CITY OF REDMOND
ORDINANCE NO. 2663

AN ORDINANCE OF THE CITY OF REDMOND, WASHINGTON, ADOPTING A LIMITED SHORELINE MASTER PROGRAM AMENDMENT; AMENDING POLICIES IN THE NATURAL ENVIRONMENT ELEMENT OF THE COMPREHENSIVE PLAN; AMENDING CHAPTER 21.64.040 FREQUENTLY FLOODED AREAS CRITICAL AREAS REGULATIONS OF THE REDMOND ZONING CODE; INCLUDING A NEW DEFINITION OF DEVELOPMENT IN CHAPTER 21.78 OF THE REDMOND ZONING CODE; AND PROVIDING FOR SEVERABILITY AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, the Growth Management Act requires that comprehensive plans shall be subject to continuing evaluation, review, and update; and

WHEREAS, the purpose of updating the Comprehensive Plan is to extend the planning horizon from 2022 to 2030, to emphasize Redmond's goal of being a sustainable community, to reflect changes in the Growth Management Act or regional plans since 2004, to reflect City actions or studies since the 2004 Comprehensive Plan update and to clarify portions of the text, and make the Comprehensive Plan easier to read; and

WHEREAS, the Planning Commission conducted study sessions in June and July 2011; held a public hearing on June 29, 2011, and on July 20, 2011; and completed its unanimous recommendation that the Redmond City Council approve these amendments; and

WHEREAS, the Redmond City Council has considered the recommendations of the Planning Commission and held a study

session on August 23, 2011; and received staff reports on the amendment on August 6, 2011, and August 21, 2012; and

WHEREAS, the environmental review was completed on June 6, 2011; and

WHEREAS, City staff has been coordinating with regional Federal Emergency Management Agency (FEMA) staff to ensure compliance of Redmond's floodplain policies and regulations with the National Marine Fisheries Service's (NMFS) Biological Opinion issued for threatened species in September 2008; and

WHEREAS, the Washington State Department of Ecology will ultimately issue an approval letter on this Limited Shoreline Master Program Amendment; and

WHEREAS, after discussion, the City Council has determined to adopt the Limited Shoreline Master Program Amendment in the form established by this ordinance.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF REDMOND, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. Natural Environment Element. The Natural Environment Element in the City of Redmond Comprehensive Plan is hereby amended to read as set forth in Exhibit 1 attached to this ordinance and incorporated by this reference as if set forth in full.

Section 2. Frequently Flooded Areas Regulations. Chapter 21.64, Critical Areas Regulations, of the Redmond Zoning

Code is hereby amended as set forth in Exhibit 2 attached to this ordinance and incorporated herein by this reference as if set forth in full.

Section 3. FEMA-related Definition of Development. Chapter 21.78 of the Redmond Zoning code is hereby amended to revise the FEMA-related definition of development as set forth in Exhibit 3 attached to this ordinance and incorporated herein by this reference as if set forth in full.

Section 4. Severability. If any section, sentence, clause or phrase of this ordinance or any code or comprehensive plan section adopted or amended hereby should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity of any other section, sentence, clause or phrase of this ordinance or the adopted or amended code or comprehensive plan section.

Section 5. Effective Date. This ordinance shall take effect five (5) days after publication of an approved summary thereof consisting of the title, or as otherwise provided by law.

ADOPTED by the Redmond City Council this 18th day of September, 2012.

CITY OF REDMOND

JOHN MARCHIONE, MAYOR

ATTEST:

MICHELLE M. MCGEHEE, MMC, CITY CLERK (SEAL)

APPROVED AS TO FORM:
OFFICE OF THE CITY ATTORNEY:

JAMES HANEY, CITY ATTORNEY

FILED WITH THE CITY CLERK:	September 12, 2012
PASSED BY THE CITY COUNCIL:	September 18, 2012
SIGNED BY THE MAYOR:	September 18, 2012
PUBLISHED:	September 24, 2012
EFFECTIVE DATE:	September 29, 2012
ORDINANCE NO. 2663	

ADOPTED 6-0: Allen, Carson, Margeson, Myers, Stilin and Vache

NATURAL ENVIRONMENT

Future Vision for Redmond: Natural Environment

Redmond in 2030 has maintained a very green character. Citizens benefit from its livability which contributes to the general quality of life. The city is framed within a beautiful natural setting, with open spaces and an abundance of trees continuing to define Redmond's physical appearance, including forested hillsides that flank the Sammamish Valley, Lake Sammamish and Bear Creek. Clean air quality not only contributes to a healthy community, it also helps keep the scenic mountain vistas visible from the city. Likewise, reduction in greenhouse gas emissions and particulate air pollutants enhances these benefits. A system of interconnected open spaces provides habitat for a variety of wildlife. The city prides itself for its environmental stewardship, including an emphasis on sustainable land use and development patterns, landscaping that requires little watering, and other techniques to protect and conserve the natural environment, while flourishing as a successful urban community. People continue to enjoy Lake Sammamish and the Sammamish River for boating, swimming, and other types of recreation. Bear and Evan Creeks provide regionally significant habitat for wild salmon spawning and rearing. Through many cooperative efforts, the improved water quality is demonstrated annually in the increasing salmon runs and a productive aquatic ecosystem. Public access to shorelines has been enhanced while protecting the natural environment and property owners' rights.

Organization of This Element

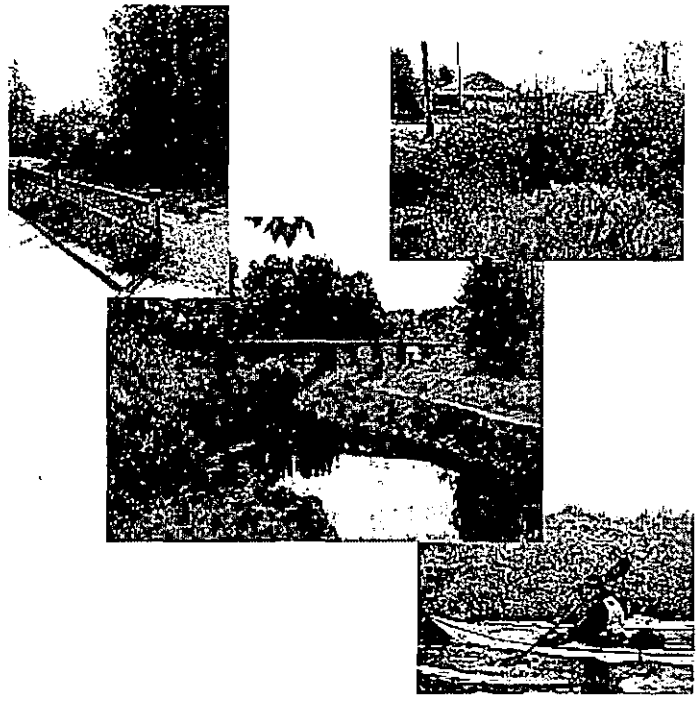
Introduction

A. Environmental Stewardship

B. Environmentally Critical Areas
- Geologically Hazardous Areas
- Critical Aquifer Recharge Areas
- Frequently Flooded Areas
- Wetlands
- Water Quality and Basin Planning
- Fish and Wildlife Habitat

C. Tree Preservation and Landscape Enhancement

D. Climate Change
E. Air Quality
F. Noise



G. Light Pollution

Introduction

The Natural Environment Element implements the vision of Redmond as a city enriched with valued natural features that enhance the quality of life for the community. This element provides policies to maintain key natural processes and functions that provide the natural physical foundation for the community while acknowledging the need to accommodate growth. It is important to be responsible stewards of our natural resources so that future generations may enjoy and benefit from them as we do today. It is equally important to recognize that resources exist for the benefit of not only humans but also for other living creatures and plants as well.

The "green infrastructure" of the city provides the backbone on which physical development occurs. Key strategies to maintaining the city's environmental assets are summarized below:

- Maintain a green infrastructure map to determine how all of the city's environmental assets interact;
- Work actively to address informational gaps in the environmental network;

- Use a science-based approach to ensure no net loss of critical areas' significant ecological functions;
- Maintain and strive to enhance a healthy natural ecosystem;
- Monitor and report on the effectiveness of Redmond's environmental protection programs, policies, and regulations;
- Foster a high quality of life by retaining trees, promoting clean air, limiting noise and light pollution, and maintaining scenic vistas;
- Strive towards becoming a sustainable community; and
- Promote economic sustainability of the community.

A. Environmental Stewardship

The environmental stewardship policies address the need to consider the long-range implications of City policies upon the environment, to conduct City operations in a manner that protects the environment, and to provide education on how the City, its businesses, and residents can improve the quality of the environment.

NE-1 **Incorporate a systems perspective into policy, regulatory, and service decisions, recognizing the interrelationship of people, nature, and the economy. Consider broader implications and look for ways to accomplish multiple goals (i.e., value stacking) rather than default to short-term piecemeal efforts.**

NE-2 **Utilize Best Management Practices (BMPs) and technology in City projects and practices to achieve effective environmental stewardship while striving towards sustainable fiscal responsibility.**

NE-3 **Conduct City operations in a manner that provides quality municipal services to the community while encouraging resource conservation and minimizing adverse environmental impact.**

NE-3a **Maintain and, where possible, improve air quality, water**

quality, soil quality, and ecosystem function to ensure the health and well-being of people, animals, and plants.

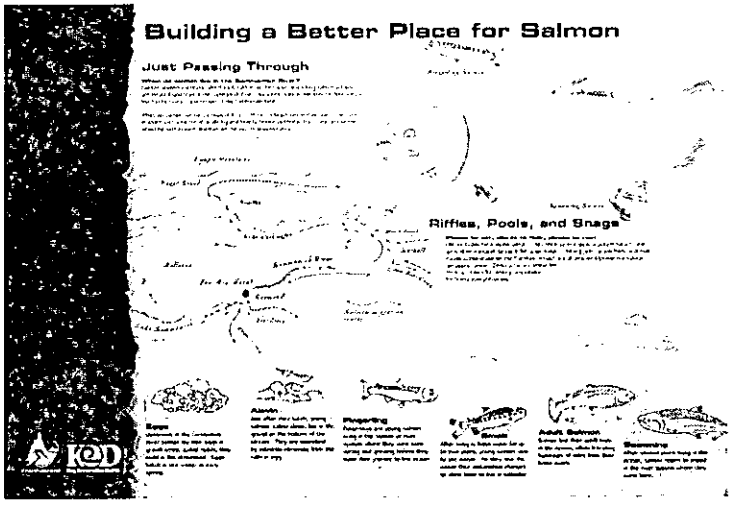
NE-4 Minimize and, where practical, eliminate the release of substances into the air, surface water, soil; and groundwater that degrades the quality of these resources or contribute to global atmospheric changes.

NE-5 Encourage the judicious use of renewable natural resources and conserve nonrenewable resources.

NE-5a Minimize water use and optimally recycle material resources to protect natural systems by reducing resource extraction, greenhouse gas emissions, and air and water pollution.

NE-6 Reduce waste, reuse and recycle materials, and dispose of all wastes in a safe and responsible manner.

NE-7 Promote and lead education and involvement programs to raise public awareness of environmental issues, encourage respect for the environment, and show how individual actions and the cumulative effects of a community's actions can have significant effects on the environment.



Educational signage along the Sammamish River

NE-8 **Support sustainable development and strive towards becoming a sustainable community.**

NE-8a **Explore ICLEI's (Local Governments for Sustainability) STAR Community Index as a road map for creating a healthy, inclusive, and prosperous city.**

NE-9 **Encourage environmentally friendly construction practices, such as Leadership in Energy and Environmental Design (LEED), King County Built Green, and low-impact development.**

NE-10 **Encourage projects which utilize alternative technologies, engineering, and plans which emphasize low-impact development strategies through incentives and flexibility in meeting regulatory requirements.**

Environmental issues often extend beyond governmental boundaries. Cooperation between governments is essential to address many environmental problems. Redmond should continue its policy of working cooperatively with others to address environmental issues.

NE-11 **Cooperate with other local governments, State, federal and international agencies, and nonprofit organizations to protect and enhance the environment to foster sustainability, especially for issues that affect areas beyond Redmond's boundaries.**

Plan, deploy, and maintain physical and social infrastructure such that vulnerability to natural hazards and disasters is reduced for all

NE-11a **members of the community, and ensure that communities are adequately prepared to respond to a crisis, response is effective and coordinated, and recovery is accelerated.**

B. Environmentally Critical Areas

The environmentally critical areas policies provide for the protection of designated critical areas identified in the Growth Management Act. This includes Fish and Wildlife Habitat Conservation Areas, Wetlands, Frequently Flooded Areas, Critical Aquifer Recharge Areas, and Geologically Hazardous Areas.

Environmentally critical areas are important contributors to Redmond's high quality of life. Some natural features are critical to protect because of the hazards they present to public health and safety, some because of the values they represent. Those that present a hazard are protected to prevent loss of property and human life caused by inappropriate development in these areas. Other critical areas are protected to preserve and maintain their ecological functions and the quality of life and livability for humans. Some species, such as salmon, are considered keystone species and are commonly used as benchmark indicators of overall environmental health of a region.

Science plays a central role in delineating critical areas, identifying functions and values, and identifying protection strategies. The State's Best Available Science (BAS) Rule requires the integration of science into the establishment and update of critical areas ordinances.

NE-12 ***Use Best Available Science to preserve and enhance the functions and* values of critical areas through policies, regulations, programs, and incentives.**

NE-13 **Implement projects and programs that include adaptive management based on Best Available Science to revise policies, regulations, and programs as needed to reflect changes in scientific advancement and local circumstances.**

NE-14 **Use science-based mitigation to offset unavoidable adverse impacts to critical areas.**

NE-15 **Implement monitoring and adaptive management to programs and critical areas mitigation projects to ensure that the intended functions are retained and, when required, enhanced over time.**

NE-16 **Use the precautionary principle when there is an absence of valid scientific information or incomplete scientific information accompanying a development application. Use rigorous analysis to appropriately limit development and land uses activities until the uncertainty is sufficiently resolved.**

One of the best opportunities to protect critical areas while allowing an appropriate level of development is to avoid development in critical areas. Another way of protecting critical areas while providing for appropriate levels of development is to focus development on the areas of the site best suited to development while leaving critical areas undeveloped, through clustering or density transfers.

NE-17 **Conserve and protect environmentally critical areas from loss or degradation. Maintain as open space hazardous areas and significant areas of steep slopes, undeveloped shorelines, and wetlands.**

NE-18 **Allow modification of critical areas where they have low ecological value and the function and values will be fully replaced. Avoid land uses and developments that are incompatible with environmentally critical areas.**

NE-19 **Avoid, where possible, the creation of new parcels with building sites entirely within wetlands, streams, steep slopes, frequently flooded areas, and their associated buffers where possible. Configure future parcels to have a building site outside of these areas.**

NE-20 **Encourage use of creative and appropriate site design and housing types to balance environmental protection and achievable density. Encourage clustering and density transfers for both commercial and residential development to help retain significant natural features and critical areas as open space.**

While protection of critical areas is important to the Redmond community, allowing all properties some reasonable economic use also is important. This policy does not guarantee that each property will be able to be used for its theoretically highest and best use or that all portions of a property can be used for development. Rather, the policy provides that the critical areas regulations be administered so that each property has some community-appropriate economic use.

NE-21 **Ensure critical area regulations provide reasonable economic use for all property within Redmond when taking into account the entire**

property.

Consistency between jurisdictions can help citizens and the development community work more efficiently with critical areas regulations. While local variations need to be accommodated, the local governments in King County are committed to making critical areas regulations more consistent.

NE-22 Work cooperatively with other jurisdictions in King County to develop and implement critical area regulations, designations, and education programs that meet the goals of the Redmond community and provide for optimal consistency among jurisdictions.

Geologically Hazardous Areas

Geologic hazards include areas susceptible to erosion, sliding, earthquake, or other geologic events. They pose a threat to health and safety to citizens when incompatible residential and nonresidential development is sited in areas of significant hazards.

Erosion hazard is a measure of the susceptibility of an area of land to prevailing agents of erosion. Factors such as grain size, soil cohesion, slope gradient, rainfall frequency and intensity, surface composition and permeability, and the type of cover help determine the severity of the erosion hazard. Erosion Hazard Areas are those areas where there is a severe hazard.

Landslide Hazard Areas are potentially subject to significant or severe risk landslides based on a combination of geologic, topographic, and hydrologic factors. Examples of Landslide Hazard Areas include areas of historic failures; areas designated as such on maps published by the United States Geologic Survey; areas containing slopes steeper than 15 percent; springs or groundwater seepage and hillside-intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; slopes that are parallel or subparallel to planes of weakness in subsurface materials; areas potentially unstable as a result of rapid stream incision or stream bank erosion; and any area with a slope greater than 40 percent.

Seismic Hazard Areas are those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction, surface faulting, or subsidence and uplift. "Severe risk of damage" is loosely defined as damage that is structural rather than cosmetic. Because of its geologic structure and history of earthquake activity, the region has been designated as a Class III seismic risk zone, the highest rating given by the United States Geologic Survey.

NE-23 Avoid and/or minimize potential impacts to life and property from geologic hazards such that the site is rendered as safe as one not containing such

hazard.

NE-24 Require appropriate levels of study and analysis as a condition to permitting construction within Geologically Hazardous Areas, ensure sound engineering principles are used based on the associated risk in these areas, and appropriately limit land uses in areas of Geologically Hazardous Areas.

NE-25 Strictly limit disturbance in Landslide Hazard Areas.

NE-26 Direct uses that require substantial improvements, clearing and grading, or structures away from Geologically Hazardous Areas.

NE-27 Manage development in Erosion Hazard Areas to minimize erosion during both construction and use.

NE-28 Promote soils stability by the use of natural drainage systems and retention of existing vegetation in Geologically Hazardous Areas.

NE-29 Promote sound development practices, including Best Management Practices (BMPs), to limit erosion and sedimentation during construction.

NE-30 Establish setbacks around the perimeter of site-specific Landslide Hazard Areas to avoid the potential to undermine these areas, cause erosion and sedimentation problems to downstream or downhill land uses, and avoid the risk to human life and safety.

NE-31 Require that construction, maintenance, and operation of development in Seismic Hazard Areas minimizes hazards to persons, property, and natural resources within the Seismic Hazard Area and the entire community.

NE-32 Require site-specific seismic hazard preparedness studies for essential public facilities and lifelines.

Critical Aquifer Recharge Areas

A significant portion of the city's water supply is obtained from wells. Once groundwater is contaminated, it is difficult, costly, and sometimes impossible to clean up. Preventing contamination is necessary to avoid exorbitant costs, hardships, and potential physical harm to people.

Critical Aquifer Recharge Areas are areas where an aquifer used for drinking water is both highly susceptible and vulnerable to contamination from surface activities. An aquifer is a sizable and continuous body of porous material composed of sand, gravel or silt saturated with water and capable of producing usable quantities of water to a well. As required by federal law, this water is monitored and tested to ensure that it meets the high standards required for drinking water.

The risk of groundwater contamination depends on two main sets of conditions. One set of conditions relates to the ground itself and how easy it is for water to pass through to groundwater. This is what is meant by hydrologic susceptibility. The other set of conditions relate to how likely it is for potential contaminants to reach groundwater. This is known as contaminant loading potential or source loading. Vulnerability is the combined effect of these two conditions.

NE-33 **Protect the quality of groundwater used for public water supplies to ensure adequate sources of potable water for Redmond and the region. Ensure that the level of protection provided corresponds with the potential for contaminating the municipal water supply aquifer.**

NE-33a **Periodically review and update land use policies, regulations, or development or operating standards that ensure appropriate levels of groundwater recharge and apply to uses involving hazardous materials located in Wellhead Protection Zones 1 and 2. Ensure that any revisions to code or policy to address wellhead protection are balanced with the desire for infiltration and recharge.**

NE-34 **Ensure degradation of groundwater quality does not occur. Where appropriate, prohibit the infiltration of runoff from pollution generating surfaces.**

NE-35 **Prohibit discharge of wastewater and potentially contaminated stormwater to groundwater. Prohibit reclaimed and greywater from infiltrating in the critical aquifer recharge area in order to preserve the quality of drinking water.**

For water to be pumped on a sustainable basis, new water must enter the aquifer. The best available data indicates the aquifer is recharged by rainwater infiltrating into the ground through permeable soils and by recharge from rivers, streams and lakes. Wetlands and natural areawide landscape depressions that allow water to stand also may aid in groundwater infiltration by slowing runoff and allowing it to seep into the ground when located in suitable areas. Development can lessen the water entering the aquifer by covering recharge areas with impervious surfaces or filling wetlands and natural depressions that contain standing water. Important groundwater recharge areas that are planned for rural or natural resource uses should be retained in these uses. These areas include the northern Sammamish Valley and the Bear Creek and Evans Creek Valleys.

NE-36 Retain aquifer recharge capacity in areas that have not already been committed to urban uses. Encourage infiltration of clean runoff citywide to recharge the drinking water aquifer.

In urbanized areas, maintaining open space, areas of natural vegetation, and wetlands also can help recharge aquifers. Many developments include some open spaces or recreation areas. By siting these areas on lands with the highest potential for groundwater recharge, they can do double duty, providing both aesthetic and recreational functions and groundwater recharge. These areas must be carefully located to minimize the potential for contaminated water to enter the aquifer.

NE-37 Encourage retention of open spaces, tree protection areas, and other areas of protected native vegetation with a high potential for groundwater recharge.

Hazardous material cleanups also have the potential to protect and improve ground and surface water quality. State and federal programs require that certain properties contaminated with hazardous materials be cleaned up. In addition, many property owners voluntarily clean up contaminated land. Redmond does not have many contaminated sites, but the City should encourage cleanups. Redmond also should work with property owners and State and federal agencies to ensure that sites that may affect groundwater supplies are cleaned up thoroughly so they do not present a future threat to groundwater quality.

NE-38 Encourage cleanup of contaminated sites within the city. To encourage such cleanups, ensure regulations and standards are performance based, do not duplicate state and federal requirements, and provide for expeditious approval where local review is required.

NE-39 **Clean up contaminated sites that may affect Redmond's groundwater supplies to such a standard that the sites will not present a risk to drinking water supplies.**

Frequently Flooded Areas

Frequently Flooded Areas are open channel and overbank areas within the 100-year floodplain that are frequently inundated with floodwater. Floodplains are generally flat, low-lying areas adjacent to rivers or streams that periodically flood during storm events. These areas move large volumes of water and debris downstream during storms.

The Federal Emergency Management Agency (FEMA) delineates flood hazards along major river and stream corridors to identify areas at risk from floodwater. This information is used for both floodplain management and insurance rating.

Flooding can damage structures in the floodplain. Persons living or working within a floodplain are at risk of injury from floods and the disease that can spread from flood waters.

Floodplains also provide critical functions for fish species. They provide important areas of riparian habitat, habitat formation, connectivity to wetlands, store and convey stormwater and floodwater, and recharge groundwater.

NE-39a **Reduce the amount of effective impervious surface in floodplains and uplands contributing runoff to downstream floodplains.**

NE-40 **Employ no net impact floodplain management to avoid impacts to both upstream and downstream properties.**

NE-41 **Strive towards no net loss of the structure, value, and functions of natural systems constituting Frequently Flooded Areas.**

NE-42 **Regulate development in the 100-year floodplain to avoid substantial risk and damage to public and private property and loss of life. Ensure these regulations, as a minimum, comply with state and federal requirements for floodplain regulations.**

NE-43 **Direct uses that require substantial improvements or structures away from areas within the 100-year floodplain.**

NE-44 Locate public facilities outside of the 100-year floodplain unless needed to serve development within areas characterized by urban development or because efficiencies from locating near existing public facilities already within the 100-year floodplain would clearly outweigh the risk of damage to the facility.

NE-45 Require that construction, maintenance, and operation of development in the 100-year floodplain minimize hazards to persons and property within the 100-year floodplain and the entire community.

NE-46 Update policies and development regulations to incorporate more detailed data on the extent of flood hazards as it becomes available.

NE-47 Cooperate with flood hazard reduction planning carried out by King County and update policies and development regulations to incorporate appropriate recommendations from these studies.

NE-48 Require compensatory floodplain storage for all projects constructed within the 100-year floodplain.

NE-49 Develop a City-initiated Sammamish River Compensatory Floodplain Storage Project. Allow Downtown development in the Sammamish River floodplain to "buy into" this project as an option in lieu of providing compensatory floodplain storage on-site.

As development occurs within a basin, the 100-year floodplain will expand, exposing some properties that were previously outside the floodplain to potential flood damage. These effects occur because as a basin develops the amount of impervious surfaces increase, increasing runoff and therefore flood depths. While the stormwater management policies in this element and in King County will reduce these effects, they will not prevent them entirely. One way of anticipating and responding to these changes is to identify the future-conditions floodplain. The future-conditions floodplain is the area that will be inundated by a 100-year flood when the basin is fully developed. FEMA flood hazard maps are based on current and historic conditions, not build-out. Additional work is needed to identify the future-conditions floodplain.

NE-50 Include flood flow estimate representing future conditions build-out into the City's floodplain regulations as it becomes available.

NE-51 **Consider reductions in the FEMA floodway only if future flows have been *considered and adequately accommodated.***

Properties outside the 100-year floodplain also can aggravate flooding and flood damages. Development in landslide or erosion prone areas can lead to the clogging of streams and drainage systems, increasing flooding within and outside the 100-year floodplain. As areas outside the 100-year floodplain develop, increased impervious surfaces may increase runoff during storms and thus increase flood heights within the 100-year floodplain and cause flooding outside the existing 100-year floodplain. Increased stormwater runoff can significantly impact salmon and steelhead habitat by literally washing it away. Reducing the amount of impervious surfaces and implementing stormwater detention can help reduce these impacts, but not eliminate them entirely.

NE-52 **Limit impervious surfaces citywide to reduce the possibility of flooding, to protect the environment, and to allow for groundwater recharge as *appropriate for the specific needs of particular neighborhoods and urban* centers.**

NE-53 **Explore new methods to limit effective impervious surface to protect *environmental resources such as streams and allow for groundwater* recharge, allow for efficient land use, reduce potential for flooding, and accommodate the level of development intensity planned for the area.**

Large amounts of impervious surface

Clearing and grading for developments also can increase stormwater runoff by removing vegetation and organic soils that absorb rain water. Excessive erosion can be very damaging to water quality on adjacent and downstream water bodies, including those that support salmonid fish and other fish species. To prevent these negative

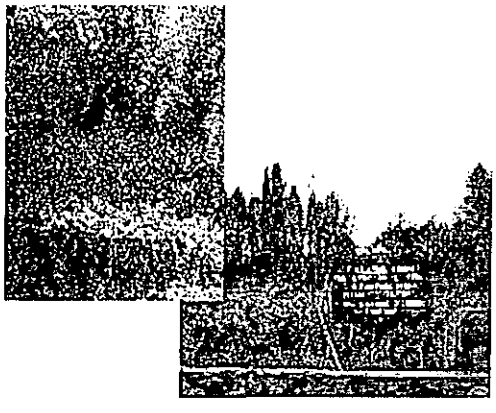
impacts, Redmond should continue to adopt and enforce clearing and grading requirements to minimize runoff and erosion.

NE-54 Maintain and update clearing and grading regulations to minimize the overall impact of the activity on the environment. Generally, limit clearing to the parts of site that will be developed.

Wetlands

Wetlands are areas that are inundated by ground or surface water frequently enough to support vegetation typically adapted to live in saturated soils. They perform many ecological functions, including flood control, reductions of erosion and siltation, water storage, groundwater recharge, water quality maintenance, nutrient absorption, and fish and wildlife habitat. Additionally, wetlands provide opportunities for research and scientific study, outdoor education, and open space.

Wetlands can be hazardous areas to develop. Their organic soils are generally poorly suited for development and may not support foundations, streets, or utilities.



It is the City's goal to achieve no net loss of wetlands through retention of function, value, and acreage of wetlands. Mitigation sequencing is used to ensure impacts to wetlands are avoided, where possible, and mitigated, when necessary.

NE-55 Preserve wetlands to achieve no net loss of wetlands function and value. Use size and value of the wetlands to determine the amount of development allowed, if any. Seek to maintain wetlands acreage over the long term.

NE-56 Require buffers adjacent to wetlands to protect the ecological functions integral to healthy wetland ecosystems.

NE-57 Use federal mitigation sequencing guidelines when reviewing projects impacting wetlands. This involves, in the following order: avoiding the impact altogether by not taking a certain action or parts of actions; minimizing the impact by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and *maintenance operations during the* life of the action; and compensating for the impact by replacing or providing substitute resources or environments.

NE-58 Ensure the amount of mitigation *required reflects the value and* function of the wetlands affected by the project, the risk that the mitigation may fail, the temporal loss of wetlands functions and values, the spatial locations of the mitigation, and the difficulty of replacing many wetlands functions and values. For these reasons, require in general a significantly larger area of mitigation than the area of wetlands impacted.

NE-59 Pursue opportunities to enhance and restore degraded wetlands.

NE-60 Implement effective ways of wetland mitigation such as mitigation banking for capital improvements projects that are linear, such as road and utility projects.

Water Quality and Basin Planning

Development in the watersheds of rivers, streams, and lakes must be carefully managed to retain water quality and prevent flooding.

Water Resources Inventory Area 8 represents the salmon recovery planning area of the Lake Washington/Cedar/Sammamish watershed. Chinook salmon are listed as threatened under the Endangered Species Act. In WRIA 8, residents, scientists, businesses, environmentalists, and governments are cooperating on protection and restoration projects and on developing a science-based plan to conserve salmon today and for future generations. Funding for the salmon conservation plan is provided by the 27 local governments, including Redmond, in the watershed.

NE-61 **Maintain surface water quality necessary to support native fish and wildlife meeting state and federal standards over the long term. Restore surface waters that have become degraded to provide for fish, wildlife, plants, and environmentally conscious human use of the water body.**

NE-62 **Restore, protect, and support the biological health and diversity of Water Resource Inventory Area (WRIA) 8 within the city.**

NE-62a **Protect and restore natural systems that underpin watershed health and hydrological integrity.**

NE-63 **Work with regional agencies to monitor surface water quality and implement measures to identify and address any sources of contamination.**

NE-64 **Control the flow of nutrients (especially phosphorus), heavy metals, and other pollutants into streams, rivers, Lake Sammamish and other area lakes, and natural wetlands. Require treatment measures where the development results in discharges to surface or groundwaters.**

The Washington State Department of Ecology and the U.S. Environmental Protection Agency (EPA), identify watershed-based stormwater management planning as an effective method of addressing receiving water impairments and hydrology impacts due to the urbanization of watersheds. The City of Redmond uses watershed management planning to develop a plan that aims to address impairments and reduce water resources impacts caused by urbanization.

NE-65 Cooperate with King County and other local governments and state agencies in developing and implementing Watershed Management Plans, Water Quality Management Plans, and other types of basin plans for basins which include or are upstream or downstream from Redmond.

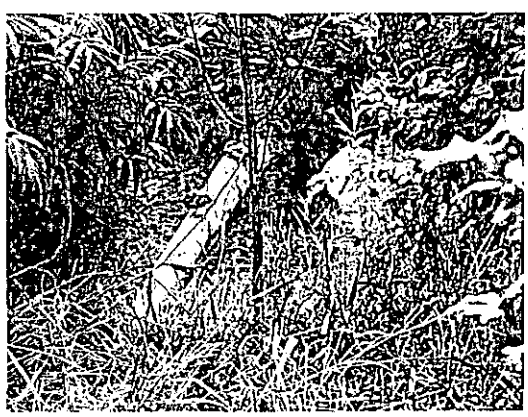
NE-66 Complete and maintain Watershed Management Plans for all areas in the city. Address water quality, habitat, stormwater runoff, and flooding issues. Review each plan for effectiveness at least once each five years.

NE-67 Incorporate the applicable and effective recommendations of Watershed Management Plans into the City's Comprehensive Plan, development regulations, and capital facility plans.

The habitat in Redmond's rivers, streams and lakes is important to protecting the area's high quality of life, valuable aquatic resources, and the area's natural beauty. The Sammamish River, with its trail and parks, is an important focal point for Redmond and ties the city into a regional recreational network. All of these areas are important to salmon migration.

NE-68 Protect and enhance rivers, streams and lakes, including riparian and shoreline habitat, to protect water quality, reduce public costs, protect fish and wildlife habitat, and prevent environmental degradation. Protect both perennial and intermittent streams to preserve natural hydraulic and ecological functions, fish and wildlife habitat, recreational resources, and aesthetics.

NE-68a Maintain natural hydrological functions within the city's ecosystems and watersheds and encourage their restoration to a more natural state.



Riparian habitat

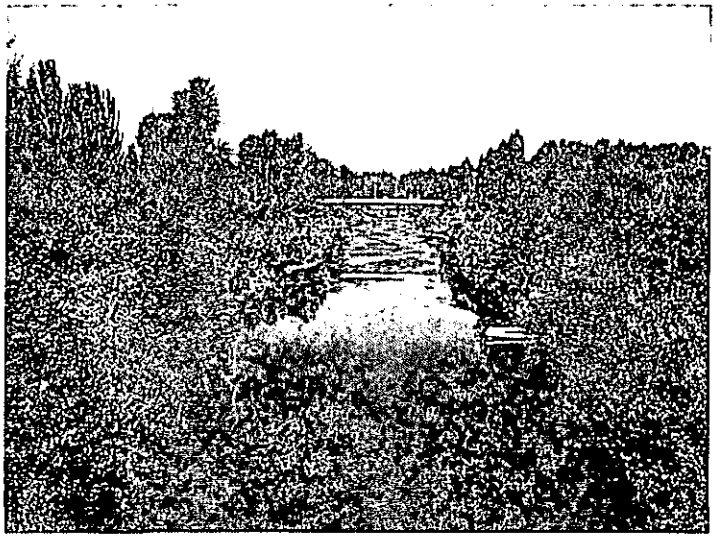
NE-69 Protect the near shore habitat of Lake Sammamish by avoiding bulkheads within the 100-year floodplain elevation.

Riparian corridors consist of vegetation along river and stream banks that are influenced by the surface waters. Ecological processes of riparian corridors include water flow, sediment routing, vegetation succession, woody debris recruitment, and plant and animal speciation.

NE-70 Avoid development impacts to riparian corridors. Protect riparian vegetation within stream buffers to maintain ecological functions. Enhance and rehabilitate these areas if they are impacted by development and encourage this when development takes place on adjacent uplands. Establish stream buffers to protect riparian ecological functions that contribute to healthy stream systems.

NE-71 Preserve and enhance the natural appearance of stream corridors.

The Sammamish River, Evans Creek, and some area streams have been channelized and adversely impacted by urbanization of their watersheds. Channelization reduces the habitat values of rivers and streams and increases the speed at which water flows through, potentially increasing downstream flooding. While it is not always possible to return these water bodies to their original condition, restoring rivers and streams can improve fish and wildlife habitat, environmental functions, recreational uses, and aesthetics. It also can reduce flood damage.



Sammamish River restoration

NE-72 **Encourage restoration and enhancement of the Sammamish River, Lake Sammamish, riparian stream corridors, wetlands, and associated buffers with priority given to areas associated with listed species. Explore actively and pursue a variety of funding mechanisms for enhancement and restoration work.**

NE-72a **Support the rerouting of Evans Creek from its current degraded position in a highly industrialized setting to an area to the north that allows for improved conditions, connecting wetlands to Evans Creek, and ample buffer widths.**

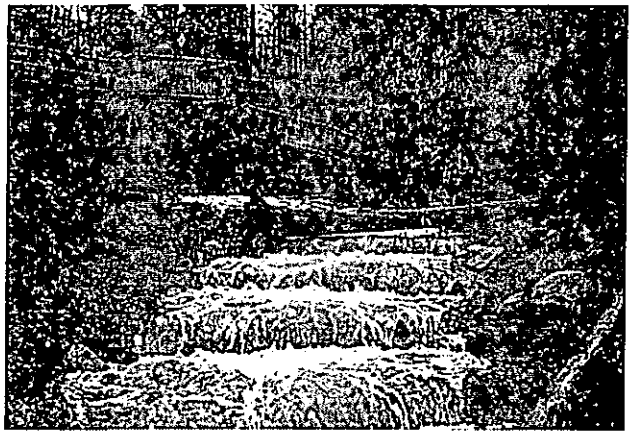
NE-73 **Encourage improvements such as removal of fish barriers to the fisheries habitat of watercourses when abutting properties are developed.**

Public education is an important component in efforts to protect surface and groundwater. Surface and groundwater quality can be adversely affected by individual choices that people make regularly. Education can help residents and businesses choose options that meet their needs and desires while protecting surface and groundwater quality.

NE-74 **Support public education to protect and improve surface and groundwater resources by:**

- Increasing the public's awareness of potential impacts on water bodies and water quality;
- Encouraging proper gardening and farming practices, including the use of environmentally appropriate fertilizers and chemicals;
- Encouraging proper disposal of materials;
- Educating businesses on surface and groundwater protection Best Management Practices in cooperation with other government agencies and other organizations; and
- Educating the public and businesses on how to substitute materials and practices with a low risk of surface and groundwater contamination for materials and practices with a high risk of contamination.

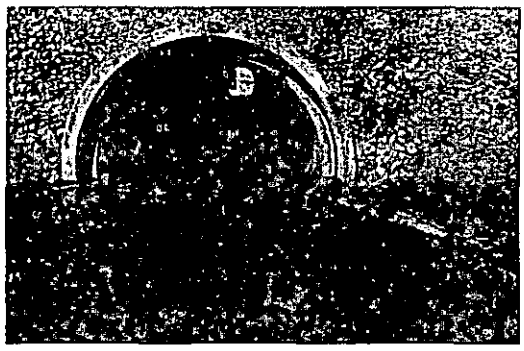
Natural drainage courses both within and outside the 100-year floodplain can function to lessen flood damages. Properly functioning natural streams and drainage ways include pools and overflow areas that slow stormwater runoff. Retaining natural drainage courses also helps to accommodate stormwater flows from upstream properties. Placing streams in culverts may not accommodate flood flows, reduces their value to fish and wildlife habitat, and may create barriers to fish passage.



Idylwood Creek during a storm

NE-75 **Avoid alteration of riparian stream corridors to the maximum extent possible. Whenever possible, avoid reduction in the capacity of natural drainage courses and minimize enclosures of natural drainage ways. Discourage stream relocation except as identified in NE-72a. Replace and enhance the flood control and habitat values of drainage courses when relocation or alteration is necessary for public benefit. Require enhancement when alteration of a stream to increase the usability of a site is permitted.**

NE-76 **Use bridges as the preferred method of crossing a watercourse that has habitat suitable for fish use or may be rehabilitated for fish use in the future. Prohibit the use of culverts where a fish barrier would result. Consider allowing culvert systems that would provide stream beds similar to natural channels where loss of habitat would not be significant and the cost of a bridge does not justify its benefits to fish passage, flood control, or other resources. Design bridges to allow for small animal migration under the bridge most of the time. Remove fish barriers where an existing fish barrier exists.**



Culvert

NE-77 **Stabilize stream banks and shorelines, if necessary, by bioengineering techniques except where unique factors make this approach infeasible.**

NE-78 **Restore natural drainage channels that have been placed within culverts and have had their capacity or habitat value reduced as development or redevelopment occurs. Allow retention of existing culverts for stream crossings where they do not result in a fish barrier in a stream that contains or has the potential to contain fisheries habitat.**

Fish and Wildlife Habitat

Fish and wildlife enhance the quality of life of a community. The salmon and steelhead are enduring symbols of the Northwest. Birds are valued for their songs and appearance. Other wildlife is attractive and helps maintain the valued character of the area. Wildlife diversity is often an indicator of environmental health. There is growing evidence that people living in metropolitan areas are interested in wildlife. Wildlife provides for human recreation and relaxation, and wildlife has aesthetic and education values. Studies have shown that viewing wildlife has aided in the recovery of sick people as it aids in the recovery of one's mental health.

Under the Growth Management Act, Fish and Wildlife Habitat Conservation Areas include:

- Areas with which endangered, threatened, sensitive, and candidate species have a primary association;
- State Priority Habitats and areas associated with State Priority Species;
- Habitats and Species of Local Importance when designated by the City Council;
- Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;
- Waters of the state;

- Areas critical for habitat connectivity; and
- Aquatic areas such as rivers, streams, lakes, ponds, and wetlands.

Wildlife habitats are characterized by a variety of internal (site specific) and external (contextual) habitat conditions. Internal conditions include: structural diversity (horizontally and vertically) of habitat; edge conditions; presence of snags or large trees; presence of downed logs; and presence or nearness of water and its safe accessibility. External conditions include: the size of the habitat patch; ability of the habitat to serve as a corridor or link to otherwise isolated natural areas, parks, preserves, or open spaces; the area is surrounded by a buffer or serves as a buffer; and the surrounding habitat types or land uses.

NE-79 Maintain a rich ecosystem supporting a variety of wildlife, as well as opportunities for education and appreciation of native habitats.

NE-79a Preserve and restore regional biodiversity with a focus on promoting native species and avoiding and eliminating invasive species.

The central planning concept for wildlife habitat in urban environments is to create an integration of habitat reserves and interconnecting corridors. Habitat reserves are generally considered to be areas of differing sizes that meet the basic needs of wildlife. Corridors are regarded as narrow, linear strips of habitat that have wildlife value. The corridors serve as interconnecting links between or along the habitat reserves.

Many of the critical lands conserved offer wildlife habitat as well, but riparian systems and streams are especially important. Natural riparian corridors are essential for wild fish populations. Reduced large woody debris is deemed a major reason for salmonid decline in Pacific Northwest streams. Healthy riparian zones are dynamic ecosystems that perform various functions that form salmonid habitat. Some of the major functions include:

- Producing and delivering large and small woody debris to shorelines and stream channels;
- Shoreline stream bank protection and habitat formation;
- Removing sediments and dissolved chemicals from water;
- Moderating water temperature;
- Providing favorable microclimate (humidity, temperature, and wind speed);
- Providing habitat for terrestrial animals;
- Providing proper nutrient sources for aquatic life;
- Allowing exchange of water between the ground and the water body;
- Providing flux of gravel between streambeds and banks; and

♦ Providing light patterning which salmonids use for concealment.

Core Preservation Areas form the backbone of the habitat areas within the city. These areas are already protected through other regulatory mechanisms. They include Native Growth Protection Easements, Class I streams and their buffers, and Class II through IV streams and other areas similarly protected. The Core Preservation Area includes wetlands and streams and their associated buffers as they become identified at a site-specific level.

Quality Habitat Areas provide significant wildlife value by virtue of their characteristics. These characteristics include several parameters indicative of habitat quality, including size, community diversity, interspersion (spatial patterns), continuity, forest vegetation layers, forest age, and invasive plants.

NE-80 **Protect Core Preservation Areas within the city.**

NE-81 **Restore and enhance degraded or lower-quality habitat within Core Preservation Areas.**

NE-82 **Pursue opportunities to preserve Quality Habitat Areas especially those which extend and connect to Core Preservation Areas.**

NE-83 **Design developments, parks, and recreation areas, to minimize impact to, and retain the character of, Quality Habitat Areas.**

Species protection is identified and accomplished during a site-specific study. Development is regulated through a series of management recommendations. Species protection applies to Species of Concern, Priority Species, and Species of Local Importance. Species of Concern includes those federal and state-listed endangered, threatened, sensitive, or candidate, as well as those species listed or proposed for listing by the federal government.

Heron – Species of Local Importance

NE-84 **Protect natural resources having a primary association with Species of Concern, Priority Species, and Species of Local Importance.**

NE-85 **Participate in regional efforts to recover species listed under the Endangered Species Act (ESA), such as the Chinook Salmon.**

NE-86 **Incorporate into the Watershed Management Plan local responses, commitments, policies, and programs to protect Redmond's wildlife targeting recovery of ESA-listed species.**

NE-87 **Modify City plans, programs, and policies, such as public projects, private development standards, maintenance standards, and utility practices, to be consistent with regional and local ESA policies and requirements.**

NE-88 **Protect salmon, steelhead and other fish, plants, and wildlife that rely on the aquatic environment by protecting and improving water quality.**

NE-89 **Give special consideration to conservation and protection measures to preserve and enhance anadromous fisheries.**

As a community develops, the available wildlife habitats become separated from each other. In part, this is a natural consequence of the development of urban areas. This is called habitat fragmentation. Where sections of critical habitat are linked, populations can move between the habitat areas. This lessens the dangers of interbreeding and allows plants and animals to recolonize the underused habitats.

Puget Sound Energy trail habitat corridor

NE-90 **Minimize habitat fragmentation by linking wildlife habitats via corridors. Connect wildlife habitats with each other within the city and the region to achieve a continuous network. Wildlife corridors include, but are not limited to, parklands usable by wildlife, protected or reserved (Native Growth Protection Easements) open space, utility rights-of-way, riparian corridors, wetland buffers, and protected sensitive areas.**

NE-91 **Consider impacts City projects have on wildlife corridors and connectivity.**

Many species of fish and wildlife are quite mobile and move from jurisdiction to jurisdiction during their life or with the seasons. This mobility requires a regional approach to their management.

NE-92 **Coordinate land use planning and management of fish and wildlife resources with other local governments within the region, affected state and federal agencies, and Native American Nations and Tribes.**

It is important to monitor and manage urban wildlife habitats to maintain their integrity to numerous outside influences and managed landscapes surrounding them. A management strategy is needed for the maintenance of wildlife habitat.

NE-93 **Develop a wildlife habitat management strategy and well-defined goals to monitor and maintain wildlife habitat, with mechanisms for City and volunteer support.**

Pesticides can kill birds, cause cancer, and decimate prey populations of several City Priority Species. Usage of these substances to maintain City-owned rights-of-way, parklands, and public spaces should be reduced to the maximum extent practical.

Alternatives to using pesticides and fertilizers, such as employing compost-amended soils or compost tea during development and redevelopment, could minimize use of these synthetic and harmful products.

NE-94 **Encourage conservation and sustainability throughout the city by minimizing impacts to wildlife and water quality through practices, such as limiting the use of toxic pesticides and fertilizers, incorporating alternative pest management methods, and providing public education about such practices.**

Weeds can be a problem because they are detrimental to wildlife by replacing native plant species and providing little to no value in terms of forage, cover, or nest sites for the wildlife community. These weeds spread quickly from one area to another. Noxious weeds already adversely affect most habitat areas. Currently, the most prevalent problem weeds for wildlife in the city include blackberry species, Scotch broom, reed canarygrass, English ivy, and holly.

Scotch broom

NE-95 **Use native vegetation on City capital projects, prevent the continued spread of invasive and noxious weeds to habitat areas, maintain a long-term management strategy to prevent noxious weeds, and manage these weeds where they are present on City-owned properties.**

NE-96 **Use a majority of native vegetation that is supportive of wildlife instead of nonnative plant species and eliminate the use of invasive species when**

landscaping for new developments adjacent to wildlife habitats.

NE-97 **Ensure management of noxious weeds and invasive species are an integral part of landscape plans for new development. Work with King County and Washington State to target the management of noxious weeds.**

Non-regulatory measures are a key component of a comprehensive wildlife habitat management strategy. Several organizations have urban or backyard wildlife certification programs, including the National Wildlife Federation, the National Institute for Urban Wildlife, and the Washington Department of Fish and Wildlife. The National Institute for Urban Wildlife will certify city parks as urban wildlife sanctuaries when certain criteria are met. The National Wildlife Federation can certify a city as a Community Wildlife Habitat.

NE-98 **Promote public education and outreach on wildlife habitat in the city and provide information to residents on how they can participate in the Backyard Wildlife Sanctuary Program.**

City certification as a Community Wildlife Habitat involves the entire community. This designation may include certified backyard sites, certified school sites, a public demonstration garden, participation by the business community, and related projects, such as wildlife surveys, sensitive areas mapping, and creation of wildlife corridors.

NE-99 **Support urban wildlife habitat management through education, City actions, and demonstration projects.**

Education is a key non-regulatory component towards embracing wildlife habitat management. Wildlife habitat restoration and demonstration projects show residents how habitat can be created or improved in their own backyard. Restoration projects need not be limited to plant installations. Other features important to wildlife can be added to the habitat area depending upon site conditions. These features can include nest boxes, bat boxes, snags, brush piles, ponds, reptile and amphibian mounds, and other constructed and natural features. Habitat enhancement efforts need not be expensive. Limiting mowing to heavily used areas and allowing grassy meadows to grow along forest edges and in other low intensity use areas can provide additional habitat for numerous wildlife species. Rotational mowing can increase habitat value for some species.

NE-100 **Employ wildlife habitat-friendly practices in designing and maintaining city parks.**

King County has a Native Plant Salvage Program. County staff and volunteers salvage native understory plants on sites where development plans have been approved. The plant material is kept at a holding facility. Plants are typically used on county volunteer projects.

NE-101 **Coordinate with King County's Native Plant Salvage Program to facilitate the identification of potential sites for plant salvage.**

C. Tree Preservation and Landscape Enhancement

The Tree Preservation and Landscape Enhancement policies address the value of protecting trees and enhancing the placement of trees within the city.

Trees aid in stabilizing the environment's ecological balance by helping to purify the air, generating oxygen, slowing and absorbing stormwater runoff, stabilizing slopes, reducing erosion, masking noise, containing glare, and conserving energy. They enhance the community's appearance, identity, and natural beauty. Trees also provide habitat for birds and animals.

Trees in Idylwood Beach Park

NE-102 **Preserve the natural environment and Redmond's forested appearance.**

NE-103 **Maintain no net loss of significant trees within the city over the long term.**

NE-104 **Maximize tree retention and a treed appearance when development occurs through the following:**

- Require the retention of viable tree clusters, forested slopes, treed gullies, and specimen trees that are of species that are long-lived, not

dangerous, well-shaped to shield wind, and located so that they can survive within a development without other nearby trees.

- Design and construct developments to retain these trees.
- *Identify and protect these trees during land divisions and site* development.
- Allow removal of nonsignificant trees to provide for project construction.
- Plant replacement trees on appropriate areas of the site or off-site locations to replace significant trees removed during construction.
- Encourage appropriate tree pruning, avoiding topping.

NE-105 Design City capital improvement projects to preserve trees to the maximum extent possible.

Some areas, such as gullies and steep slopes, are poorly suited for development because of their natural limitations and potential hazards. They typically are also expensive to serve with public facilities. These areas often include significant numbers of trees. If these areas are designated for low intensity uses by the Comprehensive Plan, potential negative impacts on the community from developing these hazardous areas can be prevented and trees retained. This can help the property owners as well. By matching the Comprehensive Plan designation to the suitability of the land, expensive measures that try to compensate for these natural limitations and try to serve intense uses with the needed infrastructure are avoided. These areas retain their character and are sensitively developed, making them valuable sites for appropriate uses.

NE-106 Implement Comprehensive Plan designations and zoning for forested slopes and treed gullies consistent with the goal of retaining tree cover in these areas.

Trees along waterways, wetlands and lakes provide many important functions. Along streams and rivers, trees shade the water, which reduces temperatures in the summer and helps salmon, steelhead, and other fish to survive. Trees in gullies and along streams help slow stormwater and reduce erosion. The root systems of trees can also help stabilize streams, reducing erosion and stream migration. Leaves and insects falling from trees into streams, wetlands, and lakes provide important food sources for fish and other aquatic creatures. The trees also provide habitats for birds and animals.

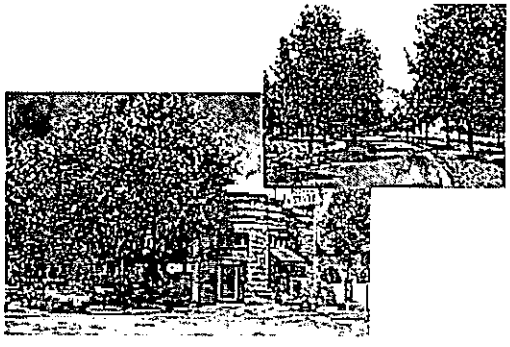
NE-107 **Preserve trees within stream, wetlands, and their associated buffers, and lake building setbacks.**

NE-108 **Plant suitable native trees and native vegetation within degraded stream, wetlands, and lake buffers. Encourage planting suitable native trees and native vegetation within steep slopes.**

Street trees provide an important visual amenity to the community. They provide a unifying look within diverse areas of the city and integrate buildings with each other and the landscape. Street trees help to develop a sense of place. Many streets are remembered because of their trees. Street trees also shade streets and parking areas in summer, reducing temperatures and building cooling loads conserving energy.

NE-109 **Require street trees along all arterial streets and along local streets designated in neighborhood policies. Where street trees are not practical, consider designating areas through neighborhood policies where trees will be required to be planted on developable lots.**

NE-110 **Plant street trees in planter strips or tree wells located between the curb and any sidewalk where feasible. Select tree species and planting techniques to create a unified image for the street, provide an effective canopy, avoid sidewalk and utility damage, and minimize water consumption. Require deciduous shade trees that are well suited to the climate and to planting along streets and sidewalks.**



Another method of encouraging trees in the city is to make it easy for property owners to plant trees on their property or in planting strips adjacent to their property. Over the years, these voluntary efforts can result in many trees in the community. Maintaining lists of suitable trees, telling Redmond residents how to find good locations for trees, and informing Redmond residents how to have underground utilities located so they will not be damaged during tree planting can help encourage community members to plant trees on their own.

NE-111 **Provide information to community residents and property owners to encourage them to plant trees on their properties.**

Ensuring that Redmond remains a city with many trees requires that they be managed and maintained. The City maintains street trees in many areas. Property owners also must properly maintain trees to provide for their future.

NE-112 **Maintain and enhance a street tree maintenance program on arterial streets and City-owned trees.**

NE-113 ***Establish private maintenance provisions for trees that will be retained within developments.***

D. Climate Change

Leading atmospheric scientists predict that climate change will have serious environmental, economic, and public health consequences in the coming decades. Naturally occurring levels of greenhouse gases are necessary to life because they keep the earth's temperature stable and the surface warmer than it otherwise would be. However, the burning of fossil fuels and increasing rates of deforestation and development have produced growing amounts of carbon dioxide, methane, and other heat-trapping gases. These gases trap the sun's energy and thereby heat the earth's atmosphere. The Environmental Protection Agency (EPA) states that for over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation have *caused concentrations of heat-trapping greenhouse gases to increase significantly in* our atmosphere. These gases prevent heat from escaping to space.

According to the EPA, careful measurements have confirmed that greenhouse gas emissions are increasing and that human activities are the primary cause. Most scientists believe that:

- Human activities are changing the composition of the earth's atmosphere. Increasing levels of greenhouse gases like carbon dioxide in the atmosphere since preindustrial times are well documented and understood.
- The atmospheric buildup of carbon dioxide and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will *continue to rise over the next few decades.*

- Increasing greenhouse gas concentrations tend to warm the planet.

As a local government, Redmond is in a position to affect change locally, regionally, and nationally by preparing for climate change and identifying actions that would help lessen its impact in the production of greenhouse gases.

NE-113a Develop a Climate Action Plan, which includes greenhouse gas emissions reductions targets for the city.

NE-113b Achieve greenhouse gas emissions reductions in both municipal operations and the community at large, with attention given to social equity.

NE-113c Include analysis of climate change impacts when conducting environmental review under the State Environmental Policy Act (SEPA).

NE-113d Promote the reduction of greenhouse gases by expanding the use of conservation and alternative energy sources and by reducing vehicles miles traveled by increasing alternatives to driving alone.

NE-113e Take positive actions such as increasing the number of trees in the city, to reduce carbons.

NE-113f Identify and address the impacts of climate change on the city's hydrological systems.

E. Air Quality

Clean outdoor air quality is healthy for all segments of the human population and for the natural environment. It contributes to the quality of life. Clean air is healthful and helps to keep the mountains, Lake Sammamish, Sammamish River and other areas visible from many areas in Redmond. These are views that the community values. Continued federal funding for transportation improvements is dependent on complying with federal air quality standards.

While other agencies regulate air quality, Redmond and other cities have an important role to play in maintaining high air quality. This includes transportation planning to reduce emissions and land use planning to internalize trips and reduce emissions.

NE-114 Promote compliance with federal and state air pollution control laws and improvements to regional air quality in cooperation with the Puget Sound Air Pollution Control Agency and the Puget Sound Regional Council.

NE-114a Achieve criteria air pollutant reductions in both municipal operations and the community at large, with attention given to social equity.

NE-115 Maintain high air quality through land use and transportation planning and management.

NE-116 Continue implementing and enforcing commute trip reduction programs as a means to limit or reduce vehicle trips as a key strategy for reducing vehicle-related air pollution.

NE-117 Reduce the amount of airborne particulates through a street sweeping program, dust abatement on construction sites, covered loads of hauled materials, and other methods to reduce the dust sources.

F. Noise

Noise is a pollutant that can have significant negative impacts on human health. Excessive noise also makes neighborhoods less desirable places to live and can contribute to deterioration of those areas. The Washington State Department of Ecology has adopted noise standards, but does not enforce them; therefore the City should continue to enforce noise regulations.

NE-118 Maintain noise regulations to limit noise to levels that protect the public health and that allow residential, commercial and manufacturing areas to be used for their intended purposes. Provide flexibility in the regulations to allow construction at night when necessary to protect worker safety while maintaining the tranquility of the city.

NE-119 Provide noise reduction and mitigation measures to reduce the noise and visual impacts of freeways and arterials on residential areas. Ensure the Washington State Department of Transportation provides appropriate levels of noise suppression when expanding or improving state

highways.

NE-120 **Require buffering or other noise reduction and mitigation measures to reduce noise impacts from Commercial and Industrial zones on residential areas.**

NE-121 **Assure that mixed-use developments are designed and operated to minimize noise impacts. Measures may include provisions controlling uses, design and construction measures, and timing requirements.**

G. Light Pollution

Light Pollution policies address the protection of the community from excessive glare and promote the concept of "dark skies."

Glare is strong, steady light that shines away from the area that is meant to be illuminated. Glare interferes with views and, in extreme cases, may interfere with the normal use of nearby properties. Inappropriate overhead lighting along the city's river and streams can interfere with the feeding and spawning activities of salmon and trout. Night lighting is an important safety feature and should be allowed, but lighting should be designed and directed to minimize glare.

NE-121a **Minimize and manage ambient light levels to protect the integrity of ecological systems and public health without compromising public safety and cultural expression.**

NE-122 **Design and construct night lighting to minimize excessive glare and to avoid spillover onto nearby properties.**

NE-123 **Minimize overhead lighting that would shine on the water surface of the city's various streams. Encourage the use of pedestrian level or shaded lighting when providing lighting along the Sammamish River Trail.**

The "dark skies" policy seeks to reduce glare and maintain views of stars and planets. Redmond recognizes that night lighting is needed, but seeks to maintain dark skies in the residential areas of the community.

NE-124 **Encourage dark night skies in Redmond's residential neighborhoods, in the Sammamish Valley, in the Bear Creek Valley, and over Lake Sammamish in development regulations, design standards, and**

development review.

RZC 21.64 Critical Areas Regulations

21.64.040 Frequently Flooded Areas

(A) Classification and Rating of Frequently Flooded Areas.

To promote consistent application of the standards and requirements of this chapter, frequently flooded areas within the city of Redmond shall be rated or classified according to their characteristics, function and value, and/or their sensitivity to disturbance.

(1) Frequently Flooded Areas Classifications. Frequently flooded areas shall be classified according to the criteria in this section.

(a) Floodplain. The total area subject to inundation by the base flood (the flood that has a one percent chance of occurring in any given year).

(b) Flood Fringe. The portion of the floodplain outside of the floodway which is generally covered by flood waters during the base flood and is generally associated with standing water rather than rapidly flowing water.

(c) FEMA Floodway. The channel of the stream and that portion of the adjoining floodplain which is necessary to contain and discharge the FEMA base flood flow without increasing the FEMA base flood elevation more than one foot.

(d) Zero-Rise Floodway. The channel of the stream and that portion of the adjoining floodplain which is necessary to contain and discharge the base flood flow without increasing the base flood elevation. The zero-rise floodway will always include the FEMA floodway.

(2) Classification of frequently flooded areas shall be determined by the Committee based on consideration of the following factors:

(a) Maps adopted pursuant to this chapter including the frequently flooded areas map, which identifies the approximate location and extent of the 100-year floodplain. This map shall be used as a general guide only for the assistance of property owners and other interested parties; boundaries are generalized. The actual type, extent, and boundaries of frequently flooded areas shall be determined in the field by a qualified consultant according to the procedures, definitions, and criteria established by this chapter. In the event of any conflict between the critical area location and designation shown on the City's map and the criteria or standards of this section, the criteria and standards shall prevail.

The City will employ hydrologic models to define the extent of the zero-rise floodway. If the zero-rise floodway has not yet been defined for the property in question, the applicant will be responsible for modeling the base flood elevation and delineating the extent of the zero-rise floodway, consistent with the assumptions in

the Bear Creek Basin Plan as adopted by the City. In the absence of a City hydrologic model, FEMA data will be acceptable;

(b) Flood Insurance Rate Maps published by the Federal Emergency Management Agency;

(c) Application of the criteria contained in these regulations; and

(d) Consideration of the technical reports submitted by qualified consultants in connection with applications subject to these regulations.

(B) Alteration of Frequently Flooded Areas.

Alteration of frequently flooded areas may only be permitted subject to the criteria in Sections 21.64.020(D) through 21.64.020(E), 21.64.030(C), 21.64.040(C), 21.64.050(B), and 21.64.060(D) of the Zoning Code.

(C) Flood Hazard Areas – Development Standards.

(1) Flood Hazard Areas Generally. For all new structures or substantial improvements, the applicant must provide certification by a qualified consultant of the actual as-built elevation of the lowest floor, including basement, and, if applicable, the actual as-built elevation to which the structure is flood-proofed. If the structure has a basement, this must be indicated.

(2) The Flood Fringe Outside the Zero-Rise Floodway.

(a) Development shall not reduce the effective base flood storage volume of the floodplain. Grading or other activity which would reduce the effective storage volume must be mitigated by creating compensatory storage on the site. Developments in Downtown in the Sammamish River floodplain have the option to participate in the city's Sammamish River Regional Compensatory Floodplain Storage Project. This option allows developers to compensate for on-site floodplain fill volume in this regional project by having their storage volume allocated to this project.

(b) No structure shall be allowed which would be at risk due to stream bank destabilization including that associated with channel relocation or meandering.

(c) All elevated construction must be designed and certified by a professional structural engineer registered in the State of Washington and must be approved by the City prior to construction.

(d) Subdivisions, short subdivisions, binding site plans, site plan review, special Land Use Permits, and general Land Use Permits shall follow the following requirements:

(i) New building lots shall contain 3,600 square feet or more of buildable land outside the zero rise floodway and building setback lines shall be shown on the face of the plat to restrict permanent structures to the area so defined;

(ii) All utilities and facilities, such as sewer, gas, electrical, telephone, cable communications and water systems, shall be located and constructed consistent with subsection (2)(i) of this section;

(iii) Base flood data and flood hazard notes shall be shown on the face of the recorded plat, including but not limited to the base flood elevation, required flood protection elevations, and the boundaries of the floodplain and the floodway, if determined; and

(iv) The following note shall be recorded with the King County Department of Records and Elections for all affected lots:

NOTICE

Lots and structures located within flood hazard areas may be inaccessible by emergency vehicles during flood events. Residents and property owners should take appropriate advance precautions.

(e) New residential construction and substantial improvement shall meet the following criteria:

(i) The lowest floor, including basements and below-grade crawl spaces per FEMA regulations, shall be elevated to the flood protection elevation.

(ii) Portions of the building that are below the flood protection elevation shall not be fully enclosed. The areas below the lowest floor shall be designed to automatically equalize hydrodynamic flood forces on exterior walls by allowing the entry and exit of floodwaters. Designs for meeting this requirement must meet or exceed the following minimum criteria:

(A.) Minimum of two openings on opposite walls having a total open area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;

(B.) The bottom of all openings shall be no higher than one foot above grade.

(iii) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the unrestricted entry and exit of floodwaters.

(f) New nonresidential construction and substantial improvement of any existing commercial, industrial, or other nonresidential structure shall meet the elevation requirements of residential construction.

(g) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

(h) For all mobile and manufactured homes, all standards for flood hazard protection for conventional residential construction shall apply. All manufactured and mobile homes must be anchored and shall be installed using methods and practices that minimize flood damage. All new and replacement water supply systems shall be *designed to minimize or eliminate infiltration of flood waters into the system.*

(i) Utilities shall meet the following criteria:

(i) All new and replacement utilities, including sewage treatment facilities, shall be flood-proofed to, or elevated above, the flood protection elevation.

(ii) New on-site sewage disposal systems shall be located outside the limits of the 100-year floodplain. The installation of new on-site sewage disposal systems in the floodplain is prohibited.

(iii) Sewage and agricultural waste storage facilities shall be flood-proofed to the base flood elevation plus three feet.

(iv) Aboveground utility transmission lines, other than electrical transmission lines, shall only be allowed for the transport of nonhazardous substances.

(v) Buried utility transmission lines transporting hazardous substances (as defined by the Washington State Hazardous Waste Management Act in RCW 70.105.005) shall be buried at a minimum depth of four feet below the maximum depth of scour for the base flood predicted by a professional civil engineer licensed by the State of Washington and shall achieve sufficient negative buoyancy so that any potential for flotation or upward migration is eliminated.

(j) Critical facilities may be allowed within the flood fringe of the floodplain. All such proposed uses shall be evaluated as part of the underlying land use permit. Critical facilities constructed within the flood fringe shall have the lowest floor elevated to three or more feet above the base flood elevation. Flood-proofing and sealing measures must be taken to ensure that hazardous or toxic substances will not be displaced by or released into floodwaters. Access routes elevated to the flood protection elevation shall be provided to all critical facilities to the nearest maintained public street or roadway located outside of the floodplain.

(k) The Committee shall review all Land Use Permits to determine that all necessary permits have been obtained as required by federal or state law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, as required by Section 60.3(a)(2) of 44 CFR.

(l) Storage and containment of hazardous or dangerous chemicals, substances or materials, as those terms are determined by applicable state and federal regulations, shall be prohibited, provided that existing uses involving storage, etc., shall conform to the flood protection elevation when applying for any permit.

(3) Development in the Zero-Rise Floodway.

(a) Activities allowed within the zero-rise floodway must conform to the requirements of this section, as well as the requirements that apply to the flood fringe outside the zero-rise floodway as identified in subsection (2) of this section.

(b) No development activity shall reduce the effective storage volume of the floodplain.

(c) No development, including permitted new construction or reconstruction, shall cause any increase in the zero-rise base flood elevation.

(d) No temporary structures or storage of materials hazardous to public health, safety and welfare shall be permitted in the zero-rise floodway.

(e) Construction of new residential or nonresidential structures is permitted in the zero-rise floodway only in the following circumstances:

(i) The structure must be on a lot legally in existence at the time the ordinance codified in this chapter becomes effective;

(ii) The structure must be on a lot that contains less than 3,600 square feet of buildable land outside the zero-rise floodway; and

(iii) The structure must meet the construction standards set forth in subsections (2) and (3)(b), (3)(c), and (3)(d) of this section.

(f) New lots that include part of the zero-rise floodway may be created only if the lots meet the requirements of subsection (2)(d) of this section and administrative rules, or are declared as nonbuilding lots on the face of the plat.

(g) The following circumstances are presumed to produce no increase in base flood elevation and shall not require special studies to establish this fact:

(i) Substantial improvement on existing residential structures outside the zero-rise floodway where the building footprint is not increased.

(ii) Substantial improvement of an existing residential structure shall meet the requirements for new residential construction set forth in subsection (2)(e) of this section.

(h) Reconstruction of an existing residential structure shall meet the requirements for *new residential construction set forth in subsection (2)(e) of this section.*

(i) Utilities and roads are permitted in the zero-rise floodway only when no other location is practicable, or when mitigating measures achieve zero-rise floodway elevations, and shall meet the minimum criteria set forth in subsection (2)(i) of this section and the following requirements:

(i) Construction of sewage treatment facilities shall be prohibited.

(ii) Utility transmission lines transporting hazardous substances shall be buried at a minimum depth of four feet below the maximum depth of scour for the base flood as predicted by a professional civil engineer licensed by the State of Washington, and shall achieve sufficient negative buoyancy so that any potential for flotation or upward migration is eliminated.

(j) Critical facilities shall not be constructed in the zero-rise floodway.

(k) Floodway Dependent Structures. Installations or structures that are floodway dependent may be located in the floodway, provided that the development proposal receives approval from all other agencies with jurisdiction and meets all standards in Sections 21.64.020(D) and 21.64.030(C) of the Zoning Code. Such installations include but are not limited to:

(i) Dams or diversions for water supply, flood control, hydroelectric production, irrigation, or fisheries enhancement;

(ii) Flood damage reduction facilities such as levees and pumping stations;

(iii) Stream bank stabilization structures where no feasible alternative exists to protecting public or private property;

(iv) Stormwater conveyance facilities subject to the requirements of the development standards for streams and wetlands, and other relevant City of Redmond development standards;

(v) Boat launches, docks and related recreation structures;

(vi) Bridge piers and abutments; and

(vii)Fisheries enhancement or stream restoration projects.

(l) Development of the area located downstream of Redmond Way on Bear Creek may be allowed:

(i) when mitigating measures achieve zero-rise floodway elevations, or

(ii) when surface water elevations are not increased over one foot provided no significant unmitigated upstream, downstream, or on-site environmental impacts are created.

(4) Development in the FEMA Floodway.

(a) Construction or placement of new residential or nonresidential structures is prohibited within the FEMA floodway. Shoreline protective structures, bridges, roads, trails and railroads are permitted within the FEMA floodway.

(b) No development subject to these regulations, including permitted new construction or reconstruction, shall cause any increase in the FEMA base flood elevation.

(c) Substantial improvement of an existing residential structure located in the floodway must meet the requirements set out in WAC 173-158-070 as amended. Such substantial improvement is presumed to produce no increase in base flood elevation and shall not require special studies to establish this fact.

RCZ 21.78 Definitions

New definition

Development: For the purposes of administering RZC 21.64.040, *Frequently Flooded Areas*, development shall mean any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, subdivision of land, removal of substantial amounts of vegetation, or alteration of natural site characteristics.