

PLANNING COMMISSION AGENDA ITEM
CITY OF SHORELINE, WASHINGTON

AGENDA TITLE: Comprehensive Plan Update, Natural Environment Element
DEPARTMENT: Planning & Community Development
PRESENTED BY: Miranda Redinger, Associate Planner
Rachael Markle, AICP, Director P&CD

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| <input type="checkbox"/> Public Hearing | <input checked="" type="checkbox"/> Study Session | <input type="checkbox"/> Recommendation Only |
| <input type="checkbox"/> Discussion | <input type="checkbox"/> Update | <input type="checkbox"/> Other |

INTRODUCTION & BACKGROUND

On January 5, 2012, staff and Commissioners discussed the proposed process for the Comprehensive Plan Update and public involvement. Commissioners have previously discussed Parks, Recreation, and Open Space; Community Design; and Transportation Elements. The subject of tonight's agenda item will be the Natural Environment Element. Originally, the Capital Facilities and Utilities Element was to be discussed this evening as well, but due to availability of key staff, that topic has been postponed until April 19th.

In the existing version of the Comprehensive Plan, policies dealing with the natural environment are contained in the Land Use Element. It is staff's recommendation that it be broken out into its own element through the revision process. Many other jurisdictions have a separate Natural Environment Element, and with the City's focus on sustainability in the last several years, staff thought it appropriate to create an element focused exclusively on the natural environment.

RELEVANT VISION 2029 FRAMEWORK GOALS

FG7: Conserve and protect our environment and natural resources, and encourage restoration, environmental education and stewardship.

FG8: Apply innovative and environmentally sensitive development practices.

DISCUSSION

Council adopted the City's Environmental Sustainability Strategy in 2008, and the Green Team tasked with implementing it has completed or is in the process of completing 42 of the 50 recommendations contained therein. The remaining recommendations are not feasible at this time. Staff would be happy to elaborate on accomplishments to date, but one of the most significant will be the launching of a web page to track indicators of environmental sustainability, created using funding from the Energy Efficiency and Conservation Block Grant. The address will be www.shorelinewa.gov/forevergreen and it will be live in time for the staff presentation to Council on April 16th, 2012. Many indicators that will be tracked will help citizens and decision-makers gauge implementation of goals and policies contained in the Natural Environment Element.

One upcoming initiative of the Green Team, funded through a grant secured and administered by the Environmental Services division of Public Works, will be the creation of a Climate Action Plan. As that develops, staff anticipates that additional policy direction and analysis will be added to the Natural Environment Element. Likewise, staff will incorporate additional policy

Approved By:

Project Manager 

Planning Director 

guidance from the Surface Water Master Plan. These additional recommendations will be included in future drafts of this element, so there are placeholders for such content in the attached version. ***The Commission is encouraged to provide staff additional direction about policies it would like to see developed.***

Attachments A-D are similar to previous packets in that they contain goals and policies, and analysis sections of the element in both track change and "clean" versions. Attachment E is a white paper produced by the consultant who developed the Environmental Sustainability Strategy, which analyzed how sustainability could be incorporated into Comprehensive Plan policies. Recommendations in this paper have been incorporated for the Natural Environment Element, where appropriate, but the entire white paper is included for reference, and recommendations for other elements will be incorporated as they are updated for Commission review.

Since this is one of the first elements where policy language is not taken from an adopted Master Plan, the staff presentation at the meeting will include a discussion of how to most effectively group edit the individual elements and full draft Comprehensive Plan document when it is assembled.

NEXT STEPS

The April 19th discussion will focus on the Capital Facilities/Utilities Element, which is a proposed merger of the two separate elements in existing Comprehensive Plan.

The next Speaker's Series event, focusing on the Natural Environment topic, will be held on Thursday, April 12th from 6:30-8:30 in the Council Chambers. The topic will be the Beacon Food Forest in Seattle, and designer Jenny Pell will speak to the purpose and process undertaken by the group of neighbors responsible for creating the project. This date represents a deviation from the previous schedule because the 4th Wednesday date on which the other Speaker's Series events have been held was not available in March due to a conflict with the previously scheduled Shoreline Eats4Health event.

Commission will discuss the Housing and Economic Development Elements at the May 3rd meeting. Staff is deciding whether to hold a Speaker's Series event for each topic (most likely a panel of speakers rather than an individual), or just focus on Economic Development. Does the Commission have a preference? Do you think that a panel discussion about innovative housing styles, such as LEED-certified pre-fabricated homes, would be beneficial, or would you prefer fewer meetings in May? Ideas and suggestions are also still welcomed for a Land Use speaker for June.

If you have questions or comments prior to the meeting, please contact Miranda Redinger at (206) 801-2513 or by email at mredinger@shorelinewa.gov.

ATTACHMENTS

Attachment A- Natural Environment Element, Goals & Policies, track change version
Attachment B- Natural Environment Element, Goals & Policies, clean version
Attachment C- Natural Environment Element, Analysis, track change version
Attachment D- Natural Environment Element, Analysis, clean version
Attachment E- Shoreline Sustainability Strategy: Existing Guidance and Potential Framework Goals and Objectives for Discussion

Natural Environment Element Goals & Policies

Introduction

This Element contains the goals and policies necessary to support the City's responsibility for protection of the natural environment. Previously, these policies were housed in the Land Use Element, but were separated into their own element in the 2012 update to support the City's emphasis on sustainability, with major impetus provided by the 2007 Council goal to "Create an Environmentally Sustainable Community."

To demonstrate this commitment to sustainability, the City has also signed on to the U.S. Conference of Mayor's Climate Protection Agreement, the Cascade Agenda, the Green City Partnership Program, and the King County- Cities Climate Collaboration. In 2008, the City adopted an Environmental Sustainability Strategy and created a Green Team tasked with its implementation. In 2012, with funding from the federal Energy Efficiency and Conservation Block Grant, the City launched a webpage to track indicators of environmental sustainability over time. Information displayed on this webpage (www.shorelinewa.gov/forevergreen) will inform citizens and decision-makers about progress of goals and policies contained in this element.

Relevant Framework Goals from Vision 2029

FG7: Conserve and protect our environment and natural resources, and encourage restoration, environmental education and stewardship.

FG8: Apply innovative and environmentally sensitive development practices.

Natural Environment Goals

Goal NE I: Strive to minimize adverse impacts on the natural environment through leadership, policy, and regulation, and to address impacts of past practices where possible. the City shall strive to minimize impacts on the natural environment. The City shall

Goal NE II: Lead and support efforts to protect and improve the natural environment, protect and preserve environmentally critical areas, and minimize pollution and the waste of energy and materials.

Goal NE III: Conserve soil resources and protect people, property and the environment from geologic hazards, including steep slope areas, landslide hazard areas, seismic hazard areas, and erosion hazard areas by regulating disturbance and development.

Comment [j1]: Goal LU XIII. Please note that these citations reference goal and policy numbers in the current version of the Comp. Plan.

Comment [r2]: Set high bars or the environment won't be protected.

Comment [m3]: Rest of goal moved to new one below.

Comment [j4]: Goal LU XIV

Goal NE IV: Protect, enhance and restore habitat of sufficient diversity and abundance to sustain existing indigenous fish and wildlife populations. ~~Balance the conditional right of private property owners to develop and alter land with the protection of native vegetation and critical areas.~~

Comment [j5]: Goal LU XV

Comment [s6]: Moved to policy

Goal NE V: ~~Ensure~~Protect clean air and the climate for present and future generations through the reduction of greenhouse gas emissions ~~and through the promotion of efficient and effective solutions to for transportation issues,~~ clean industries, and development.

Comment [j7]: Goal LU XVI

Comment [sc8]: "Ensure" is a high bar.

Goal NE VI: Manage the storm and surface water system through the preservation of ~~natural systems a combination of engineered and structural solutions and the preservation of natural systems~~ in order to:

Comment [j9]: Goal LU XVII

- Protect water quality;
- Preserve and enhance fish and wildlife habitat, and critical areas;
- Maintain a hydrologic balance;
- Prevent property damage; and
- Provide for public safety and services.

Comment [m10]: Test and bullets were rearranged from current version to indicate priority

Goal NE VII: Continue to mandate natural and on-site solutions, such as infiltration, rain gardens, etc. ~~be proven infeasible before considering engineered solutions, such as detention.~~

Comment [j11]: New

Goal NE VIII: Preserve, protect, and, where feasible, restore wetlands, shorelines, and ~~streams surface water, and ground water~~ for wildlife, appropriate human use, and the maintenance of hydrological and ecological processes.

Comment [m12]: Goal LUXVIII

Goal NE IX: Use education and outreach ~~as a tool~~ to increase understanding, stewardship and protection of ~~critical areas the natural environment and understanding of environmental values.~~

Comment [j13]: Goal LU XIX

Land Use Policies

Comment [d14]: Do we want anything for GHG/carbon reduction? SEE BELOW

General

NE 1: Preserve suburban fringe, rural areas, open spaces, and agricultural lands in the region through infill development in existing communities.

Comment [m15]: New. Could also incorporate additional Smart Growth principles into other elements.

NE 2: Preserve environmental quality by taking into account the land's suitability for development and directing intense development away from ~~natural hazards and important natural resources~~critical areas.

Comment [m16]: LU1

NE 3: ~~Balance the conditional right of private property owners to develop and alter land with the protection of native vegetation and critical areas.~~

Comment [j17]: LU83

Comment [s18]: Moved from goal statement above

NE: Lead and support regulatory efforts, incentives, and projects to protect and improve the natural environment and preserve environmentally critical areas consistent with federal and state requirements. ~~Where different state and federal requirements exist, the more stringent of the two shall be applied. SUPERSEDED~~

NE: Consider and evaluate the immediate, long-range, and cumulative environmental impacts of policy and development decisions consistent with the SEPA and GMA. **SUPERSEDED**

Comment [j19]: LU84 - DELETE

NE 4: Conduct all City operations in a manner that minimizes adverse environmental impacts, by ~~The City should reduce its consumption and waste of energy and materials; minimizing its use of toxic and polluting substances; reusing, reducing, and recycling; and disposing of all waste in a safe and responsible manner. The City should give preference to recycled products, and alternative energy sources, whenever feasible.~~

Comment [j20]: LU85

Comment [m21]: This is superseded by Environmentally Preferred Purchasing Policy.

NE 5: Support, promote, and lead public education and involvement programs to raise public awareness about environmental issues, ~~advocate respect for the environment, encourage/motivate individuals and community efforts/organizations~~ to protect the environment, and provide opportunities for the community and visitors to ~~practice stewardship and respect and~~ enjoy Shoreline's unique environmental features.

Comment [jn22R21]: Not sure EPP is implemented/strong enough yet to remove this policy. This will help support implementation and enhancement of the guidelines in the next few years.

Comment [j23]: LU86

NE: Provide incentives for site development that will minimize environmental impacts. Incentives may include density bonuses for cluster development and a transfer of development rights (TDR) program. **OBSOLETE**

Comment [j24]: LU87

Comment [m25]: We're moving towards more ambitious mandates for "green" site development, and haven't pursued TDR. **BIG PICTURE QUESTION: DO WE WANT TO CONSIDER TDR?**

NE 6: Coordinate with local, state, and federal governments, Indian tribes, international ~~other governmental~~ agencies, and non-profit organizations to protect and enhance the environment, especially on issues that affect areas beyond Shoreline's boundaries. Participate in regional programs to protect critical areas.

Comment [j26]: LU88

NE: The following shall be designated environmentally critical areas and regulated through the Shoreline Municipal Code: frequently flooded areas, geologically hazardous areas, wetlands, streams, and fish and wildlife habitat conservation areas. **OBSOLETE**

Comment [j27]: LU89

Comment [j28]: LU90

NE 7: ~~Continue to identify~~ identify and map the location of all critical areas and buffers located within Shoreline. If there is a conflict between the mapped location and field information collected during project review, field information that is verified by the City shall govern. ~~The City shall consider updates, including citizen petitions, to the critical areas maps at least annually.~~

Comment [j29]: LU91

Is it already in our code that a private development can use critical areas as required open space? JN: not addressed one way or another. What is our policy?

Is this necessary policy language? If there are sound environmental reasons to stay away from critical areas, don't our current regs cover this? JN: passive use of critical areas for recreation actually leads to better stewardship of the resource in most cases.

NE 8: Environmentally critical areas may be designated as open space and should be conserved and protected from loss or degradation wherever feasible.

9/15 Kim L - I thought the "may be designated..." part meant something more along the lines of dedication as protected areas like we do with our requirement for buffers, fencing and signage. ... which actually is in the code. But I don't think there's anything in the code that specifically allows the use of critical areas as required open space. The CAO dictates what kinds of activities can take place in critical areas/buffers. FOLLOW UP.

NE: Develop, actively participate in, and help publicize, local and regional programs to ~~conserve open space and protect environmentally critical areas, including future transfer of development rights (TDR) programs, conservation efforts of the Land Conservancy of Seattle and King County, and King County's Public Benefit Rating System.~~ **REDUNDANT**

Steve S - The first part is regulatory, it doesn't belong in the Comp Plan. The second part sounds nice.

NE: Restrict the creation of new lots in critical areas or critical area buffers. **SUPERSEDED**

Comment [j30]: LU92

Comment [j31]: LU93

NE: Regulations should limit noise to levels that protect the public health and that allow residential, commercial, and manufacturing areas to be used for their intended purposes. Noise walls or other effective mitigation measures should be required when noise levels exceed adopted standards. OBSOLETE

Comment [j32]: LU94

NE: Work with the State Department of Transportation and other appropriate agencies and groups to mitigate freeway and arterial noise and address aesthetic concerns.

Comment [j33]: LU95

Comment [m34]: Doesn't seem like Natural Environment is the right place for these, but could be placed elsewhere.

NE 9: Encourage the use of "green" building methods and materials (such as those specified under certification systems like LEED, Built Green, Living Building, etc.) that may reduce impacts on the built and natural environment, such as to:

Comment [j35]: LU96

- Reduce stormwater impacts to protect local watersheds and salmon,
- Conserve energy and water,
- Prevent air and water pollution and conserve natural resources,
- Improve indoor air quality, and
- Enhance building durability.

Geological and Flood Hazard Areas – the entire section was moved over from LU Element

NE 10: Mitigate drainage, erosion, siltation, and landslide impacts while encouraging native vegetation, by:

Comment [j36]: LU97

- utilizing geotechnical engineering,
- clustering development to avoid hazards,
- decreasing development intensity, building site coverage and impervious surfaces, and
- limiting vegetation removal that would increase hazards.

Development regulations and required mitigation shall fit the specific type and level of potential impact. **REGULATION**

NE: Development of geologic hazard areas shall be discouraged and closely regulated. Where development is allowed on or adjacent to slopes which are less than 40% and have not experienced documented landslide activity, land uses shall be designed and sited to prevent property damage and environmental degradation, and to protect wildlife habitat to the maximum extent feasible by:

Comment [j37]: LU98

- preserving existing native vegetation,
- preventing soil saturation, and
- preventing overland flows of water. **REGULATION**

NE: The City shall actively enforce construction and erosion control standards and regulations, including best management practices and seasonal restrictions. SUPERSEDED

Comment [j38]: LU99

NE 11: In seismic hazards areas, seek to minimize risks to people and property, and prevent post-seismic collapse by requiring pre-development risk analysis and appropriate building design and construction measures. **REGULATION**

Comment [j39]: LU100

Comment [j40]: Do we have a seismic hazard area? Tsunami model, soils?
JN: Seismic hazard areas are defined and probably exist. I have never encountered a CA report that identified one though. There are maps of potential seismic hazard areas based on liquefaction in the 2009 City of Shoreline Hazard Mitigation Plan.

NE 12: Research information available on tsunami hazards and map the tsunami hazard areas located in Shoreline. Consider the creation of development standards and

Comment [j41]: LU101

emergency response plans for tsunami hazard areas to avoid tsunami-related impacts. (Think about keeping 2nd sentence.)

NE: ~~Allow land alteration, such as clearing, grading, and filling only for approved development proposals or approved mitigation plans. The City shall periodically review clearing and grading regulations to ensure that they adequately prevent environmental impacts. REGULATION~~

NE 13: ~~Promote educational efforts to inform landowners about site development, drainage, and yard maintenance practices which that impact slope stability and water quality.~~

NE: ~~Protect floodplains by limiting new development. All new permanent structures and roadways should be located above the 100-year flood level, wherever feasible. New development should be required to replace existing flood storage capacity lost due to filling. The City should not increase the allowed housing density of residential areas within the 100-year floodplain. REGULATION~~

NE 14: ~~Resolve long standing flooding impacts and prevent new flooding impacts, and ensure adequate surface water services for existing and anticipated development at service levels designated by the Capital Facilities Element. SUPERSEDED~~

NE 15: ~~Prioritize the resolution of flooding problems based on property damage, public safety risk, and flooding frequency.~~

Vegetation Protection – *the entire section was moved over from LU Element*

NE 16: ~~Develop educational materials, incentives, policies, and regulations to conserve native vegetation on public and private land for wildlife habitat, erosion control and human enjoyment. The city shall should establish regulations to protect mature trees and other native vegetation from the negative impacts of residential and commercial development, including short-plat development.~~

NE 17: ~~The removal of healthy trees should be minimized, particularly when they are located in environmentally critical areas.~~

NE: ~~The City shall encourage the replacement of removed trees on private land and require the replacement of removed trees on public land, wherever feasible. Trees which are removed should be replaced with a suitable number of native trees that are of a size and species which will survive over the long term and provide adequate screening in the short term. REGULATION~~

~~The City may require tree replacement on private property as required project mitigation or subject to terms and limitations in a vegetation conservation and management ordinance.~~

NE: ~~Trees that are a threat to public safety should be removed by property owners or designated maintenance providers at property owner expense. REGULATION~~

Comment [m42]: Not really addressed in SMP, Gail do we have this in Emergency Preparedness Plan?

JN: Tsunami hazards evaluated in 2009 City of Shoreline Hazard Mitigation plan, pg 92. "It is unlikely that a tsunami or seiche generated by a distant or Cascadia Subduction earthquake would result in much damage in Shoreline. One computer model suggests that a tsunami generated by such an earthquake with a magnitude of 8.5 would only be 0.2 to 0.4 meters in height when it reached the Seattle/Shoreline area. This results from the shielding of the Olympic Peninsula and the Puget Sound islands. However, Puget Sound is vulnerable to tsunamis generated by local crustal earthquakes (such as along the Seattle fault or South Whidbey Island fault) or by submarine landslides triggered by earthquake shaking. This type of tsunami could impact Shoreline. The low-lying areas along the Puget Sound coastline could suffer damage. Warning vulnerable areas would be nearly impossible due to the close proximity to the origin of the tsunami. The first wave would probably hit coastline areas within minutes."

Comment [j43]: LU102

Comment [j44]: LU103

Comment [j45]: LU104

Comment [j46]: LU105

Comment [j47]: State requirement

Comment [j48]: LU106

Comment [j49]: LU107

Comment [j50]: LU108

Comment [j51]: LU109

Comment [j52]: LU110

NE 18: If development is allowed in an environmentally critical area or critical area buffer, clearing and grading should be restricted ~~minimized to building footprints, roads, and small areas immediately adjacent to these improvements.~~ Native vegetation outside of these areas should be preserved, wherever feasible, or replanted.

Comment [j53]: LU111

REGULATION

NE 19: Identify and protect wildlife corridors prior to, ~~and during and after land development through public education, incentives, regulation, and code enforcement.~~

Comment [j54]: Is this superseded by DFW standards? JN: Existing regulations are Fish and Wildlife Habitat critical area . Data is from DFW currently. No City process for identifying new wildlife data.

NE 20: Encourage the use of native and low maintenance vegetation to provide additional secondary habitat, reduce water consumption, and reduce the use of pesticides, herbicides, and fertilizer.

Comment [m55]: Recommendation of SE Neighborhoods Subarea Plan

Wetlands and Habitat Protection ~~– the entire section was moved over from LU Element~~

NE 21: ~~Actively participate~~ Participate in regional species protection efforts, including salmon habitat protection and restoration.

Comment [j56]: LU114

NE: ~~Critical wildlife habitat, including habitats or species that have been identified as priority species or priority habitats by the Washington Department of Fish and Wildlife, will be preserved through regulation, acquisition, incentives and other techniques. Habitats and species of local importance will also be protected in this manner.~~ **SUPERSEDED**

Comment [j57]: LU115

NE 22: Preserve wetlands, and aquatic and riparian habitats in a natural state. ~~Appropriate buffers shall be maintained around natural areas of the Puget Sound shoreline, wetlands, lakes, creeks, and streams to protect native vegetation, water quality, habitat for fish and wildlife, and hydrologic function.~~

Comment [jn58]: This is actually a helpful policy, it was unclear to me recently reviewing the CA regulations whether it was the intent to specifically include priority species and habitats in the CA regulations. If they want that to remain, it should probably stay as a policy because it is not obvious.

Comment [j59]: LU116

NE: ~~Preserve and maintain wetlands in a natural state. Alterations to wetlands may be considered only if they:~~

- ~~•are necessary to provide a reasonable economic use of a property, provided all wetland functions are evaluated, impact to the wetland is minimized to the maximum extent practicable, and affected significant functions are appropriately mitigated;~~
- ~~•are absolutely necessary for a public agency or utility development; or~~
- ~~▪ provide necessary road or utility crossings.~~ **REGULATION**

Comment [j60]: LU117

NE: ~~Maintain a ranking and classification system for wetlands which rates wetlands based on size, vegetative complexity, ecological and hydrological function, and presence of threatened or endangered species. The City should work with other jurisdictions to establish a consistent regional classification system for wetlands that allows for the designation of both regionally important and locally unique wetlands.~~ **REGULATION**

Comment [j61]: LU118

NE: ~~Maintain regulations for wetlands that:~~

- ~~•recognize and protect the functions and values of all wetlands where feasible;~~

Comment [j62]: LU119

- *provide increasingly stronger protection to wetlands according to the ranking and classification system hierarchy;
- *recognize and protect wetlands of significant size;
- *preserve appropriate buffers to facilitate infiltration and maintain stable water temperatures, limit the rate at which stormwater enters the wetland, and provide wildlife habitat;
- *protect the natural water quality and regime;
 - preserve native wetland vegetation and allow the removal of noxious weeds; and limit public access based on the importance and sensitivity of the wetland. **REGULATION**

NE 23: ~~Strive to Achieve a level of no net loss of wetlands function, area, and value within each drainage basin over the long term. Shoreline should seek to maintain total wetlands acreage over the long term.~~

Comment [j63]: LU120

NE: ~~When development may impact wetlands or habitat, the following hierarchy should be followed in deciding the appropriate course of action:~~

- ~~*avoid impacts to the wetland and habitat;~~
- ~~*minimize impacts to the wetland and habitat;~~
- ~~*restore the wetland and habitat when impacted; and~~
- ~~*recreate the wetland and habitat at a ratio which will provide for its assured viability and success. **REGULATION**~~

Comment [j64]: LU121

~~On-site, in-kind mitigation shall be generally preferred. Because it is difficult to replace or restore many natural wetland and habitat values and functions after a site has been degraded, a significantly larger mitigation area than the area impacted should generally be required. Allow wetland or habitat mitigation off-site only if there is a new benefit to the resource and if long term monitoring and maintenance is ensured. **REGULATION**~~

NE: ~~If wetlands are used as part of a storm drainage system, assure that water level fluctuations will be similar to fluctuations under natural conditions and that water quality standards are met prior to discharging stormwater into a wetland. **REGULATION**~~

Comment [j65]: LU122

NE: ~~All wetlands in the City should be identified and preliminarily classified. The City shall identify all wetlands on public property and establish and implement a voluntary program to identify wetlands on private land. **REDUNDANT**~~

Comment [j66]: LU123

NE 24: ~~Existing degraded wetlands should be restored where feasible. Restoration of degraded wetlands may be required as a condition of redevelopment.~~

Comment [j67]: LU124

NE 25: ~~Wetland and habitat restoration efforts should focus on those areas that will result in the greatest benefit to the resource and that have been identified by the City as priority for restoration.~~

Comment [j68]: LU125

Streams and Water Resources ~~– the entire section was moved over from LU Element~~

NE 26: ~~The City should develop Support and promote basin stewardship programs to prevent surface water impacts and to identify opportunities for restoration. The~~

Comment [j69]: LU126

Comment [m70]: Brian, these are called for in SWMP, but not yet created, correct?

following issues should be considered when formulating plans and implementing projects which have the potential to impact stream basins: public access, respect for private property, restoration of the feature to a more natural state, retention of native vegetation, improvement of surface water management in the basin, improvement of fish habitat and channel substrate, and streambank stabilization.
REGULATION

- NE:** Streams shall not be permanently altered except for:
- Habitat restoration;
 - Water quality restoration;
 - Flood protection;
 - Correction to bank erosion;
 - Road crossings when alternative routes are not feasible; or
 - Private driveway crossings when it is the only means of access.
- REGULATION**

Comment [j71]: LU127

Stream Alterationsalterations, other than habitat improvements, should only occur when it is the only means feasible and should be the minimum necessary. Any alteration to a stream should result in a net improvement to habitat and streams should be encouraged to return to natural channel migration patterns, where feasible. In cases where stream alteration is consistent with this policy, channel stabilization techniques shall generally be preferred over culverting.
REGULATION

- NE 27:** Work with Engage community to identify identify and prioritize potential surface water features with stream restoration projects potential and attempt to obtain citizen involvement and community consensus on any future attempt to restore features which have been altered. Restoration efforts may include the daylighting of streams which have been diverted into underground pipes or culverts.

Comment [j72]: LU128

- NE:** Solutions to stream habitat problems should focus on those types of problems that first protect and preserve existing habitat, then enhance and expand habitat in areas where wild anadromous fish are present, and lastly, enhance and expand habitat in areas where other wild fish are present. **REGULATION**

Comment [j73]: LU129

- NE 28:** The City shall Wwork with citizen volunteers, state and federal agencies, and Indian tribes to identify, prioritize, and eliminate physical barriers and other impediments to anadromous fish spawning and rearing habitat.

Comment [j74]: LU130

- NE 29:** Preserve and protect natural surface water storage sites, such as wetlands, aquifers, streams and water bodies that help regulate surface flows and recharge groundwater.

Comment [j75]: LU131

- NE 30:** Conserve and protect groundwater resources by informing the Washington Department of Ecology of major increases in groundwater withdraws by public and private parties, appropriate regulation of surface water quality, and facilitating enforcement of waste disposal ordinances by appropriate agencies.
REGULATION

Comment [j76]: LU132

- NE:** Use the Washington State Shoreline Management Act to guide protection efforts for shorelines of statewide significance and to guide protection efforts for other

Comment [j77]: LU133

water features in the City which do not qualify for Shoreline Management Act regulations. SUPERSEDED

NE: ~~The City shall work with citizens and watershed interest groups, and cooperate with King County, Snohomish County, and other local governments, regional governments, state agencies, and Indian tribes in developing and implementing watershed action plans and other types of basin plans for basins which include or are upstream or downstream from the City of Shoreline. REDUNDANT~~

Comment [j78]: LU134

NE: ~~The City shall establish an interjurisdictional stewardship committee to use as a forum for working with neighboring communities to improve water quality and stream habitat in basins that share interjurisdictional boundaries. REGULATION~~

Comment [j79]: LU135

NE 31: Provide additional public access to Shoreline's natural features, including the Puget Sound shoreline. The City will attempt to reach community and neighborhood consensus on any proposal to improve access to natural features where the proposal has the potential to negatively impact private property owners.

Comment [j80]: LU136

Clean Air and Climate Protection – *the entire section was moved over from LU Element*

Comment [jn81]: This was a suggested addition to the goals so it should be reflected in the policies. NE 30 starts to address climate change.

NE 32: Support federal, state, and regional policies intended to protect clean air in Shoreline and the Puget Sound Basin. ~~The City will support the active enforcement of air quality policies and ordinances by the Puget Sound Clean Air Agency.~~

Comment [j82]: LU154

NE 33: Support the expansion of public mass transit and encourage cycling and walking in the City ~~to reduce greenhouse gases emissions and as an alternative to dependence on individual vehicles.~~

Comment [j83]: LU155

NE 34: Reduce the amount of air-borne particulates through continuation and possible expansion of the street-sweeping program, dust abatement on construction sites, education to reduce burning of solid and yard waste, and other methods ~~that address particulate sources.~~

Comment [j84]: LU156

Comment [jn85]: If the City is serious about reducing particulates – regulating woodburning stoves is a logical area of consideration –banning or requiring EPA certified.

NE 35: Support and implement the Mayor's Climate Protection Agreement, other climate pledges and commitments undertaken by the City, and other multi-jurisdictional efforts to reduce greenhouse gasses and address climate change, sea-level rise, and other impacts of global warming.

Comment [m86]: Recommendation from Sustainability white paper (Att. E, 4/5/12 staff report)

Sustainability

Comment [m87]: Policies in this section are taken directly from Sustainability Strategy Guiding Principles.

NE 36: Establish policy decisions and priorities considering their long-term impacts on the natural and human environments.

NE 37: Lead by example and encourage other community stakeholders to commit to sustainability. Learn from other's success and design our programs, policies, facilities and practices as models to be emulated by other organizations and individuals.

- NE 38:** Recognize that a sustainable community requires and supports economic development, human health, and social benefit. Make decisions using the “triple bottom line” approach to sustainability (environment, economy, and equity).
- NE 39:** Promote community awareness, responsibility, and participation in sustainability efforts through public outreach programs and other opportunities for change. Serve as catalyst and facilitator for partnerships to leverage change in the broader community.
- NE 40:** Apply adaptive management to efforts and clearly communicate findings to the Shoreline community- individuals, businesses, non-profits, utilities, and City decision-makers. Use analytical and monitoring tools and performance targets to evaluate investments.

Natural Environment Policy Recommendations from SE Neighborhoods Subarea

Plan:

NE: Remove regulatory barriers and Create incentives to encourage the use of innovative methods of protecting natural resources (solar power for lighting outside space, green storm water conveyance systems, new recycling options).

NE: Create incentives to encourage innovative strategies to enhance the natural environment on and around developed sites (green roof and green wall techniques, hedgerow buffers, contiguous green zones/corridors through neighborhoods, green natural storm water conveyance systems).

NE: When redeveloping a site, encourage incorporation of measures that improve or complement the community’s natural assets such as its tree canopy, surface water elements, wildlife habitat, and open space.

NE: Create incentives to encourage enhancement and restoration of wildlife habitat on both public and private property through existing programs such as the backyard wildlife habitat stewardship certification program.

NE: Develop technical resources for better understanding of overall hydrology, including the locations of covered streams in the subarea, and recommend actions and measures to address existing stormwater drainage problems.

NE: Create incentives to plan all remodel and new development around substantial trees and groves of trees to preserve tree canopy.

NE: Retain and establish new trees, open spaces, and green belts.

NE: Use green buffers of specific buffer area to building height ratio between different land uses, especially where transition zoning is not possible.

What other additions should we make?

- **Green building?**
- **Green infrastructure?**
- **Greenhouse gas emissions?**
- **Other Climate recommendations?**
- **Recommendations from Surface Water Master Plan?**
- **Recommendations from Emergency Preparedness Plan?**

Comment [m88]: Are these appropriate to include?

Comment [jn89]: I’d suggest adding this language to almost all of these. Not sure if it is really feasible to “create incentives” for all of these things. Can we soften the verbs?

Comment [jn90]: Would this be the basin planning that SW is doing or something else?

Comment [jn91]: Aren’t there already green building related policies somewhere?

Natural Environment Element Goals & Policies

Introduction

This Element contains the goals and policies necessary to support the City's responsibility for protection of the natural environment. Previously, these policies were housed in the Land Use Element, but were separated into their own element in the 2012 update to support the City's emphasis on sustainability, with major impetus provided by the 2007 Council goal to "Create an Environmentally Sustainable Community."

To demonstrate this commitment to sustainability, the City has also signed on to the U.S. Conference of Mayor's Climate Protection Agreement, the Cascade Agenda, the Green City Partnership Program, and the King County- Cities Climate Collaboration. In 2008, the City adopted an Environmental Sustainability Strategy and created a Green Team tasked with its implementation. In 2012, with funding from the federal Energy Efficiency and Conservation Block Grant, the City launched a webpage to track indicators of environmental sustainability over time. Information displayed on this webpage (www.shorelinewa.gov/forevergreen) will inform citizens and decision-makers about progress of goals and policies contained in this element.

Relevant Framework Goals from Vision 2029

FG7: Conserve and protect our environment and natural resources, and encourage restoration, environmental education and stewardship.

FG8: Apply innovative and environmentally sensitive development practices.

Natural Environment Goals

- Goal NE I:** Minimize adverse impacts on the natural environment through leadership, policy, and regulation, and address impacts of past practices where possible.
- Goal NE II:** Lead and support efforts to protect and improve the natural environment, protect and preserve environmentally critical areas, and minimize pollution and the waste of energy and materials.
- Goal NE III:** Conserve soil resources and protect people, property and the environment from geologic hazards, including steep slope areas, landslide hazard areas, seismic hazard areas, and erosion hazard areas by regulating disturbance and development.
- Goal NE IV:** Protect, enhance and restore habitat of sufficient diversity and abundance to sustain existing indigenous fish and wildlife populations.

- Goal NE V:** Protect clean air and the climate for present and future generations through the reduction of greenhouse gas emissions and the promotion of efficient and effective solutions for transportation, clean industries, and development.
- Goal NE VI:** Manage the storm and surface water system through the preservation of natural systems and structural solutions in order to:
- Protect water quality;
 - Preserve and enhance fish and wildlife habitat, and critical areas;
 - Maintain a hydrologic balance;
 - Prevent property damage; and
 - Provide for public safety and services.
- Goal NE VII:** Continue to mandate natural and on-site solutions, such as infiltration, rain gardens, etc. be proven infeasible before considering engineered solutions, such as detention.
- Goal NE VIII:** Preserve, protect, and, where feasible, restore wetlands, shorelines, and streams for wildlife, appropriate human use, and the maintenance of hydrological and ecological processes.
- Goal NE IX:** Use education and outreach to increase understanding, stewardship and protection of the natural environment.

Land Use Policies

General

- NE 1:** Preserve suburban fringe, rural areas, open spaces, and agricultural lands in the region through infill development in existing communities.
- NE 2:** Preserve environmental quality by taking into account the land's suitability for development and directing intense development away from critical areas.
- NE 3:** Balance the conditional right of private property owners to develop and alter land with the protection of native vegetation and critical areas.
- NE 4:** Conduct all City operations in a manner that minimizes adverse environmental impacts, by reducing consumption and waste of energy and materials; minimizing use of toxic and polluting substances; reusing, reducing, and recycling; and disposing of all waste in a safe and responsible manner.
- NE 5:** Support, promote, and lead public education and involvement programs to raise awareness about environmental issues, motivate individuals and community organizations to protect the environment, and provide opportunities for the community and visitors to practice stewardship and enjoy Shoreline's unique environmental features.
- NE 6:** Coordinate with other governmental agencies, and non-profit organizations to protect and enhance the environment.

- NE 7:** Continue to identify and map the location of all critical areas and buffers located within Shoreline. If there is a conflict between the mapped location and field information collected during project review, field information that is verified by the City shall govern.
- NE 8:** Environmentally critical areas may be designated as open space and should be conserved and protected from loss or degradation wherever feasible.
- NE 9:** Encourage the use of “green” building methods and materials (such as those specified under certification systems like LEED, Built Green, Living Building, etc.) that may reduce impacts on the built and natural environment,

Geological and Flood Hazard Areas

- NE 10:** Mitigate drainage, erosion, siltation, and landslide impacts while encouraging native vegetation.
- NE 11:** In seismic hazards areas, seek to minimize risks to people and property.
- NE 12:** Research information available on tsunami hazards and map the tsunami hazard areas located in Shoreline. Consider the creation of development standards and emergency response plans for tsunami hazard areas to avoid tsunami-related impacts.
- NE 13:** Promote educational efforts to inform landowners about site development, drainage, and yard maintenance practices that impact slope stability and water quality.
- NE 14:** Resolve long standing flooding impacts and prevent new flooding impacts.
- NE 15:** Prioritize the resolution of flooding problems based on property damage, public safety risk, and flooding frequency.

Vegetation Protection

- NE 16:** Develop educational materials, incentives, policies, and regulations to conserve native vegetation on public and private land for wildlife habitat, erosion control and human enjoyment. The city should establish regulations to protect mature trees and other native vegetation from the negative impacts of residential and commercial development, including short-plat development.
- NE 17:** The removal of healthy trees should be minimized
- NE 18:** If development is allowed in an environmentally critical area or critical area buffer, clearing and grading should be minimized.
- NE 19:** Identify and protect wildlife corridors prior to, during and after land development through public education, incentives, regulation, and code enforcement.

- NE 20:** Encourage the use of native and low maintenance vegetation to provide additional secondary habitat, reduce water consumption, and reduce the use of pesticides, herbicides, and fertilizer.

Wetlands and Habitat Protection

- NE 21:** Participate in regional species protection efforts, including salmon habitat protection and restoration.
- NE 22:** Preserve wetlands, and aquatic and riparian habitats in a natural state to protect native vegetation, water quality, habitat for fish and wildlife, and hydrologic function.
- NE 23:** Strive to achieve a level of no net loss of wetlands function, area, and value within each drainage basin.
- NE 24:** Existing degraded wetlands should be restored where feasible.
- NE 25:** Wetland and habitat restoration efforts should focus on those areas that will result in the greatest benefit to the resource and that have been identified by the City as priority for restoration.

Streams and Water Resources

- NE 26:** Support and promote basin stewardship programs to prevent surface water impacts and to identify opportunities for restoration. Stream alterations, other than habitat improvements, should only occur when it is the only means feasible and should be the minimum necessary.
- NE 27:** Engage community to identify and prioritize potential stream restoration projects. Restoration efforts may include the daylighting of streams which have been diverted into underground pipes or culverts.
- NE 28:** Work with citizen volunteers, state and federal agencies, and Indian tribes to identify, prioritize, and eliminate physical barriers and other impediments to anadromous fish spawning and rearing habitat.
- NE 29:** Preserve and protect natural surface water storage sites, such as wetlands, aquifers, streams and water bodies that help regulate surface flows and recharge groundwater.
- NE 30:** Conserve and protect groundwater resources.
- NE 31:** Provide additional public access to Shoreline's natural features, including the Puget Sound shoreline. The City will attempt to reach community and neighborhood consensus on any proposal to improve access to natural features where the proposal has the potential to negatively impact private property owners.

Clean Air and Climate Protection

- NE 32:** Support federal, state, and regional policies intended to protect clean air in Shoreline and the Puget Sound Basin.
- NE 33:** Support the expansion of public mass transit and encourage cycling and walking in the City to reduce greenhouse gas emissions and as an alternative to dependence on individual vehicles.
- NE 34:** Reduce the amount of air-borne particulates through continuation and possible expansion of the street-sweeping program, dust abatement on construction sites, education to reduce burning of solid and yard waste, and other methods that address particulate sources.
- NE 35:** Support and implement the Mayor's Climate Protection Agreement, other climate pledges and commitments undertaken by the City, and other multi-jurisdictional efforts to reduce greenhouse gasses and address climate change, sea-level rise, and other impacts of global warming.

Sustainability

- NE 36:** Establish policy decisions and priorities considering their long-term impacts on the natural and human environments.
- NE 37:** Lead by example and encourage other community stakeholders to commit to sustainability. Learn from other's success and design our programs, policies, facilities and practices as models to be emulated by other organizations and individuals.
- NE 38:** Recognize that a sustainable community requires and supports economic development, human health, and social benefit. Make decisions using the "triple bottom line" approach to sustainability (environment, economy, and equity).
- NE 39:** Promote community awareness, responsibility, and participation in sustainability efforts through public outreach programs and other opportunities for change. Serve as catalyst and facilitator for partnerships to leverage change in the broader community.
- NE 40:** Apply adaptive management to efforts and clearly communicate findings to the Shoreline community- individuals, businesses, non-profits, utilities, and City decision-makers. Use analytical and monitoring tools and performance targets to evaluate investments.

Natural Environment Policy Recommendations from SE Neighborhoods Subarea

Plan:

NE: Remove regulatory barriers and create incentives to encourage the use of innovative methods of protecting natural resources (solar power for lighting outside space, green storm water conveyance systems, new recycling options).

NE: Create incentives to encourage innovative strategies to enhance the natural environment on and around developed sites (green roof and green wall techniques,

hedgerow buffers, contiguous green corridors through neighborhoods, natural storm water conveyance systems).

NE: When redeveloping a site, encourage incorporation of measures that improve or complement the community's natural assets such as its tree canopy, surface water elements, wildlife habitat, and open space.

NE: Create incentives to encourage enhancement and restoration of wildlife habitat on both public and private property through existing programs such as the backyard wildlife habitat stewardship certification program.

NE: Develop technical resources for better understanding of overall hydrology, including the locations of covered streams in the subarea, and recommend actions and measures to address existing stormwater drainage problems.

NE: Create incentives to plan all remodel and new development around substantial trees and groves of trees to preserve tree canopy.

NE: Retain and establish new trees, open spaces, and green belts.

NE: Use green buffers of specific buffer area to building height ratio between different land uses, especially where transition zoning is not possible.

What other additions should we make?

- **Green building?**
- **Green infrastructure?**
- **Greenhouse gas emissions?**
- **Other Climate recommendations?**
- **Recommendations from Surface Water Master Plan?**
- **Recommendations from Emergency Preparedness Plan?**

Natural Environment Element Supporting Analysis

Background and Context

Shoreline's environment is comprised of both natural and built features. Puget Sound vistas, mature trees, natural vegetation, streams, wetlands, lakes, and tidelands are just some of the aspects of the natural environment that Shoreline citizens value. The relationships between these features, development, and natural processes, and the quality of the resulting environment, have profound impacts on the quality of life in Shoreline. Shoreline is not a pristine landscape, but the very name of the City reflects the importance of the natural environment to the community identity. Preserving the quality of the environment depends on government, ~~corporate business~~, and individual decisions, and coordinated actions to minimize the adverse environmental impacts that ~~are caused by human development~~ can occur during development or redevelopment and daily life.

Environmental Conditions

Shoreline is a community that developed mostly as a suburban residential area with ~~the an~~ associated mix of commercial centers, parks, schools, and natural areas. Natural areas are comprised of the Puget Sound shoreline, bluffs, steep slopes, ravines, natural reserves, wetlands, streams, lakes, native growth easements, and stands of mature trees. These areas are found on both private property and public property, such as larger single family residential lots and City parks.

~~Portions of Shoreline is known to have contain~~ the following environmentally critical areas: geological hazard areas (including steep slopes and erosion hazards), frequently flooded hazard areas, streams, wetlands, and fish and wildlife habitat conservation areas. The City does not contain any known critical aquifer recharge areas that supply potable water. ~~Almost without exception, residents get their d~~Drinking water comes from surface systems that originate in the Cascade Mountains and are operated by the Shoreline Water District and the City of Seattle, predominantly from the Tolt River.

Shoreline has adopted regulations to protect environmentally critical areas in the City. These regulations are referred to as the Critical Areas Regulations and are located in Chapter 20.80 of the Shoreline Municipal Code. These regulations ~~to protect critical areas~~ are periodically reviewed and updated in accordance with ~~the Growth Management Act~~state mandates.

Geologic Hazards and Frequently Flooded Areas

Continental glaciers extended many times into central Puget Sound over the past two million years depositing layers of silt-clay, gravel and till in a rolling plateau known as the Seattle

Comment [jn1]: There are a lot more types of geo hazard areas so why name just a couple?

Comment [jn2]: Is this just because we don't have any data? Or does the data show there aren't any? Why do we have the regulations if not?

Comment [jn3]: I think it is all from the Tolt.

drift plain. The City is located on this plateau which drops irregularly to Puget Sound and Lake Washington through a series of basins formed by small streams that flow through the area. A number of steep bluffs are located along the shores of Puget Sound within The Highlands and Innis Arden neighborhoods. The size of these bluffs diminishes in the Richmond Beach neighborhood. Hazards, including landslides and mudslides, ~~are associated with~~ have occurred along these steep bluffs. Steep bluffs are also found along the eastern edges of the City. The majority of the remaining areas of the City are located on a rolling plateau with a north/south topographical orientation. Development on or adjacent to severe slopes and highly erodable soils can have a negative impact on slope stability.

Soil type, vegetative cover, presence of ground water, and degree of slope affect the suitability of a site for development. The City is predominately covered with the Alderwood series of soils (U.S. Geological Survey Maps). Alderwood soils have drainage problems during periods of heavy seasonal rainfall. Erosion can be severe and accelerated if vegetation (including trees) and forest litter, which protects the soils from rain, are removed for development. The City of Shoreline contains geologic hazard areas prone to landslide, seismic, and erosion hazards. Most of these hazard areas are located on the bluffs along Puget Sound or along adjacent to creek streambeds.

Comment [jn4]: Beds implies the flat part at the bottom of the stream.

Landslide Hazards

Many of the bluffs along Puget Sound consist of severe slopes and isolated glacial deposits that are susceptible to landslides. These unstable slopes are a major hazard to people, structures, and other land uses and improvements (such as railroad tracks). The identification of areas susceptible to landslides is necessary to effectively regulate grading, building, foundation design, housing density, drainage and to implement other regulations to reduce or eliminate the risk of property damage and personal injury.

The City contains areas that are susceptible to landslides. Within the City these areas include the bluffs and stream ravines along Puget Sound, the Boeing Creek ravine and the hillsides along McAleer Creek.

Seismic Hazards

Seismic hazard areas are those areas subject to severe risk of earthquake damage as a result of settlement or soil liquefaction. These conditions occur in areas underlain by soils with low cohesion and density, usually in association with a shallow groundwater table. When shaken by an earthquake, certain soils lose their ability to support a load. Some soils will actually flow like a fluid; this process is called liquefaction. Loss of soil strength can also result in failure of the ground surface and damage to structures supported in or on the soil. Loose, water-saturated materials are the most susceptible to ground failure due to earthquakes.

One area of identified seismic hazard is located along Puget Sound in Richmond Beach Saltwater Park. In this area, park structures and the Burlington Northern railroad tracks may be at risk. The other seismic hazard area is located along McAleer Creek between NE 196th Street and NE 205th Street. Roads, single-family residences, and other public and private improvements may be affected in this area. A small area near 24th Avenue NE is susceptible to both landslides and seismic hazards.

Erosion Hazards/Sedimentation

Erosion is a natural process where rain, running water, and wind loosen and eliminate or reduce soil coverage and deposit it elsewhere. Of these natural forces, erosion by rain and running water is by far the most common within the Puget Sound region. The susceptibility of any soil type to erosion depends upon the physical and chemical characteristics of the soil, its protective vegetative cover, slope length and gradient, intensity of rainfall, and the velocity of water runoff. During storms, water runoff saturates the upper layers of till and sand-gravel. When the water migrates to the less permeable layer of silt-clay below the layer of sand-gravel it begins to flow laterally toward Puget Sound or Lake Washington. Erosion and slides occur as the sand-gravel layer washes away or slides on top of the slippery silt-clay layer. Runoff also erodes topsoil, which contributes to the erosion and landslide hazards.

The City contains areas that are prone to erosion activity. These areas include the bluffs along Puget Sound, the Boeing Creek ravine, and the hillsides along McAleer Creek, near the eastern boundary of the City. Erosion hazards also include hillsides in the Richmond Beach neighborhood, the vicinity of Paramount Park, east of Holyrood Cemetery, and the vicinity of Hamlin Park and Shorecrest High School. A large portion of the Boeing Creek Basin, which includes Shoreview Park, is both an erosion hazard area and a landslide area. Other small erosion hazard areas are variously located within the City.

Comment [jn5]: What data is this paragraph based on? Doesn't match erosion hazard soils data.

Potential geologic hazard areas are shown on Figure LU-2 at the end of this section.

Comment [sc6]: Update map

Frequently-Flooded Hazard Areas

~~Frequently flooded~~ Flood hazard areas are those areas within the regulatory floodplain subject to a one percent or greater chance of flooding in any given year which include the floodway, channel migration zones, riparian habitat zones, and special flood hazard areas. Floodplains have been mapped on Flood Insurance Rate Maps (FIRM) prepared by FEMA. Within Shoreline, only limited areas adjacent to ~~streams-Thornton and Boeing creeks~~, Ronald Bog and the Puget Sound Shoreline have been designated as potential floodplains. In addition to floodplains, unmapped spot flooding occurs during storm events in various areas in the City that lack adequate drainage.

Vegetation Protection

Comment [jn7]: May want to add information on tree canopy study and park vegetation management plans.

Residents characterize the City of Shoreline as a wooded community; this is often cited as a key reason for locating in the area. Large evergreen trees can be seen rising above residential neighborhoods, on hilltops, and even on the periphery of Aurora Avenue. As the City has become more urbanized, the area covered by native ground cover and/or shaded by native trees has been vastly reduced.

Forested open space, wetlands, and native vegetation found on steep slopes and larger residential lots are important resources that should be preserved. Trees help stabilize soils on steep slopes and act as barriers to wind and sound. Plants replenish the soil with nutrients and generate oxygen and clean pollutants from the air. Native vegetation provides habitat for wildlife; the native vegetation found near creeks, lakes, and saltwater areas offer habitats for many migrating and resident birds and other wildlife. Less developed wooded areas and City parks also provide habitats for many birds and mammals. Wetlands and

riparian vegetation provide surface water storage and help clean surface water of pollutants and sediment.

Aerial photos show that the community is a mosaic of various types of vegetation. The largest, most contiguous areas of native vegetation in Shoreline are primarily found in City parks, publicly owned open space, privately owned open space (such as the Boeing Creek area of The Highlands and the reserves in Innis Arden) and designated critical areas (such as steep slopes along the Puget Sound shoreline). These areas include the highest quality wildlife habitat found in the City. However, areas of less intensive residential development also contain mature trees and other native vegetation which provide secondary wildlife habitat and substantially contribute to the quality of life in our City. Native vegetation in residential areas that may be subdivided or otherwise more intensely developed is at the greatest risk of being lost.

Comment [sc8]: Do we own this now? JN: NO

~~Development standards and incentives help protect native vegetation during the development process. For example, standards may require that the developer file a vegetation management plan which specifies how he/she will reduce the amount of vegetation which is cleared from the site and where he/she will plant trees to replace the ones which are lost. Incentives could include density bonuses for cluster housing which protects areas of undisturbed open space or expedited permit review. Other tools which can be used to protect vegetation include public education, habitat enhancement assistance, conservation easements, open space designation and property tax reduction under the Public Benefit Rating System, transfer or purchase of development rights, and outright acquisition.~~

Comment [sc9]: We should probably only refer to current regs, not prospective ones

Habitat Protection

The process of urbanization can result in the conversion of wildlife habitat to other uses. The loss of certain types of habitat can have significant, adverse effects on the health of certain species. Fish and wildlife habitat conservation areas are those that are necessary for maintaining species within their natural geographic distribution so that isolated subpopulations are not created. Designated habitats include those areas associated with species that state or federal agencies have designated as endangered, threatened, sensitive, or candidate species, anadromous fish habitat, waterfowl and raptor nests, heron rookeries and designated habitats of local importance.

Currently in the Puget Sound, the bald eagle and Chinook salmon are listed as threatened species by the federal government under the Endangered Species Act. The Washington Department of Fish and Wildlife indicates bald eagle territory in the Richmond Beach and Point Wells areas. WDFW maps and the City's stream inventory indicate the presence of Chinook salmon in portions (including sections outside of the City) of McAleer Creek, Thornton Creek and Boeing Creek. Other sources have indicated the presence of fish in other streams within the City, although the full extent of fish habitat has not been confirmed. To help restore healthy salmon runs, local governments and the State government must work proactively to address salmon habitat protection and restoration.

Comment [jn10]: Double check to see if listings have changed at all.

The Washington Department of Fish and Wildlife (WDFW) has developed the Priority Habitats and Species (PHS) Program to help preserve the best and most important habitats and provide for the life requirements of fish and wildlife. Priority species are fish and wildlife species that require protective measures and/or management guidelines to ensure their

perpetuation. Priority habitats are habitat types with unique or significant value to many species. The WDFW has documented the locations of priority habitats and species within the City. These PHS areas include wetlands, anadromous fish habitat, riparian areas, bald eagle territory, urban natural open space, habitat for a priority bird species, and the point location of a priority bird species siting. These areas combined comprise less than 5% of the total land area of the City and are often found within existing City parks, public open space, and designated private open space

Comment [jn11]: Check against current data.

The City has developed a geographic information system (GIS) that includes detailed maps of PHS areas based on data provided by the WDFW and other mapping resources. WDFW provides management recommendations for priority species and habitats that are intended to assist landowners, users, and managers in conducting land-use activities in a manner that incorporates the needs of fish and wildlife. Management recommendations are developed through a comprehensive review and synthesis of the best scientific information available. The City has reviewed the PHS management recommendations developed by WDFW for species identified in Shoreline and used them to guide the development of critical areas regulations that fit the existing conditions and limitations of our relatively urbanized environment.

Comment [m12]: Have we done this? JN: Started doing this, but not fully launched for use by the planners.

Streams and Water Resources

Wetlands

Wetlands perform valuable functions that include surface and flood water storage, water quality improvement, groundwater exchange, stream base flow augmentation, and biological habitat support. A review of background information, including aerial photos from 1992, identified 17 individual wetlands within the City. These wetlands range from the large estuarine system (a mixture of salt and fresh waters) adjacent to Puget Sound, to lakes and small excavated ponds. With the exception of the Puget Sound estuarine system, all wetlands in the City are palustrine systems (freshwater). The largest palustrine system is Echo Lake located in the north-central portion of the City. Other large wetlands include ponds within Ronald Bog Park, Twin Ponds Park, Paramount Park, and the Seattle Country Club, as well as numerous undocumented wetlands of .5 acres or less. Most wetlands in the City are relatively isolated systems and are surrounded by development.

Under the Shoreline Municipal Code, wetlands are designated using a tiered classification system (from ~~Class 4~~Type I to ~~Class 3~~Type IV) based on size, vegetative complexity, and the presence of threatened or endangered species. The entire Puget Sound shoreline is classified as a ~~Class 4~~Type I wetland. This wetland includes approximately 150 acres of aquatic bed and shoreline habitat. No other wetlands in the City have received a Class I rating. All wetlands, regardless of size, are regulated under the Shoreline Municipal Code. When a development is proposed on a site with known or suspected wetlands, a wetland evaluation is required to verify and classify wetlands and delineate boundaries and buffer areas.

Comment [jn13]: Check SMP data. Need to confirm that Puget Sound IS classified as a wetland, Type I)

Comment [m14]: Is this still correct?

All of the documented wetlands within the City have experienced some level of disturbance as a result of development and human activity. Disturbances have included major alterations such as wetland excavation, fill or water impoundment. Some wetland areas occur within parks that receive constant use by people, threatening the wetlands with impacts of human activity, such as trash and trampling of vegetation.

Lakes

There are four lakes in the City of Shoreline: Echo Lake, Ronald Bog, Hidden Lake and Twin Ponds. Like most small urban lakes, Shoreline’s lakes contain pollutants and contaminated runoff, including fertilizers and pesticides from lawns and gardens; oils, greases, and heavy metals from vehicles; and fecal coliform bacteria. The quality of the water in the lakes is a concern to many residents and City staff. Ronald Bog and Twin Ponds were historically bogs that were dredged. As urban development in the City has occurred, the process by which the nutrient level and vegetation in these lakes increases has accelerated. Ronald Bog and Twin Ponds will eventually revert to bogs.

Comment [jn15]: There are technically NO lakes in shoreline. Should this be rewritten. Technically these are wetlands. From a regulatory perspective we do not classify them as lakes, but as openwater wetlands.

Hidden Lake is currently used as a sediment storage facility and has been significantly altered to accommodate this function. King County completely reconstructed this feature by removing the sediment eroded from sites further upstream in the basin. Hidden Lake has served as a sink for this sediment and has protected the water quality and potential fish habitat in the lower reaches of Boeing Creek. Sedimentation will continue to impact Hidden Lake unless action is taken to stabilize the upper reaches of Boeing Creek and/or reduce run-off rates in the upper reaches of the basin. If future stabilization of Boeing Creek includes changes to the channel, the habitat values associated with the upper reaches of the Creek could be reduced. Some community members would like to see Hidden Lake restored to a more natural condition. However, this could limit the ability of the City to continue to use this feature for and could increase sedimentation and habitat degradation in the lower reaches of Boeing Creek.

The City anticipates preparing a master plan for Shoreview Park. This plan will guide the City as it acts to close and rehabilitate user created trails and access points to Hidden Lake and establish public access in a suitable location(s). This will reduce erosion and sedimentation in and around this location. The City is also working with King County in an effort to remove barriers to fish passage along the lower reaches of Boeing Creek. The restoration of viable fish habitat may make the protection of the lower reaches of the Creek from sedimentation (a role played by Hidden Lake) a higher priority.

Comment [sc16]: Is this still relevant?

Comment [sc17]: Is this still on the work program? Has it been accomplished?

Streams and Creeks

Numerous small stream and creeks are found within or adjacent to the City of Shoreline. Many of these streams have been placed in culverts, channels, or otherwise altered and degraded. Boeing Creek flows to the Puget Sound and drains an area which includes Shoreview Park. Thornton Creek originates in Ronald Bog, near the geographic center of the City, flows to Twin Ponds, crosses the City limits, and emerges as an open channel in the City of Seattle’s Jackson Park Golf Course. McAleer Creek flows in the southeasterly direction and passes through the northeast corner of the City and into Lake Forest Park. Lyon Creek flows in a similar direction just outside of the City. Other features include small and unnamed creeks which flow into the Puget Sound in the Richmond Beach, Innis Arden, and Highlands neighborhoods.

Large portions of the watersheds drained by creeks in the City have been paved or otherwise developed. This development dramatically increases the volume of water in the creeks during storm surges and reduces in-stream flows during drier periods of the year. This combination of more intense storm surges and overall lower flows causes numerous environmental problems, including: increased bank erosion, scouring and deepening of the stream channel, reduced water quality, sedimentation of gravels, damage to stream-side

vegetation, and reduction or elimination of habitat for wildlife, fish, and the insects that fish feed on.

McAleeer Creek and Thornton Creek and an area of Puget Sound adjacent to Richmond Beach are currently on the Washington State list of water features that do not meet water quality standards due to high levels of fecal coliform, and in some locations for dissolved oxygen and temperature. It is believed that Boeing Creek does not meet State standards for sediment. Creeks continue to be damaged as a result of large quantities of stormwater as well as by pollutants it may contain.

Comment [m18]: Is this still true? JN: checked data on: <http://apps.ecy.wa.gov/wqawa2008/viewer.htm>

Groundwater

Groundwater aquifers are used for supplying water to lakes, wetlands, and streams during the dry season and for a few private wells that supply water for irrigation and possibly drinking water in a few isolated instances. Wetlands and lakes are thought to be the main groundwater recharge areas in the City.

Comment [jn19]: This is weird wording. They are not "used", except for the wells mentioned. The rest are natural processes.

Water Quality and Drainage

Drainage in the City consists of nine separate areas or drainage basins: Lyons Creek, McAleeer Creek, Thornton Creek, Boeing Creek, West Lake Washington, Bitter Lake, Seattle Golf Club and two separate areas of the Middle Puget Sound Basin (north and south).

Comment [jn20]: Check SW master plan maps/designations. These do not match the current labels on the basins in the GIS.

Along the west half of the City, the Boeing Creek Basin empties directly into Puget Sound, and the Middle Puget Sound basins drain into Puget Sound via small creeks and surface water systems. The McAleeer Creek Basin in the northeastern portion of the City drains into Echo Lake and Lake Ballinger and eventually into Lake Washington. The approximate eastern half of the City from Interstate 5 drains to Lake Washington via Thornton Creek. The Ballinger area drains to Lake Washington via Lyon Creek. Small portions of the City at the north and northeastern edges drain into Lake Washington through small creeks and surface water systems.

Drainage facilities in the City consist of a combination of conveyance pipes, ditches, and stream channels. Much of the development in the City took place in the 1940s and 1950s, prior to the implementation of stormwater mitigation regulations in the 1970s.

Many natural creek systems have been stabilized or reconstructed to repair and prevent slope erosion or bank failures. However, water quality mitigation measures have not been adequate to protect natural waterways. Consequently, the water quality of the lakes and streams in the City has been negatively impacted by the large volumes of polluted runoff that they regularly receive. Although open vegetated drainage ways are generally the preferred option from a water quality standpoint, the construction of curbs, gutters, and sidewalks may be appropriate in areas with urban densities, high vehicular traffic, schools, parks, bus stops, shopping or employment concentrations.

Comment [m21]: What text should be added about improvements to Cromwell Park and the effect on Ronald Bog and where should it go? Are there other recent or potential improvements to note? Should we talk about GreenWorks projects from the SWMP?

Surface water and wetland areas are shown on Figure LU-3 at the end of this section.

Comment [m22]: Will replace map

Air Quality

One of the basic characteristics of a livable city is clean air. Numerous federal, state, regional, and local agencies enact and enforce legislation to protect air quality. Good air quality in Shoreline, and in the region, requires controlling emissions from all sources, including: internal combustion engines, industrial operations, indoor and outdoor burning,

Comment [sc23]: Is this useful for the comp plan? To my knowledge we don't address this directly

and wind-borne particles from land clearing and development. In the Puget Sound region, vehicle emissions are the primary source of air pollution. Local and regional components must be integrated in a comprehensive strategy designed to improve air quality through transportation system improvements, vehicle emissions reductions, and demand management strategies.

Air quality is measured by the concentration of chemical compounds and particulate matter in the air outside of buildings. Air that contains carbon monoxide, ozone, and particulate matter can degrade the health of humans, animals, and plants. Human health risks from poor air quality range in severity from headaches and dizziness to cancer, respiratory disease, and other serious illnesses, to premature death. Potential ecological impacts include damage to trees and other types of vegetation. Quality of life concerns include degradation of visibility and deposition of soot and other particulate matter on homes and other property.

The City seeks long-term strategies to address air quality problems, not only on the local level, but in the context of the entire Puget Sound Basin with coordination and major direction from the Puget Sound Clean Air Agency.

Sustainability

What other information should we include for sustainability? We probably don't want to overload with background information, but it is appropriate to discuss our recent and upcoming efforts, such as:

- Cleanscapes programs
- Indicator Tracking website
- City Hall
- Backyard Habitat certification
- Uses of funds from EECBG
- Tree canopy study

Comment [jn24]: Yes. Not sure what is appropriate for the comp plan level of detail, but let me know what I can help with.

Natural Environment Element Supporting Analysis

Background and Context

Shoreline's environment is comprised of both natural and built features. Puget Sound vistas, mature trees, natural vegetation, streams, wetlands, lakes, and tidelands are just some of the aspects of the natural environment that Shoreline citizens value. The relationships between these features, development, and natural processes, and the quality of the resulting environment, have profound impacts on the quality of life in Shoreline. Shoreline is not a pristine landscape, but the very name of the City reflects the importance of the natural environment to the community identity. Preserving the quality of the environment depends on government, business, and individual decisions, and coordinated actions to minimize the adverse environmental impacts that can occur during development or redevelopment and daily life.

Environmental Conditions

Shoreline is a community that developed mostly as a suburban residential area with an associated mix of commercial centers, parks, schools, and natural areas. Natural areas are comprised of the Puget Sound shoreline, bluffs, steep slopes, ravines, natural reserves, wetlands, streams, lakes, native growth easements, and stands of mature trees. These areas are found on both private property and public property, such as larger single family residential lots and City parks.

Portions of Shoreline contain the following environmentally critical areas: geological hazard areas, flood hazard areas, streams, wetlands, and fish and wildlife habitat conservation areas. The City does not contain any known critical aquifer recharge areas that supply potable water. Drinking water comes from surface systems that originate in the Cascade Mountains and are operated by the Shoreline Water District and the City of Seattle, predominantly from the Tolt River.

Shoreline has adopted regulations to protect environmentally critical areas in the City. These regulations are referred to as the Critical Areas Regulations and are located in Chapter 20.80 of the Shoreline Municipal Code. These regulations are periodically reviewed and updated in accordance with state mandates.

Geologic Hazards and Frequently Flooded Areas

Continental glaciers extended many times into central Puget Sound over the past two million years depositing layers of silt-clay, gravel and till in a rolling plateau known as the Seattle drift plain. The City is located on this plateau which drops irregularly to Puget Sound and Lake Washington through a series of basins formed by small streams that flow through the

area. A number of steep bluffs are located along the shores of Puget Sound within The Highlands and Innis Arden neighborhoods. The size of these bluffs diminishes in the Richmond Beach neighborhood. Hazards, including landslides and mudslides, have occurred along these steep bluffs. Steep bluffs are also found along the eastern edges of the City. The majority of the remaining areas of the City are located on a rolling plateau with a north/south topographical orientation. Development on or adjacent to severe slopes and highly erodible soils can have a negative impact on slope stability.

Soil type, vegetative cover, presence of ground water, and degree of slope affect the suitability of a site for development. The City is predominately covered with the Alderwood series of soils (U.S. Geological Survey Maps). Alderwood soils have drainage problems during periods of heavy seasonal rainfall. Erosion can be severe and accelerated if vegetation (including trees) and forest litter, which protects the soils from rain, are removed for development. The City of Shoreline contains geologic hazard areas prone to landslide, seismic, and erosion hazards. Most of these hazard areas are located on the bluffs along Puget Sound or adjacent to streams.

Landslide Hazards

Many of the bluffs along Puget Sound consist of severe slopes and isolated glacial deposits that are susceptible to landslides. These unstable slopes are a major hazard to people, structures, and other land uses and improvements (such as railroad tracks). The identification of areas susceptible to landslides is necessary to effectively regulate grading, building, foundation design, housing density, drainage and to implement other regulations to reduce or eliminate the risk of property damage and personal injury.

The City contains areas that are susceptible to landslides. Within the City these areas include the bluffs and stream ravines along Puget Sound, the Boeing Creek ravine and the hillsides along McAleer Creek.

Seismic Hazards

Seismic hazard areas are those areas subject to severe risk of earthquake damage as a result of settlement or soil liquefaction. These conditions occur in areas underlain by soils with low cohesion and density, usually in association with a shallow groundwater table. When shaken by an earthquake, certain soils lose their ability to support a load. Some soils will actually flow like a fluid; this process is called liquefaction. Loss of soil strength can also result in failure of the ground surface and damage to structures supported in or on the soil. Loose, water-saturated materials are the most susceptible to ground failure due to earthquakes.

One area of identified seismic hazard is located along Puget Sound in Richmond Beach Saltwater Park. In this area, park structures and the Burlington Northern railroad tracks may be at risk. The other seismic hazard area is located along McAleer Creek between NE 196th Street and NE 205th Street. Roads, single-family residences, and other public and private improvements may be affected in this area. A small area near 24th Avenue NE is susceptible to both landslides and seismic hazards.

Erosion Hazards/Sedimentation

Erosion is a natural process where rain, running water, and wind loosen and eliminate or reduce soil coverage and deposit it elsewhere. Of these natural forces, erosion by rain and

running water is by far the most common within the Puget Sound region. The susceptibility of any soil type to erosion depends upon the physical and chemical characteristics of the soil, its protective vegetative cover, slope length and gradient, intensity of rainfall, and the velocity of water runoff. During storms, water runoff saturates the upper layers of till and sand-gravel. When the water migrates to the less permeable layer of silt-clay below the layer of sand-gravel it begins to flow laterally toward Puget Sound or Lake Washington. Erosion and slides occur as the sand-gravel layer washes away or slides on top of the slippery silt-clay layer. Runoff also erodes topsoil, which contributes to the erosion and landslide hazards.

The City contains areas that are prone to erosion activity. These areas include the bluffs along Puget Sound, the Boeing Creek ravine, and the hillsides along McAleer Creek, near the eastern boundary of the City. Erosion hazards also include hillsides in the Richmond Beach neighborhood, the vicinity of Paramount Park, east of Holyrood Cemetery, and the vicinity of Hamlin Park and Shorecrest High School. A large portion of the Boeing Creek Basin, which includes Shoreview Park, is both an erosion hazard area and a landslide area. Other small erosion hazard areas are variously located within the City.

Potential geologic hazard areas are shown on Figure LU-2 at the end of this section.

Flood Hazard Areas

Flood hazard areas are those areas within the regulatory floodplain which include the floodway, channel migration zones, riparian habitat zones, and special flood hazard areas. Floodplains have been mapped on Flood Insurance Rate Maps (FIRM) prepared by FEMA. Within Shoreline, only limited areas adjacent to Thornton and Boeing creeks, Ronald Bog and the Puget Sound Shoreline have been designated as potential floodplains. In addition to floodplains, unmapped spot flooding occurs during storm events in various areas in the City that lack adequate drainage.

Vegetation Protection

Residents characterize the City of Shoreline as a wooded community; this is often cited as a key reason for locating in the area. Large evergreen trees can be seen rising above residential neighborhoods, on hilltops, and even on the periphery of Aurora Avenue. As the City has become more urbanized, the area covered by native ground cover and/or shaded by native trees has been vastly reduced.

Forested open space, wetlands, and native vegetation found on steep slopes and larger residential lots are important resources that should be preserved. Trees help stabilize soils on steep slopes and act as barriers to wind and sound. Plants replenish the soil with nutrients and generate oxygen and clean pollutants from the air. Native vegetation provides habitat for wildlife; the native vegetation found near creeks, lakes, and saltwater areas offer habitats for many migrating and resident birds and other wildlife. Less developed wooded areas and City parks also provide habitats for many birds and mammals. Wetlands and riparian vegetation provide surface water storage and help clean surface water of pollutants and sediment.

Aerial photos show that the community is a mosaic of various types of vegetation. The largest, most contiguous areas of native vegetation in Shoreline are primarily found in City parks, publicly owned open space, privately owned open space (such as the Boeing Creek

area of The Highlands and the reserves in Innis Arden) and designated critical areas (such as steep slopes along the Puget Sound shoreline). These areas include the highest quality wildlife habitat found in the City. However, areas of less intensive residential development also contain mature trees and other native vegetation which provide secondary wildlife habitat and substantially contribute to the quality of life in our City. Native vegetation in residential areas that may be subdivided or otherwise more intensely developed is at the greatest risk of being lost.

Habitat Protection

The process of urbanization can result in the conversion of wildlife habitat to other uses. The loss of certain types of habitat can have significant, adverse effects on the health of certain species. Fish and wildlife habitat conservation areas are those that are necessary for maintaining species within their natural geographic distribution so that isolated subpopulations are not created. Designated habitats include those areas associated with species that state or federal agencies have designated as endangered, threatened, sensitive, or candidate species, anadromous fish habitat, waterfowl and raptor nests, heron rookeries and designated habitats of local importance.

Currently in the Puget Sound, the bald eagle and Chinook salmon are listed as threatened species by the federal government under the Endangered Species Act. The Washington Department of Fish and Wildlife indicates bald eagle territory in the Richmond Beach and Point Wells areas. WDFW maps and the City's stream inventory indicate the presence of Chinook salmon in portions (including sections outside of the City) of McAleer Creek, Thornton Creek and Boeing Creek. Other sources have indicated the presence of fish in other streams within the City, although the full extent of fish habitat has not been confirmed. To help restore healthy salmon runs, local governments and the State government must work proactively to address salmon habitat protection and restoration.

The Washington Department of Fish and Wildlife (WDFW) has developed the Priority Habitats and Species (PHS) Program to help preserve the best and most important habitats and provide for the life requirements of fish and wildlife. Priority species are fish and wildlife species that require protective measures and/or management guidelines to ensure their perpetuation. Priority habitats are habitat types with unique or significant value to many species. The WDFW has documented the locations of priority habitats and species within the City. These PHS areas include wetlands, anadromous fish habitat, riparian areas, bald eagle territory, urban natural open space, habitat for a priority bird species, and the point location of a priority bird species siting. These areas combined comprise less than 5% of the total land area of the City and are often found within existing City parks, public open space, and designated private open space

The City has developed a geographic information system (GIS) that includes detailed maps of PHS areas based on data provided by the WDFW and other mapping resources. WDFW provides management recommendations for priority species and habitats that are intended to assist landowners, users, and managers in conducting land-use activities in a manner that incorporates the needs of fish and wildlife. Management recommendations are developed through a comprehensive review and synthesis of the best scientific information available. The City has reviewed the PHS management recommendations developed by WDFW for species identified in Shoreline and used them to guide the development of critical areas regulations that fit the existing conditions and limitations of our relatively urbanized environment.

Streams and Water Resources

Wetlands

Wetlands perform valuable functions that include surface and flood water storage, water quality improvement, groundwater exchange, stream base flow augmentation, and biological habitat support. A review of background information, including aerial photos from 1992, identified 17 individual wetlands within the City. These wetlands range from the large estuarine system (a mixture of salt and fresh waters) adjacent to Puget Sound, to lakes and small excavated ponds. With the exception of the Puget Sound estuarine system, all wetlands in the City are palustrine systems (freshwater). The largest palustrine system is Echo Lake located in the north-central portion of the City. Other large wetlands include ponds within Ronald Bog Park, Twin Ponds Park, Paramount Park, and the Seattle Country Club, as well as numerous undocumented wetlands of .5 acres or less. Most wetlands in the City are relatively isolated systems and are surrounded by development.

Under the Shoreline Municipal Code, wetlands are designated using a tiered classification system (from Type I to Type IV) based on size, vegetative complexity, and the presence of threatened or endangered species. The entire Puget Sound shoreline is classified as a Type I wetland. This wetland includes approximately 150 acres of aquatic bed and shoreline habitat. No other wetlands in the City have received a Class I rating. All wetlands, regardless of size, are regulated under the Shoreline Municipal Code. When a development is proposed on a site with known or suspected wetlands, a wetland evaluation is required to verify and classify wetlands and delineate boundaries and buffer areas.

All of the documented wetlands within the City have experienced some level of disturbance as a result of development and human activity. Disturbances have included major alterations such as wetland excavation, fill or water impoundment. Some wetland areas occur within parks that receive constant use by people, threatening the wetlands with impacts of human activity, such as trash and trampling of vegetation.

Lakes

There are four lakes in the City of Shoreline: Echo Lake, Ronald Bog, Hidden Lake and Twin Ponds. Like most small urban lakes, Shoreline's lakes contain pollutants and contaminated runoff, including fertilizers and pesticides from lawns and gardens; oils, greases, and heavy metals from vehicles; and fecal coliform bacteria. The quality of the water in the lakes is a concern to many residents and City staff. Ronald Bog and Twin Ponds were historically bogs that were dredged. As urban development in the City has occurred, the process by which the nutrient level and vegetation in these lakes increases has accelerated. Ronald Bog and Twin Ponds will eventually revert to bogs.

Hidden Lake is currently used as a sediment storage facility and has been significantly altered to accommodate this function. King County completely reconstructed this feature by removing the sediment eroded from sites further upstream in the basin. Hidden Lake has served as a sink for this sediment and has protected the water quality and potential fish habitat in the lower reaches of Boeing Creek. Sedimentation will continue to impact Hidden Lake unless action is taken to stabilize the upper reaches of Boeing Creek and/or reduce run-off rates in the upper reaches of the basin. If future stabilization of Boeing Creek includes changes to the channel, the habitat values associated with the upper reaches of the Creek could be reduced. Some community members would like to see Hidden Lake restored to a more natural condition. However, this could limit the ability of the City to

continue to use this feature for and could increase sedimentation and habitat degradation in the lower reaches of Boeing Creek.

The City anticipates preparing a master plan for Shoreview Park. This plan will guide the City as it acts to close and rehabilitate user created trails and access points to Hidden Lake and establish public access in a suitable location(s). This will reduce erosion and sedimentation in and around this location. The City is also working with King County in an effort to remove barriers to fish passage along the lower reaches of Boeing Creek. The restoration of viable fish habitat may make the protection of the lower reaches of the Creek from sedimentation (a role played by Hidden Lake) a higher priority.

Streams and Creeks

Numerous small stream and creeks are found within or adjacent to the City of Shoreline. Many of these streams have been placed in culverts, channels, or otherwise altered and degraded. Boeing Creek flows to the Puget Sound and drains an area which includes Shoreview Park. Thornton Creek originates in Ronald Bog, near the geographic center of the City, flows to Twin Ponds, crosses the City limits, and emerges as an open channel in the City of Seattle's Jackson Park Golf Course. McAleer Creek flows in the southeasterly direction and passes through the northeast corner of the City and into Lake Forest Park. Lyon Creek flows in a similar direction just outside of the City. Other features include small and unnamed creeks which flow into the Puget Sound in the Richmond Beach, Innis Arden, and Highlands neighborhoods.

Large portions of the watersheds drained by creeks in the City have been paved or otherwise developed. This development dramatically increases the volume of water in the creeks during storm surges and reduces in-stream flows during drier periods of the year. This combination of more intense storm surges and overall lower flows causes numerous environmental problems, including: increased bank erosion, scouring and deepening of the stream channel, reduced water quality, sedimentation of gravels, damage to stream-side vegetation, and reduction or elimination of habitat for wildlife, fish, and the insects that fish feed on.

McAleer Creek and Thornton Creek and an area of Puget Sound adjacent to Richmond Beach are currently on the Washington State list of water features that do not meet water quality standards due to high levels of fecal coliform, and in some locations for dissolved oxygen and temperature. It is believed that Boeing Creek does not meet State standards for sediment. Creeks continue to be damaged as a result of large quantities of stormwater as well as by pollutants it may contain.

Groundwater

Groundwater aquifers are used for supplying water to lakes, wetlands, and streams during the dry season and for a few private wells that supply water for irrigation and possibly drinking water in a few isolated instances. Wetlands and lakes are thought to be the main groundwater recharge areas in the City.

Water Quality and Drainage

Drainage in the City consists of nine separate drainage basins: Lyons Creek, McAleer Creek, Thornton Creek, Boeing Creek, West Lake Washington, Bitter Lake, Seattle Golf

Club and two separate areas of the Middle Puget Sound Basin (north and south). Along the west half of the City, the Boeing Creek Basin empties directly into Puget Sound. The Middle Puget Sound basins drain into Puget Sound via small creeks and surface water systems. The McAleer Creek Basin in the northeastern portion of the City drains into Echo Lake and Lake Ballinger and eventually into Lake Washington. The approximate eastern half of the City from Interstate 5 drains to Lake Washington via Thornton Creek. The Ballinger area drains to Lake Washington via Lyon Creek. Small portions of the City at the north and northeastern edges drain into Lake Washington through small creeks and surface water systems.

Drainage facilities in the City consist of a combination of conveyance pipes, ditches, and stream channels. Much of the development in the City took place in the 1940s and 1950s, prior to the implementation of stormwater mitigation regulations in the 1970s.

Many natural creek systems have been stabilized or reconstructed to repair and prevent slope erosion or bank failures. However, water quality mitigation measures have not been adequate to protect natural waterways. Consequently, the water quality of the lakes and streams in the City has been negatively impacted by the large volumes of polluted runoff that they regularly receive. Although open vegetated drainage ways are generally the preferred option from a water quality standpoint, the construction of curbs, gutters, and sidewalks may be appropriate in areas with urban densities, high vehicular traffic, schools, parks, bus stops, shopping or employment concentrations.

Surface water and wetland areas are shown on Figure LU-3 at the end of this section.

Air Quality

One of the basic characteristics of a livable city is clean air. Numerous federal, state, regional, and local agencies enact and enforce legislation to protect air quality. Good air quality in Shoreline, and in the region, requires controlling emissions from all sources, including: internal combustion engines, industrial operations, indoor and outdoor burning, and wind-borne particles from land clearing and development. In the Puget Sound region, vehicle emissions are the primary source of air pollution. Local and regional components must be integrated in a comprehensive strategy designed to improve air quality through transportation system improvements, vehicle emissions reductions, and demand management strategies.

Air quality is measured by the concentration of chemical compounds and particulate matter in the air outside of buildings. Air that contains carbon monoxide, ozone, and particulate matter can degrade the health of humans, animals, and plants. Human health risks from poor air quality range in severity from headaches and dizziness to cancer, respiratory disease, and other serious illnesses, to premature death. Potential ecological impacts include damage to trees and other types of vegetation. Quality of life concerns include degradation of visibility and deposition of soot and other particulate matter on homes and other property.

The City seeks long-term strategies to address air quality problems, not only on the local level, but in the context of the entire Puget Sound Basin with coordination and major direction from the Puget Sound Clean Air Agency.

Sustainability

What other information should we include for sustainability? We probably don't want to overload with background information, but it is appropriate to discuss our recent and upcoming efforts, such as:

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- City Hall
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- Uses of funds from EECBG
- Tree canopy study



Shoreline Sustainability Strategy: Existing Guidance and Potential Framework Goals and Objectives for Discussion

Summary of Initial Observations

The City has an impressive list of programs that address aspects of sustainability, but lacks a coordinated strategy. The first steps in developing a sustainability strategy are to define the area of concern, identify existing policy guidance and suggest where additional guidance may be needed to provide a framework to guide this effort. The existing comprehensive plan provides policy direction that touches on many of the aspects of sustainability. A preliminary analysis of how the existing comprehensive plan policies address sustainability is attached to this summary.

While existing adopted policies address many aspects of sustainability, they do not:

- **Define the concept of sustainability and the need for a sustainability strategy,**
- **Identify sustainability elements to be addressed and their relationship,**
- **Establish priorities among these elements,**
- **Provide sufficient guidance for an coordinated strategy, including**
- **Guidelines for decision making and progress monitoring.**

Additional direction on sustainability program efforts and priorities is provided or implied in the adopted City Council goal “to create an environmentally sustainable community”. This includes the directive to manage natural resources and environmental assets to preserve, restore and enhance their value for future generations and a finding that “such actions complement community efforts to foster economic and social health”. The Council goal notes specific programs that the City will embark on, including this strategy. The City has also recently adopted the Mayor’s Climate Protection Agreement, which address a range of issues and local actions that will also need to be integrated into the existing policy framework.

In addition to establishing a policy basis for the overall strategy, amending appropriate existing policies to fit within this framework, and integrating recently adopted initiatives, key substantive program gaps have been identified:

- **Establish the City as a leader in sustainability and an educational resource,**
- **Address resource use and carbon emissions in a comprehensive & accountable way,**
- **Promote healthy communities and assess the impacts of decisions on human health,**
- **Define the major elements of a green infrastructure system,**
- **Establish and implement low impact development standards,**
- **Consider social equity and community building as components of sustainability, and**
- **Identify key partnerships, relationships and responsibilities.**

Our initial analysis of policy direction provides examples of potential changes that could be made to initiate and focus the discussion, rather than an exhaustive list of recommendations. More specific implementation actions and strategies will be developed to take the framework policies closer to the ground. The development of framework goals and objectives is an iterative process that will require substantial additional input from the City and stakeholders to complete.

Components of Sustainability

In considering appropriate goals and objectives for the sustainability strategy, the various components of sustainability must first be considered. The components of sustainability are generally divided into three primary categories: ecology, economy, and community. Within these categories are components that address more specific aspects of sustainability under which specific measures and actions may be categorized. Many of these components are synergistic in nature, and therefore may fall under more than one of the primary categories.

The following “working list of sustainability elements” is provided to initiate a discussion of the various aspects of sustainability that could be addressed under the concept of sustainability. Please note that these elements are presented without prioritization. In addition, it will be useful to organize elements according to high level goals. For example: a high level goal to “become a carbon neutral city” might include a variety of specific strategies related to components such as energy use and production, transit, vegetation and non-motorized facilities.

- Energy use and production
- Carbon emissions
- Resource use and waste reduction
- Transit
- Non-motorized facilities
- Water use and quality
- Stormwater run-off
- Air quality
- Toxics
- Land use and development
- Vegetation and habitat
- Open space and parks
- Economic vitality
- Public health and safety
- Community building
- Public awareness and stewardship
- Social equity and environmental justice

The City must make some key choices early on in the development of the sustainability strategy. In identifying the priorities and emphasis of the sustainability strategy and the kind of leadership role the City wants to take, the following questions should be considered:

- Which of these items does the City have the capacity to address?
- Are some of these items beyond the scope of this effort?
- Does the City want to focus on City actions, decisions and leadership?
- How much can the City afford to or want to be involved in measuring and influencing personal behavior?
- Which components should the City seek another public or private organization to lead? To implement?

- Are there items on this list that do not make sense to address for one reason or another?

Policy Direction

The existing comprehensive plan provides policy direction that touches on many of the aspects of sustainability. A matrix that analyzes how the existing comprehensive plan policies address sustainability is attached to this memo. The Comprehensive Plan currently addresses the following concepts at some level:

- protection and enhancement of environmentally sensitive areas,
- protection and enhancement of habitat and vegetation,
- encouraging a mix of land uses near transit,
- promoting non-motorized transportation and transit,
- encouraging reduced energy and material use,
- promoting waste reduction and recycling,
- improving water quality,
- promoting public awareness and stewardship, and
- encouraging local economic vitality.

While the City of Shoreline Comprehensive Plan makes mention of many key aspects of sustainability, there is a need to strengthen existing language to make it more direct and allow for more measurable outcomes. There are key aspects of sustainability that are not currently addressed in Shoreline's Comprehensive plan. Each of these components has many potential policy implications (sub-bullets), some of which would have the City playing a peripheral role, while others may fall beyond the City's sphere of influence. Specific gaps include the need for policy direction that:

- Specifically addresses the concept of sustainability
- Establishes a basis for a city-wide sustainability program and its major elements
- Provides decision criteria and performance measurements that address sustainability
- Addresses energy use and carbon emissions in a measurable and accountable way
 - reducing vehicle miles traveled (beyond TDM policies)
 - reducing use of small engines in park maintenance
 - considering machinery and vehicle use in capital facility projects and maintenance operations
 - green building – energy efficiency
 - renewable energy
- Defines and identifies the elements of green infrastructure
 - Integration of low impact design into new road and utility projects
 - Encouraging landscaping that serves an ecological function
- Identifies partners in achieving sustainability
- Identifies priorities for City actions or at least a process for identifying priorities
- Identifies interventions that improve public health
 - encouraging active lifestyles
 - eliminating use of toxic substances in maintenance operations
 - encouraging use of non-hazardous materials

- access to healthy food
- Addresses social equity
 - meeting human needs fairly and efficiently
 - access to healthy food
 - participatory planning (decentralized)
 - affordable housing
 - equitable provision of infrastructure and facilities
- Promotes local and/or regional food production/consumption
 - farmer's markets
 - p-patch program
 - public awareness campaigns
 - farm to school programs
- Integrates community building efforts into the discussion of sustainability
 - Public spaces
 - Art and culture

The Role of the Sustainability Strategy

The Sustainability Work Group should consider the level of detail it wishes to see in the Comprehensive Plan and the exact nature of the relationship between this document and the Sustainability Strategy. As part of the sustainability strategy, the City should establish a policy framework for sustainability in its comprehensive plan. As with other aspects of the City's planning framework, the Comprehensive Plan should identify the vision for a sustainable Shoreline, broad sustainability goals, and limited specific direction related to key objectives, outcomes, priorities, and future efforts. The inclusion of sustainability in the Comprehensive Plan will provide a legal basis to incorporate the concept of sustainability in the cities codes, regulatory decisions, capital improvements and other key decisions. However, as with other aspects of City policy making, from neighborhood plans to transportation improvements, the Comprehensive Plan requires other documents to effectively establish and prioritize specific programs, priorities and desired future outcomes.

The Environmental Sustainability Strategy will provide the vehicle to establish both the broader policy direction and many of the specific actions that will make up the strategic plan. For example, while framework policies (that will also be included in the Comprehensive Plan) might direct the City to establish measurable goals for waste reduction, fleet conversion or transit ridership, or to develop decision tools for procurement, the actual numeric goals, measurement standards and decision matrix would be identified in the Environmental Strategy or another implementation vehicle that is specific in the Strategy.

The Sustainability Strategy will thus serve as both a stand alone plan for easy reference and a document that references other written policy and program direction where elements of sustainability are or will be incorporated. We recommend that in addition to the broader 20 year Comprehensive Plan time horizon, framework goals and objectives related to sustainability be explicitly developed for the immediate (e.g. within 1 year), near term (e.g. within 3 years), and medium term (e.g. 6 years or concurrency time frame) time horizons.

Some examples (non-exhaustive) of potential sustainability goals and policies to initiate group discussion are included below:

Comprehensive Plan Framework Goal: Shoreline strives to be a sustainable community. The City of Shoreline will promote a sustainable future that meets today's needs without compromising the ability of future generations to meet their needs. We will consider the relationship between the decisions that we make and their long-term impacts before committing to them. We accept responsibility to:

- *Support a stable, diverse and equitable economy*
- *Improve the livability, safety and health of our community*
- *Protect the quality of the air, water, land and other natural resources*
- *Minimize human impacts on ecosystems*
- *Reduce energy and resource consumption*
- *Conserve and restore native vegetation, fish and wildlife habitat*
- *Maintain an open and fair decision making process that promotes our commitment to social equity*

Example Comprehensive Plan Framework Policies:

Establish and maintain a City-wide Environmental Sustainability Strategy that includes:

1. *Criteria for environmentally sustainable decision making;*
2. *The defined existing and potential green infrastructure system for the City;*
3. *An assessment of how the City is doing so far and suggestions for improvement;*
4. *Measures for tracking progress toward environmental sustainability, and a*
5. *Capacity assessment for implementation.*

Encourage and develop connections between environmental quality and economic vitality. Promote development that reduces adverse effects on ecology and the natural resource capital base and supports employment opportunities for our citizens.

Develop and use criteria so that the impact of City decisions, including land use, capital facilities, procurement and other efforts, on sustainability goals and objectives can be properly considered before resources are committed.

Develop, maintain and report on indicators to track the City's progress towards achieving identified sustainability goals and objectives.

The City recognizes that the decisions it makes have impacts on human health. The City will establish and implement tools to address the human health impacts of City decisions, including land use plans and private development permits.

Support and implement the Mayor's Climate Protection Agreement and other multi-jurisdictional efforts to reduce greenhouse gasses and address climate change (more specific policies can be created based on this agreement or the measures could be summarized in bullets).

Ensure the City's commitment to equity so environmental impacts and the costs of protecting the environment do not unfairly burden any one geographic or socioeconomic sector of the City.

Consider long term environmental and life cycle operating costs in purchasing decisions and seek mechanisms to integrate environmental and social costs in the fees the City charges for goods and services..

Work with stakeholders to define and prioritize the components of the City's existing and proposed green infrastructure system: an interconnected network of protective and restored lands, water and vegetation that maintains or mimics natural ecological processes, sustains air and water resources, supports native species, provides human connections and contributes to the health and quality of life of the community. Incorporate green infrastructure plans into the Capital Facilities Plan.

Finally, in addition to framework goals and policies that can be included in the Comprehensive Plan, more specific goals objectives can be identified primarily within the Environmental Sustainability Strategy document (which may or may not be incorporated by reference into the Comprehensive Plan). **Appropriate specific objectives could include, but are not limited to, such things as:**

- **Specific ecological measurement systems**
- **Waste reduction and recycling targets**
- **Carbon emission reduction targets**
- **Stream and restoration goals expressed in acreage and lineal feet**
- **Green Infrastructure system development benchmarks**
- **Basin-wide hydrology goals**
- **Canopy coverage targets**
- **Low Impact development expressed in acres**
- **City green buildings**
- **City low impact development capital projects**
- **Integrated pest management benchmarks**
- **City fleet conversion goals and benchmarks**
- **Commitments to specific toxic reduction goals and zero use implementation and monitoring**
- **Health Impact Assessment implementation benchmarks**
- **Other more specific objectives that are closely related to the criteria and indicators and are too specific and detailed for inclusion in the Comprehensive Plan**

The following table summarizes some initial analysis on existing comprehensive plan policies, how they address applicable elements of sustainability, and how they might be modified as previously described. This is a working list for discussion and is not an exhaustive analysis. We encourage Sustainability Working Group members to add comments to this form as a way to offer comments on this ongoing analysis.



City of Shoreline: Working Matrix of Existing Core Comprehensive Plan Policy Guidance on Sustainability 7/17/06

The following table contains some initial analysis of the applicability of existing comprehensive plan goals and policies to elements of environmental sustainability. Some gaps and/or potential modifications have been noted. This is a “working list” that will be added to as the analysis proceeds. We encourage Sustainability Working Group Members to provide comments on other existing policies that may have been omitted, perceived gaps, modifications and potential new policies and email the document with your input to Gabe Snedeker at gsnedeker@ahbl.com.

Goal/Policy	Content	Applicability	Gap/Potential Modification
Land Use			
Goal LU XIII	Through leadership, policy, and regulation, the City shall strive to minimize impacts on the natural environment. The City shall lead and support efforts to protect and improve the natural environment, protect and preserve environmentally critical areas, and minimize pollution and the waste of energy and materials.	Environmentally sensitive areas Energy use Resource use and waste reduction	Address “sustainability”, include economic vitality, social equity in any broader goal that is developed to address sustainability.
Goal LU XV	Protect, enhance and restore habitat of sufficient diversity and abundance to sustain existing indigenous fish and wildlife populations. Balance the conditional right of private property owners to develop and alter land with the protection of native vegetation and critical areas.	Vegetation and habitat	
Goal LU XVI	Ensure clean air for present and future generations through the promotion of efficient and effective solutions to transportation issues, clean industries, and development.	Air quality	Relate the need for clean air to community sustainability. Consider additional policy language to address the human health impacts of development.

Goal/Policy	Content	Applicability	Gap/Potential Modification
Goal LU XVII	<p>Manage the storm and surface water system through a combination of engineered solutions and the preservation of natural systems in order to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide for public safety <input type="checkbox"/> Prevent property damage <input type="checkbox"/> Protect water quality <input type="checkbox"/> Preserve and enhance fish and wildlife habitat, and critical areas <input type="checkbox"/> Maintain a hydrologic balance 	<p>Water quality Vegetation and habitat</p>	<p>This goal could be tied more directly to Green Streets or complete streets concepts</p>
Goal LUXVIII	<p>Preserve, protect, and, where feasible, restore wetlands, shorelines, surface water, and ground water for wildlife, appropriate human use, and the maintenance of hydrological and ecological processes.</p>	<p>Water quality Vegetation and Habitat</p>	
Goal LU XIX	<p>Use education as a tool to increase protection of critical areas and understanding of environmental values.</p>	<p>Public Awareness and Stewardship</p>	<p>Review educational policies and broaden to include references beyond critical areas</p>
Policies			
LU10	<p>Review and update infill standards for single-family houses that promote quality development and reflect the character of the existing neighborhood. These standards shall address at a minimum:</p> <ul style="list-style-type: none"> <input type="checkbox"/> design and siting in accordance with natural environment <input type="checkbox"/> building height <input type="checkbox"/> bulk and scale <input type="checkbox"/> type and number of accessory buildings <input type="checkbox"/> pervious and impervious surface coverage <input type="checkbox"/> lot coverage by buildings <input type="checkbox"/> setbacks for front, back and side yards <input type="checkbox"/> storm water runoff <input type="checkbox"/> provision of public sewers and water <input type="checkbox"/> limits on outside storage of more than one 	<p>Water quality Vegetation and habitat</p>	<p>Integrate green building techniques into site development standards, energy efficiency, green infrastructure</p>

Goal/Policy	Content	Applicability	Gap/Potential Modification
	inoperative vehicle <input type="checkbox"/> landscaping <input type="checkbox"/> privacy and defensible space <input type="checkbox"/> attractive street frontage <input type="checkbox"/> screening of on site storage of recreational vehicles and boats <input type="checkbox"/> compatibility with neighborhood character		
LU 15	Periodically review new multifamily residential development and redevelopment standards adopted by the City to ensure that the standards: <input type="checkbox"/> preserve and/or enhances existing vegetation, including trees; <input type="checkbox"/> includes architectural/design features, such as building modulation, porches, balconies, window treatment, to enhance the existing community character and improve street frontage; <input type="checkbox"/> address siting that protects the natural environment (e.g. habitat areas, site terrain, wetlands); <input type="checkbox"/> respect adjacent development by providing setbacks, height reductions and/or buffers for lesser densities; <input type="checkbox"/> provide an attractive street frontage; <input type="checkbox"/> cluster on site to provide the maximum open space, including recreation and/or play areas and other amenities available to residents; <input type="checkbox"/> provide for privacy between units; <input type="checkbox"/> provide for ground orientation and/or usage for all units; <input type="checkbox"/> provide for on-site, screened parking for vehicles which is not located in front yard setback areas; <input type="checkbox"/> screen any onsite storage for recreational	Vegetation and habitat Environmentally sensitive areas Open space Non-motorized transportation	Integrate green building techniques into site development standards Address impervious surface coverage Landscaping-green infrastructure Proximity to transit Reduced parking

Goal/Policy	Content	Applicability	Gap/Potential Modification
	vehicles; <input type="checkbox"/> do not allow for outside storage of more than one inoperative vehicle; <input type="checkbox"/> provide pedestrian connections within project and to adjacent uses such as bike lanes and walking trails; and <input type="checkbox"/> screen loading and unloading areas.		
LU20	Provide public investment and priority services to specified neighborhood and community business areas to increase their overall economic health through methods such as: <input type="checkbox"/> organizational development of merchants association <input type="checkbox"/> coordinated permit review for new development <input type="checkbox"/> coordinated land use planning and subarea planning for business and neighborhood areas <input type="checkbox"/> Metro King County transit improvements <input type="checkbox"/> transportation and traffic improvements <input type="checkbox"/> pedestrian and bicycle improvements <input type="checkbox"/> aesthetic improvements such as street trees and street furniture <input type="checkbox"/> enhanced business area image <input type="checkbox"/> community-building through events and celebrations <input type="checkbox"/> an area-specific planned action environmental review <input type="checkbox"/> a “Main Street Program” approach, if suitable	Economic vitality Non-motorized transportation Community building Environmentally sensitive areas	Programs that support local business, consider tying economic health more directly to community health and sustainability
LU22	Provide incentives such as increased height and bulk up to 30% of allowed floor area ratio if a development provides at least three of the following... : landscaping which exceeds requirements by	Vegetation and habitat Air quality Water quality	Expand definition of landscaping to include green infrastructure function and provide “Seattle green factor” type flexibility for urban sites that emphasizes visible landscaping that has green

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	30% or more		infrastructure function and helps create public places.
LU58	Ensure that newly annexed areas provide resources to preserve and/or improve environmental quality , where appropriate, through identification and protection of watersheds, open space corridors, preservation of environmentally critical areas , water quality , dedication and construction of trail and parks systems, if necessary, and maintenance of existing flora and fauna.	Water quality Open space Environmentally sensitive areas Vegetation and habitat	
LU61	Require large commercial or residential projects to include transit stop improvements such as bus pullouts or shelters when supported by the transit agency. Transit agencies should be notified of major developments and have the opportunity to suggest improvements that will improve transit operations or attractiveness.	Transit	
LU72	Ensure that the design of these [Essential Public] facilities will mitigate impacts to the project site and to the affected community through: <ul style="list-style-type: none"> o Use of aesthetically compatible buffers (e.g. fences, landscaping and similar means) to separate the Essential Public Facility from surrounding uses. o Open space as part of the development plan. Where feasible and appropriate, this open space should be accessible to the public. 	Vegetation and habitat Open space	Green infrastructure, low impact development
LU83	Lead and support regulatory efforts, incentives, and projects to protect and improve the natural environment and preserve environmentally critical areas consistent with federal and state	Environmentally sensitive areas	

Goal/Policy	Content	Applicability	Gap/Potential Modification
	requirements. Where different state and federal requirements exist, the more stringent of the two shall be applied.		
LU85	Conduct all City operations in a manner that minimizes adverse environmental impacts . The City should reduce its consumption and waste of energy and materials , minimize its use of toxic and polluting substances , reuse and recycle, and dispose of all waste in a safe and responsible manner. The City should give preference to recycled products, and alternative energy sources, whenever feasible.	Energy use Resource use and waste reduction	Tie policy directly to sustainability. Need stronger language and “teeth” to set real goals and provide accountability for waste reduction, toxic reduction and use of recycled products.
LU86	Support, promote, and lead public education and involvement programs to raise public awareness about environmental issues , advocate respect for the environment, encourage individual and community efforts to protect the environment , and provide opportunities for the community and visitors to respect and enjoy Shoreline’s unique environmental features.	Public Awareness and Stewardship	Work with school district to involve students in local sustainability programs, i.e. track waste reduction, energy use, public outreach efforts, etc. Policy can be tied more directly to sustainability and along with policy above could be modified to provide key direction.
LU87	Provide incentives for site development that will minimize environmental impacts. Incentives may include density bonuses for cluster development and a transfer of development rights (TDR) program.		Rather than, or in addition to “minimize”, provide incentives for projects that “enhance” or “restore”. Consider tying this policy into work by the Cascade Land Conservancy, and broader regional initiatives.
LU92	Develop, actively participate in, and help publicize, local and regional programs to conserve open space and protect environmentally critical areas , including future transfer of development rights (TDR) programs, conservation efforts of the Land Conservancy of Seattle and King County, and King County’s Public Benefit Rating System.	Open space Environmentally sensitive areas	See Cascade Land Conservancy Development incentives (LU87)

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LU96	<p>Encourage the use of “green” building methods and materials (such as LEED, Built Green, etc.) that may reduce impacts on the built and natural environment, such as to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reduce stormwater impacts to protect local watersheds and salmon, <input type="checkbox"/> Conserve energy and water, <input type="checkbox"/> Prevent air and water pollution and conserve natural resources, <input type="checkbox"/> Improve indoor air quality, and <input type="checkbox"/> Enhance building durability. 	<p>Energy use Resource use and waste reduction Water quality Air quality</p>	<p>Integrate green building techniques into site development standards. Provide incentives to encourage. E.g. offer height, density or other incentives for recycled content and other “green” material use</p>
LU97	<p>Mitigate drainage, erosion, siltation, and landslide impacts while encouraging native vegetation by:</p> <ul style="list-style-type: none"> <input type="checkbox"/> utilizing geotechnical engineering, <input type="checkbox"/> clustering development to avoid hazards, <input type="checkbox"/> decreasing development intensity, building site coverage and impervious surfaces, and <input type="checkbox"/> limiting vegetation removal that would increase hazards. <p>Development regulations and required mitigation shall fit the specific type and level of potential impact.</p>	<p>Water quality Vegetation and habitat</p>	
LU103	<p>Promote educational efforts to inform landowners about site development, drainage, and yard maintenance practices which impact slope stability.</p>	<p>Public awareness and stewardship</p>	<p>Create or reference a more specific stewardship program</p>
LU 107	<p>Develop educational materials, incentives, policies, and regulations to conserve native vegetation on public and private land for wildlife habitat and human enjoyment. The city shall establish regulations to protect mature trees and other native vegetation from the negative impacts of residential and commercial development, including short-plat development.</p>	<p>Public awareness and stewardship Vegetation and habitat Land Use and Development</p>	<p>Initiate stewardship program such as Audubon habitat certification, tie into more specific canopy coverage goals</p>

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LU112	Identify and protect wildlife corridors prior to and during land development through public education, incentives, regulation, and code enforcement.	Public awareness and stewardship Vegetation and habitat Land Use and Development	Sustainability program should address how the idea of wildlife corridor protection could be implemented. Specific mechanisms are needed.
LU120	Achieve a level of no net loss of wetlands function and value within each drainage basin over the long term. Shoreline should seek to maintain total wetlands acreage over the long term.	Environmentally sensitive areas	
LU139	Restrict the water runoff rate to predevelopment levels and restore water quality to predevelopment levels for all new development and redevelopment.	Environmentally sensitive areas Water quality	Need to consider what “predevelopment” means in terms of moving towards a greater level of protection
LU142	Support enhanced water quality and the percolation of water at natural rates near its source to limit soil instability or damage to roadways or other improvements. Measures may include appropriate landscaping, swales, “Green Street” improvements, natural retention facilities, pollution control devices, and improved storm water facilities.	Water quality Land Use and Development	Establish ad definition for complete streets/.green streets and how this relates to the concept of green infrastructure. Establish implementation strategies to implement low impact development standards
LU143	Protect water quality through the continuation and possible expansion of the street sweeping program.	Water quality	Need additional policies that address water quality impacts of public works activities and management
LU146	Maintain and enhance natural drainage systems, to protect water quality, reduce public costs, protect property, and prevent environmental degradation.	Water quality Economic vitality	Integrate green infrastructure into developed areas, restore natural systems in developed areas
LU 156	Reduce the amount of air-borne particulates through continuation and possible expansion of the street-sweeping program, dust abatement on construction sites, and other methods to address	Air quality Public Health	Relate this policy to human health sustainability element

Goal/Policy	Content	Applicability	Gap/Potential Modification
	particulate sources.		
Housing			
H15	Ensure that a proportion of housing created through an increase in permitted density is priced to accommodate low and moderate income households.	Social equity	Equate housing goal with overall community health
Transportation			
T7	Designate "Green Streets" on select arterials and neighborhood collectors that connect schools, parks, neighborhood centers and other key destinations. Compile design standards for each "Green Street" type.	Non-motorized transportation Land Use and Development	Adopt complete streets ordinance or resolution
T10	Implement the Transportation Master Plan that integrates "Green Streets", bicycle routes, curb ramps, major sidewalk routes, street classification, bus routes and transit access, street lighting and roadside storm drainage improvements. Promote adequate capacity on the roadways and intersections to provide access to homes and businesses.	Transit Non-motorized transportation	Adopt complete streets ordinance or resolution
T11	Coordinate transportation infrastructure design and placement to serve multiple public functions when possible, i.e. integrate storm water management, parks development and transportation facility design.	Water quality Open space Transit	
T14	The City of Shoreline shall pursue the development of a multi-modal measure for Level of Service that takes into account not only vehicular travel and delay, but transit service and other modes of travel.	Transit Non-motorized transportation	Need policy language that addresses the human health impacts of transportation choices and new development.
T20	Establish a pavement management system		Eliminate use of toxic weed-control chemicals
T27	Place high priority on sidewalk projects that abut or provide connections to schools, parks, transit, shopping, or large places of employment.	Non-motorized transportation Public Health	

Goal/Policy	Content	Applicability	Gap/Potential Modification
T36	Develop an off-street trail system that serves a recreational and transportation function. Preserve rights-of-way for future non-motorized trail connections, and utilize utility easements for trails when feasible.	Non-motorized transportation Open space Public health	
T42	Accommodate bicycles in future roadway or intersection improvement projects.	Non-motorized transportation Public health	Adopt complete streets ordinance or resolution
Parks and Recreation			
PR2	Preserve, protect and enhance areas with critical or unique natural features -- such as stream corridors, wildlife habitats, shorelines and wetlands -- especially if endangered by development, and educate the public on the importance of stewardship through a variety of mechanisms.	Environmentally sensitive areas Vegetation and habitat Open space Public awareness and Stewardship	
PR7	Utilize sound maintenance practices and design and development guidelines to ensure the careful stewardship of natural resources and habitat in the park system.	Vegetation and habitat Resource use and waste reduction	Integrate life-cycle analysis into project development and maintenance, eliminate use of pesticides and chemical fertilizers
PR9	Develop and distribute multi-use neighborhood, community and regional park facilities throughout the City to satisfy varying levels of citizen needs.	Social equity	
PR17	Develop alliances with other public and private agencies and organizations in order to avoid duplication and reduce costs through joint planning and development of facilities and programs.	Open space Economic vitality Resource use and waste reduction Land Use and Development	Development incentives for open space
PR21	Identify opportunities to develop pedestrian and bicycle connections in and around the City to expand connectivity of community amenities with a specific focus on linking neighborhoods	Non-motorized transportation Public health Open Space	Conduct a non-motorized audit and develop/update plan

Goal/Policy	Content	Applicability	Gap/Potential Modification
	with parks.		
PR22	Develop trail systems within parks and in the Interurban right-of-way focusing on linking these systems with existing, planned and future local and regional trails through coordination with Planning and Public Works and where possible enhancing historic watersheds.	Non-motorized transportation Public health Open space	
Capital Facilities			
CF17	Give highest funding priority to capital facility improvements that protect the public health and safety .	Public Health	Minimize impact on environment, serve multiple functions
CF21	Evaluate proposed public capital facility projects to identify net costs and benefits, including impacts on transportation, surface water, parks, and other public services. For those projects where it is possible to increase the community benefit of the project and it is cost effective, assign greater funding priority to those projects that provide a higher net benefit and provide multiple functions to the community over projects that provide single or fewer functions.		Introduce life cycle costs criteria into evaluation process
CF26	Promote the collocation of capital facilities (if viable) to enhance the efficient use of land, reduce public costs, and minimize disruption to the community.	Economic vitality Land Use and Development Community building	
CF27	Through site selection and design seek opportunities to minimize the impact of capital facilities on the environment, and if possible, include enhancements to the natural environment.	Environmentally sensitive areas Land Use and Development	Adopt low impact development standards
CF35	Investigate water reuse and water conservation opportunities that: <input type="checkbox"/> diminish impacts on water, wastewater, and	Resource Use and waste reduction Water Quality	"Pursue" rather than investigate

Goal/Policy	Content	Applicability	Gap/Potential Modification
	surface water systems, <input type="checkbox"/> promote the conservation or improvement of natural systems.		
CF36	Encourage the use of ecologically sound site design in ways that enhance the provision of utility services through measures such as: <input type="checkbox"/> using drought tolerant vegetation in landscaping to reduce water consumption, <input type="checkbox"/> using native vegetation in places such as natural or buffer areas to reduce surface water or wetland impacts, <input type="checkbox"/> promoting solar orientation on site to reduce energy consumption, <input type="checkbox"/> reducing impervious surfaces or excessive run-off to maintain natural drainage systems, and <input type="checkbox"/> encouraging tree retention to prevent erosion and provide wildlife habitat, etc.	Resource use and waste reduction Vegetation and habitat Water quality Energy use	“require” rather than encourage
Utilities			
U6	Encourage the design, siting, construction, operation, and relocation or closure of all utility systems in a manner that: <input type="checkbox"/> is cost effective , <input type="checkbox"/> minimizes and mitigates impacts on adjacent land uses, <input type="checkbox"/> is environmentally sensitive , and <input type="checkbox"/> is appropriate to the location and need.	Environmentally sensitive areas Resource use and waste reduction Economic vitality	benefits the community through by serving multiple functions
U8	Encourage utilities to consider the replacement of outdated equipment with technologically updated or advanced alternatives, providing that the cost of the updated equipment is fiscally reasonable.		Add renewable energy technology
U10	Support recycling efforts throughout the community	Resource use and waste reduction	Strengthen - Require recycling, support reuse of materials, encourage non-

Goal/Policy	Content	Applicability	Gap/Potential Modification
			hazardous material use
U11	Where found to be safe and appropriate, promote recreational use of utility corridors, such as trails, sport courts, and similar facilities.	Non-motorized transportation Public Health	
Economic Development			
ED1	Improve economic vitality by: <ul style="list-style-type: none"> <input type="checkbox"/> Encouraging existing businesses <input type="checkbox"/> Recruiting new businesses <input type="checkbox"/> Encouraging economic services for the community <input type="checkbox"/> Cooperating with businesses to create strategies and action plans <input type="checkbox"/> Assuring increased housing density around commercial districts <input type="checkbox"/> Developing design guidelines to enhance commercial areas 	Economic vitality	“economic gardening” – providing resources and other support to local business (Tacoma)
ED5	Encourage land uses which increase the City’s tax base		Should emphasize living wages and not undermining local small business
ED9	Emphasize attracting living wage jobs to the community	Economic vitality Social equity	
ED15	Support and retain small businesses for their jobs and services that they provide to the community.	Economic vitality Community building	Participate in programs/campaigns that promote small businesses
ED20	Direct capital improvements to key areas to promote the City’s image, create a sense of place , and to grow and attract businesses.	Economic vitality Community building	See ED38
ED37	Ensure that infrastructure can meet the needs of existing and planned future commercial development including utilities, communication, transportation, and high-technology facilities.	Economic vitality Land use and Development	
ED 38	Encourage and promote business districts by creating physical plans to improve the	Economic vitality	

Goal/Policy	Content	Applicability	Gap/Potential Modification
	appearance and function of their streets, sidewalks, utilities, access, lighting, buildings, signage, landscaping, etc		
Community Design			
CD6	Encourage development to provide public amenities, such as public and pedestrian access , pedestrian-oriented building design, mid-block connections, public spaces , activities, openness, sunlight, and view preservation.	Non-motorized transportation Community building Open space	
CD18	City projects and those on City owned property should use native, drought tolerant plantings and natural pesticides and fertilizers where appropriate.	Resource use and waste reduction Vegetation and habitat Water quality	Promote “pesticide-free” landscapes and native plantings through signage and other outreach efforts
CD19	Encourage the use of appropriate landscape design in commercial and residential settings.	Vegetation and habitat	Encourage development of green infrastructure, natural drainage,
CD20	Encourage large scale, residential and commercial development to consolidate onsite landscape areas, especially when site frontage can be enhanced.	Vegetation and habitat	Encourage development of green infrastructure, natural drainage,
CD24	Preserve, encourage, and enhance open space as a significant element of the community’s character through parks, trails, water features, and other significant properties (such as cemeteries) that provide public benefit.	Open space	
CD36	Where appropriate, provide sidewalks, walkways, and trails with lighting, seating, landscaping, street trees, public art, bike racks, railings, newspaper boxes, trash receptacles, etc. These improvements should be compatible with safe pedestrian circulation .	Non-motorized transportation Public health	
CD37	Develop “Green Street” standards to be applied as an overlay to existing street design standards. The “Green Street” standards shall	Vegetation and habitat Non-motorized	

Goal/Policy	Content	Applicability	Gap/Potential Modification
	provide guidelines for an enhanced streetscape, including street trees, landscaping, lighting, pathways, crosswalks, bicycle facilities, decorative paving, signs, seasonal displays, and public art. The “Green Street” standards shall vary consistent with the underlying street classification.	transportation Open space	
CD38	Develop a program to implement “Green Street” improvements that prioritizes connections to schools, parks, neighborhood centers and other key destinations.	Non-motorized transportation	
CD44	Encourage site and building designs that support and connect with existing or planned transit facilities in the vicinity.	Transit	“Require” rather than “encourage”
CD53	Preserve the natural character of neighborhoods by minimizing the removal of existing vegetation, especially mature trees, when improving streets or developing property.	Vegetation and habitat	Relate this policy to specific sustainability goals and objectives