, correct deficiencies identified through adaptive management or provide protection for plant or animal species listed as threatened or endangered by the state or federal government. The critical areas regulations shall embody the intent of the goals and policies contained in this Element and elsewhere in the Plan.
- NE-A2 Aggressively enforce the city's regulations and ordinances, particularly with regard to natural foliage retention, land clearing, landscaping and critical area protection.
- NE-A3 Maintain and update maps and inventories of aspects of the natural environment including, but not limited to, critical areas as defined by the Growth Management Act (See **Figures NE 1-6**).
- NE-A4 Participate in interjurisdictional efforts which may be implemented from time to time concerning the natural environment.
- NE-A5 Work with the public and any other interested parties to investigate and identify for Planning Commission, Shorelines Board, Parks and Recreation Board, and City Council consideration environmentally sensitive areas, fish and wildlife habitat areas, fish and wildlife corridors, aquifer recharge lands, critical forestlands, and other areas in need of preservation within the Bothell Planning Area which are deserving of public reclamation, restoration, acquisition, preservation and inclusion within the City's open space system. Reference the Land Use Element.
- NE-A6 Prioritize those properties identified in NE-A5 according to their value to the City and their vulnerability to degradation or loss. Emphasis should be given to those areas which facilitate the development of uninterrupted natural passageways for wildlife, provide for continuous urban separators between jurisdictions and within the community, or enhance public access to the waterfront.

- NE-A7 Provide printed materials and information workshops regarding stewardship of environmentally sensitive areas.
- NE-A8 Update the City's surface water comprehensive plan and implementing regulations so as to incorporate those surface water management approaches and technologies which best reflect the goals and policies of this element.

Fish and wildlife

- NE-A9 Continue participation in regional watershed and salmon recovery planning activities.

Soils, slopes and geologically hazardous areas

- NE-A10 Protect cleared and graded areas from erosion at all times, pursuant to best management practices..
- NE-A11 Maintain and update clearing and grading regulations to minimize the overall impact of the activity on the environment.
- NE-A12 Develop hillside design and construction standards for development on slopes.

Monitoring, updating and enforcement

- NE-A13 Apply adaptive management to monitor and improve the effectiveness of critical area and other development regulations to establish whether they have achieved the intended purpose of protecting environmentally sensitive lands from degradation in keeping with the policies of this element and best available science.