

# Environmental Element

## GOAL:

To integrate the natural and developed environments to create a sustainable urban habitat with clean air and water, habitat for fish and wildlife, and comfortable and secure places for people to live and work.



*Volunteers with the City's Stream Team restoration project at Kelsey Creek wetlands*

Note: Specialized environmental terms used in this Element are defined in the Glossary.

## OVERVIEW

The quality of life in the Pacific Northwest is often equated with the quality of the environment. Protecting the environment depends on governments, businesses, communities, and individuals taking coordinated actions to minimize adverse environmental impacts, and enhance our urban ecosystem.

As Bellevue matures and as more is learned about the relationship between the developed and natural environment, urban environmental concerns assume a higher priority in public policy. The city leads and supports efforts to protect and improve the environment while balancing its other goals, responsibilities and requirements. Through the Comprehensive Plan numerous goals and policies are articulated to help the city achieve its vision for the future; no one goal or policy is pursued to the exclusion of others. In weighing environmental protection against other needs, including urban growth, housing, economic development, and recreation opportunities, the city balances these goals and achieves protection through a variety of means, including regulation of property, incentives and public programs. Public investment in the urban environment promotes a high quality of life and encourages private investment in the community.

Environmental protection is integrated into the city's philosophy. Bellevue is a leader in the development and implementation of critical areas legislation, thereby demonstrating that the city's environmental responsibilities are compatible with the other goals and policies of the Comprehensive Plan. Through policy and regulation, the city seeks a healthy, sustainable urban environment, one in which the community meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainability implies that limitations on the use of the environment are necessary to buffer the effects of human activities. A sustainable urban environment develops in harmony with the ecosystem. A community that embraces sustainability continually evaluates the relationship between the developed and natural environment including: the susceptibility to contamination of its air, water, and soil; the rate at which it consumes resources; the amounts of noise, waste, and emissions it generates; the open space, fish and wildlife habitat, and recreation opportunities it provides; and its dependency on the automobile.

The Environmental Element provides the policy framework for protecting and improving Bellevue's natural environment. The concepts discussed in this element include: **Environmental Stewardship, Water Resources, Earth Resources and Geologic Hazards, Fish and Wildlife Habitat Conservation Areas, Air Quality, and Noise.**

Bellevue evaluates the relationships of the many elements of the urban environment in its decision-making processes. The city weighs the merits and costs of its environmental actions with other important responsibilities under the Growth Management Act, such as public safety and recreation, public infrastructure, housing, and economic development. Policies and regulations guide development citywide, with particular attention given to development in environmentally sensitive natural areas such as riparian corridors, floodplains, wetlands, shorelines, and steep slopes. City-owned open space is managed for multiple purposes including air and water quality, fish and wildlife habitat, and recreation. Public information and involvement programs assist residents and businesses in their commitments to enhance the quality of the environment.

Bellevue's environmental policies promote the management of water resources within the city such that they remain clean, prevent public health and safety hazards, mitigate property damage, and provide fish and wildlife habitat and other beneficial uses. Policies also support protecting steep, forested slopes and highly erodible or unstable soils. It is the intent of these policies to achieve land use and development practices that are compatible with the environment. In essence, development practices should protect rather than destroy the significant natural features and processes of the land.

Bellevue thus prohibits most types of development in riparian corridors, floodplains, wetlands, setbacks adjacent to shorelines, and in unstable or potentially hazardous areas except where development can be accomplished in a manner which:

- Assures the protection and safety of people and property, public and private;
- Improves overall environmental conditions over time;
- Is compatible with the existing natural environment;
- Prevents significant erosion, sedimentation or siltation, or degradation of riparian corridors, lakes and shorelines, floodplains, and wetlands on site or in downslope or downstream areas;
- Assures long-term slope and soil stability with minimum maintenance; and
- Provides reasonable assurance that future repairs and maintenance will be performed.

In addition, essential public services and infrastructure will be allowed in the Protection Zone where no feasible alternative exists, and certain other uses that rely on being located in or near such areas, including parks and recreations uses, will be allowed. The design, scale and intensity of these allowed uses should take into consideration the functions and values of the Protection Zone. Development associated with these allowed uses shall be accomplished with minimum environmental degradation, appropriate environmental mitigation, and in a manner that assures the protection and safety of persons and property.

The city does not intend to deny all economic use of any property, however the city is not obligated to guarantee the maximum economic use of any property.

Good air quality and quiet neighborhoods help make Bellevue a liveable city. Air pollution and noise are both local and regional concerns. Vehicle traffic is the single, most pervasive threat to good urban air quality and peace and quiet. Yet automobiles are vital to the economy and culture of the region. Air quality implications are significant in transportation planning that involves improving mobility within the city and region, not by accommodating more vehicles, but by creating less polluting transportation options.

Bellevue's comprehensive noise control ordinance protects neighborhoods from excessive noise and provides multiple enforcement tools. The city supports regional legislation, participates in regional discussions, and enacts local ordinances to ensure that air and noise pollution do not significantly degrade the environment.

# Environmental Stewardship

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## **GOAL:**

**To promote a sustainable urban environment by weighing environmental concerns in all decision-making processes.**

Of the many roles the City of Bellevue must fulfill, one of its most demanding is that of chief steward of the city's environment. This demand is unique to the city because it has the authority to regulate land use and the responsibility to implement federal and state statutes. Therefore, the city must endeavor, at all times, to ensure that its environment is managed wisely. Through regulations, programs and incentives, the city encourages the preservation, restoration, and improvement of the natural environment. This three-pronged strategy is the foundation of Bellevue's approach to environmental stewardship. Over time, this strategy is expected to produce incremental and cumulative improvements to the functions and values of critical areas, and promote sustainable ecosystems to the extent practical within urban constraints.



*Bellevue residents demonstrate their commitment to environmental stewardship.*

Environmental stewardship is a comprehensive and continuous community endeavor. The goal of creating and maintaining a sustainable urban environment can be accomplished not only by reducing or eliminating adverse impacts, but by improving conditions that have become degraded. Again, incremental and cumulative improvements will result in a healthier environment.

Bellevue is a leader in its commitment to environmental stewardship. The city encourages all residents and businesses to explore ways to contribute to protecting the environment. The concept of "environment" is as diverse as the members of the community, and the opportunities to protect and enhance the environment are equally diverse. As part of the ongoing effort to minimize its impact on the environment, the city uses energy and other natural resources efficiently and wisely, substitutes

more benign substances in place of chemicals damaging to the atmosphere or waterways, purchases recycled products and fuel efficient vehicles, promotes and practices green building and low impact development techniques, and has adopted a growth management strategy that promotes development within the urban center and encourages nonmotorized transportation and an efficient mass transit system. Bellevue also demonstrates environmental stewardship and fiscal responsibility by using the best management practices and technologies in building and maintaining public facilities and infrastructure. Businesses can eliminate unnecessary packaging, utilize recycled materials, install energy efficient lighting, or ensure that their operations do not contaminate surface water. Individual commitments to protecting the local environment include carpooling or taking the bus to work, recycling, planting a tree, reducing pesticide and fertilizer use, and conserving water. Each person has the ability to make a difference.

### **Critical Areas and Best Available Science**

Environmentally critical areas are identified as: wetlands, aquifer recharge areas for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas. Under the Growth Management Act, Bellevue has a statutory obligation to protect the functions and values of critical areas, and to give special consideration to conservation and protection measures to preserve or enhance anadromous fisheries.

Bellevue considers scientific information together with factors such as land use patterns and multiple responsibilities under the Growth Management Act in policies, regulations, programs and incentives to protect the functions and values of critical areas. Science defines critical areas functions and values, and plays a role in recommending strategies to protect those functions from degradation. Science also drives adaptive management strategies that reflect changing circumstances and information. Bellevue's *Critical Areas Inventory Reports and Best Available Science Papers* provide a basis for policy and regulatory decisions.

Critical area "functions" relate to the ecological role of natural areas and systems. Functions vary by type of critical area, and include: improving water quality, reducing flood damage, and providing fish and wildlife habitat. The "value" is the extent to which the critical area provides for a given function. Values can be expressed in biological, social, and economic terms. Regulations and programs that emphasize protecting intact functions are demonstrated to be an effective environmental stewardship strategy for urban areas with variable habitat conditions and multiple growth management objectives.

Avoidance of habitat degradation is the best way to protect critical area functions. Mitigation for projects that would unavoidably damage the short-term and long-term functions of natural systems should be based on the best available scientific information – which may conclude that mitigation for loss of function is not possible, in which case the project as proposed may not be approved. Monitoring mitigation sites and adaptively managing these areas affords the greatest chance of effectively restoring the lost functions. On-site, in-kind mitigation is generally preferable to off-site and out-of-kind mitigation.

## Regulations



*Signage helps identify critical habitat and functions in Native Growth Protection Areas.*

Urbanization, particularly the replacement of natural vegetation and soils with impervious surfaces like pavement and rooftops, adversely affects water resources like streams, lakes and wetlands, and results in degraded natural systems and habitats. Environmental degradation in critical areas can be minimized with a regulatory approach to urbanization that utilizes habitat protection strategies on multiple scales, from individual sites to the landscape on the watershed-scale.

While each site and watershed is different, and the functions and values of critical areas vary from place to place, Bellevue employs a set of land use regulations that apply across the city according to the type of critical area. To acknowledge the various situations in which these prescriptive regulations may not be the best solution for the environment, the city allows for the preparation of a critical areas study to address the unique circumstances and to devise a development strategy that results in a better outcome. Bellevue has established a Critical Areas Overlay District within which special land use regulations are applied to protect and enhance critical area functions and values. The Critical Areas Overlay District includes the designated critical area, plus an adjacent buffer area where many important ecological functions occur. Together these areas are referred to as the “Protection Zone.” Regulations for the Protection Zone limit new development and restrict the redevelopment of existing structures, while programs and incentives provide opportunities for habitat improvements. Ideally, there are no artificial impervious surfaces in the Protection Zone, and indigenous vegetation is retained and enhanced. Existing structures, landscaping and other improvements on private property in the Critical Areas Overlay District are allowed to continue under the new regulations. However, structure redevelopment is subject to a higher standard of environmental protection than elsewhere in the city.

A well-vegetated and undeveloped Protection Zone may not be sufficient to protect the critical area functions related to watershed hydrology. Therefore, Bellevue implements land use and stormwater controls and encourages the use of low impact development techniques on the watershed scale to address urban hydrology issues.

## **Incentives**

Incentives supplement and complement regulations as a voluntary means to protect the natural environment. Bellevue provides a variety of incentive options to landowners who are developing or redeveloping their property or who simply want to improve their stewardship of the land. Incentives generally fall into two categories: regulatory and non-regulatory.

Regulatory incentives provide limited flexibility in certain Land Use Code requirements. The city, for example, may allow transferring development potential away from critical areas and individually adjust site development standards such as setbacks and building height to address specific situations. Regulatory incentives are intended to protect critical areas and benefit property owners, but incentives must be balanced with the potential adverse impacts to the community. Also, the city can facilitate efforts by property owners who want to improve degraded critical area habitat.

Non-regulatory incentives provide the community with motivation, tools and techniques to protect the environment outside of the development approval process. Scientific information and technical assistance could be made readily available through a city environmental assistance center where developers could obtain regulatory information and where the city could promote and support voluntary habitat improvement projects. Small grants; stormwater rate, permit fee and property tax incentives; or landowner recognition may encourage a property owner to protect a critical area or support environmental sustainability citywide. Large scale projects or crucial habitat improvement objectives may involve conservation easements, land acquisition, and public-private partnerships.

## **Programs**

City programs are integrated with regulations and incentives to advance environmental stewardship policies. Almost 10 percent of Bellevue's land base, not including public rights-of-way, is owned and managed by the city. The Parks and Community Services Department and the Utilities Department manage 60 percent of Bellevue's wetlands, 30 percent of the riparian corridors and 10 percent of its shorelines.



*Stream protection is promoted by the Utilities Department through citizen-based stewardship programs.*

Environmental stewardship is woven into Parks Department programs to acquire land and to sensitively manage its natural resources. The Utilities Department promotes stewardship on a number of fronts, including stormwater management, habitat improvement, and public information and involvement in habitat restoration projects. The Parks and Utilities Departments must balance opportunities for stewardship against other fundamental missions of those departments, including providing parks, recreation and public access opportunities, and operating and maintaining public utility systems. Public programs can address degraded habitat conditions resulting from existing land use and the cumulative impacts of ongoing urban development.

## **Redevelopment**

Much of Bellevue is developed with structures and impervious surfaces. Prior to the adoption of measures to protect critical areas and shorelines, structures and impervious surfaces were built close to edge of streams, lakes, wetlands, and steep slopes. Natural determinants legislation adopted in 1987 defined and designated critical areas and precluded new encroachment into them, but allowed existing structures to remain. Legislation to protect the shorelines was first adopted in the early 1970s and similarly designated setbacks from the water's edge, but allowed existing structures to remain. By 2003, scientific evidence supported establishing wider buffers to protect and improve the functions of some types of critical areas. As structures within these buffers (in the Protection Zone) age and property owners' needs change, proposals for expansions and other structural changes are inevitable. Regulations and incentives direct redevelopment entirely out of the Protection Zone when feasible. Redevelopment within the Protection Zone is treated with special consideration to stewardship of the environment.

## Low Impact Development and Green Buildings

Low impact development (LID) is an innovative strategy to conduct urban development in a way that minimizes or precludes adverse environmental impacts. By mimicking natural systems, low impact development can help maintain or restore the natural hydrology of watersheds. Site design using LID principles incorporates vegetation and small-scale hydrologic control to capture, treat and infiltrate storm water runoff on site. When implemented throughout the watershed, LID can improve habitat by complementing the regulatory protections afforded to environmentally critical areas. LID techniques applicable to new development or redevelopment include: preserving native vegetation, natural drainages and porous soils; reducing impervious surfaces; diverting runoff from the storm drainage system; limiting total impervious surface on a site; and clustering development.



*Low impact development techniques include reducing impervious surfaces.*

Site development and building construction techniques can be used to help reduce the potential adverse environmental impacts of urbanization. Whereas LID focuses on stormwater management, several “green building” programs provide guidelines for developing buildings that are sustainable in environmental terms, as well as economically. Based on scientific standards, green building strategies promote sensitive site development, and emphasize water savings, energy efficiency, materials selection and indoor environmental quality. Together, low impact development and green buildings can contribute to long-term environmental sustainability.

## POLICIES

**POLICY EN-1.** Consider the immediate and long range environmental impacts of policy and regulatory decisions and evaluate those impacts in the context of the city’s commitment to provide for public safety, infrastructure, economic development, and a compact Urban Center in a sustainable environment.

**POLICY EN-2.** Conduct city operations in a manner that provides high quality municipal services to the community while ensuring resource conservation, promoting an environmentally safe workplace for its employees, and minimizing adverse environmental impacts.

**POLICY EN-3.** Minimize, and where practicable, eliminate the release of substances into the air, water, and soil that may degrade the quality of these resources or contribute to global atmospheric changes.

**POLICY EN-4.** Encourage the wise use of renewable natural resources and conserve nonrenewable natural resources.

**POLICY EN-5.** Reduce waste, reuse and recycle materials, and dispose of all wastes in a safe and responsible manner.

**POLICY EN-6.** Promote the use of products manufactured from recycled materials.

**POLICY EN-7.** Promote growth management strategies that protect air, water, land, and energy resources consistent with Bellevue's role in the regional plan to contain an Urban Center.

**POLICY EN-8.** Provide regional leadership on environmental issues that extend beyond Bellevue's boundaries and require regional cooperation.

**POLICY EN-9.** Promote and lead education and involvement programs to raise the public awareness about environmental issues, advocate respect for the environment, and demonstrate how individual actions and the cumulative effects of a community's actions can create significant improvements to the environment.

**POLICY EN-10.** Utilize the best scientific information available in an adaptive management approach to preserve or enhance the functions and values of critical areas through regulations, programs, and incentives.

**POLICY EN-11.** Utilize prescriptive development regulations for critical areas based on the type of critical area, and the functions to be protected; and as an alternative to the prescriptive regulations, allow for a site specific or programmatic critical areas study to provide a science-based approach to development that will achieve an equal or better result for the critical area functions.

**POLICY EN-12.** Recognize critical area function in preparing programs and land use regulations to protect critical areas and to mitigate the lost function due to unavoidable impacts.

**POLICY EN-13.** Utilize science based mitigation for unavoidable adverse impacts to critical areas to protect overall critical areas function in the watershed.

**POLICY EN-14.** Implement monitoring and adaptive management plans for critical areas mitigation projects to ensure that the intended functions are maintained or enhanced over time.

**POLICY EN-15.** Integrate site-specific development standards with urban watershed-scale approaches to managing and protecting the functions of critical areas.

**POLICY EN-16.** Facilitate the transfer of development potential away from critical areas and the clustering of development on the least sensitive portion of a site.

**POLICY EN-17.** Establish land use regulations that limit the amount of impervious surface area in new development and redevelopment city-wide.

**POLICY EN-18.** Implement land use incentives to minimize the amount of impervious surface area below that allowed through prescriptive standards, in new development, redevelopment, and existing development city-wide.

**POLICY EN-19.** Provide incentives to private property owners to achieve specific habitat improvement goals, including retention and enhancement of native vegetation.

**POLICY EN-20.** Encourage property owners to incorporate suitable indigenous plants in critical areas and buffers, consistent with the site's habitat type and successional stage.

**POLICY EN-21.** Reduce or eliminate regulatory barriers to protecting and enhancing critical areas.

**POLICY EN-22.** Develop partnerships with land conservation organizations to acquire critical areas and buffers to protect and restore critical areas functions.

**POLICY EN-23.** Explore opportunities for public acquisition and management of key critical areas of valuable natural and aesthetic resources, and fish and wildlife habitat sensitive to urbanization through a variety of land acquisition tools such as conservation easements and fee-simple purchase.

**POLICY EN-24.** Prioritize efforts to preserve or enhance fish and wildlife habitat through regulations and public investments in critical areas with largely intact functions and in degraded areas where there is a significant potential for restoring functions.

**POLICY EN-25.** Provide for limited building footprint expansion options for existing single family structures in the Protection Zone only in a manner that does not degrade critical area functions.

**POLICY EN-26.** Require mitigation proportional to any adverse environmental impacts from development or redevelopment in the Protection Zone.

**POLICY EN-27.** Implement the citywide use of low impact development techniques and green building practices that provide benefits to critical areas functions.

**POLICY EN-28.** Utilize best management practices and technology in city projects to demonstrate effective environmental stewardship and long-term fiscal responsibility.

**POLICY EN-29.** Recognize and support the broad benefits and educational value of public access to critical areas and appropriate low-impact uses such as trails.

**POLICY EN-30.** Identify, prioritize and implement public projects to improve habitat.

**POLICY EN-31.** Pursue grants to support habitat improvement projects.

## Water Resources

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### **GOAL:**

**To preserve and enhance water resources.**

Bellevue's lakes, streams, wetlands, intermittent waterways, and groundwater aquifers are all important natural resources and comprise elements of the local hydrologic cycle. Open surface water's beneficial uses are, in order of priority:

- a. Natural resources preservation;
- b. Fish and wildlife habitat and water quality;
- c. Storm water conveyance;
- d. Recreation, culture and education; and
- e. Aesthetics.

### **Groundwater**

Groundwater aquifers supply water to lakes, wetlands, and streams during the dry season and to a few private wells that provide drinking water. Rainfall contributes to surface water and recharges the groundwater as precipitation infiltrates through

the soil. Land development changes the natural hydrologic cycle. The land surface is transformed through clearing, grading, filling, excavation, compaction, covering with impervious surface, and construction of conventional pipe drainage systems. All of these activities decrease the land's capacity to absorb and retain rainfall and reduce the groundwater recharge potential. When this capacity is reduced, surface water runoff increases, causing flooding and erosion. Replacing natural overland and subsurface drainage with conventional pipe systems can cause flooding by hastening the delivery of rainfall into surface waters and can decrease groundwater recharge by limiting the amount of water seeping into the soil. To maintain our aquifers and reduce flooding, groundwater resources should be conserved to the maximum extent possible using the best available technology and low impact development techniques, except where groundwater creates public safety problems.

The Utilities Element of the Comprehensive Plan describes the city's role in protecting ground water resources. Groundwater-related policies in the Utilities Element provide direction to manage household hazardous waste, manage the use of septic systems, and generally require sewer connections for new development.

Flooding is caused by excess surface water runoff and is exacerbated when eroded soil from cleared land or unstable slopes reduces the waterway's natural capacity to carry runoff water. Construction and development activity within the floodplain reduces the floodway capacity and creates additional runoff. Flooding results, creating property damage, public safety hazards, and destroying aquatic and riparian habitat. Some land uses that create minimal impervious surfaces such as open space, recreation, agriculture, and uses of similar intensity may not cause flooding problems when located within the floodplain but may contribute to water quality problems.



*Flooding problems can result in property damage and public safety hazards.*

In recognition of this situation, the Federal Flood Insurance Program was created to guarantee protection for lands in flood hazard areas if eligibility requirements are met. The standard set by this program is the preservation of the 100-year floodplain. The 100-year floodplain is the area of land flooded by a storm which has a 1 percent probability of occurring in any year. Numerous small floodplains exist in areas of

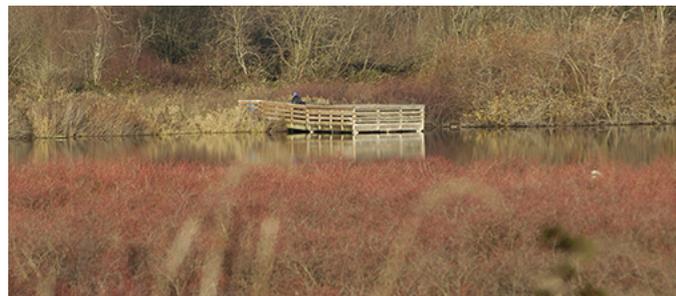
Bellevue, such as along Coal Creek west of I-405; Kelsey Creek through the Lake Hills Greenbelt, Glendale Golf Course, and Kelsey Creek Park; Valley Creek near Highland Park; Richards Valley; and the shoreline of Lake Sammamish.

Under the Federal Flood Insurance Program some floodplain development is allowed such as streets, parking lots, buildings on pilings, some filling of the floodplain, and channelization of streams. These practices have resulted in public hazards due to flooded streets, parking lots, and buildings located in the floodplain; increases in stream velocities causing erosion, scouring and sedimentation; property damage and the destruction of aquatic and riparian habitat. Predicted changes to the floodplain and its ramifications as a result of floodplain development are imperfect and there may be substantial public risk in approving such developments. The public cost of correcting problems resulting from these uses is demonstrated in the city's Comprehensive Drainage Plan and Capital Investment Program.

Some land uses such as open space, recreation, agriculture, or horticulture may not cause problems to such a high degree. Management plans for these activities should incorporate best management practices to protect critical areas functions and values. Given Bellevue's numerous storms and floodplains, the city regulates land uses and land alteration activities to minimize this potential for flooding and to protect water quality.

## **Water Quality**

Water quality also changes as a result of land activities. Good water quality sustains aquatic life, but quickly deteriorates when pollutants, such as sediment, nutrients, organic material, and toxicants are either dumped or discharged directly into the surface water or washed in by runoff. Polluted water reduces the number of uses of the resource, causes public health hazards,



*Good water quality supports aquatic life and provides visual appeal.*

destroys aquatic and riparian habitat, and detracts from its aesthetic appeal. Direct dumping or discharge results from improper disposal of waste materials. Contaminants from land use activities and traffic are washed off impervious surfaces. In addition, rainfall carries pollutants from the air. Groundwater can become contaminated when polluted surface water percolates through the soil.

Lakes, like many water bodies, are sensitive to stormwater runoff. Of particular concern for lakes is phosphorous, a mineral element that occurs naturally in soil,

wastewater, and animal droppings, and is commonly used in fertilizers and detergents. Stormwater runoff picks up these substances and carries them into lake bodies. Water quality is influenced by activities and inputs from the watershed through the influence of streams, lake nutrient cycles, ecological interactions, and seasonal or year to year variability in weather.

Large areas of Bellevue's lake basins have been experiencing rapid urban and suburban development as part of the overall growth in the region. New roads, housing developments, and urban areas are transforming the lakes' watershed into highly urban and suburban land uses. With that change in the landscape come changes in the quality, quantity, and timing of water flows from the watershed, potentially impacting the water quality of lakes in Bellevue. Lake water quality is monitored and the data can be used to address these issues and monitor the effectiveness of water quality control measures over time. Continued water quality monitoring is important, as several pump stations are on or near the shores of the lakes, and miles of sewer pipelines lie on the bottoms of Lake Sammamish and Lake Washington.



*Lake water quality is influenced by activities throughout the watershed.*

Control of pollutants at their source is the first and best method to prevent water quality problems. Reducing non-point source pollution, the contaminated runoff from land surfaces, remains a major goal that involves the entire community. There is strong evidence that non-point source pollution is killing salmon and other aquatic inhabitants in our lakes, streams, and wetlands. In many areas of Bellevue, runoff from streets, parking lots and rooftops flows directly to these critical areas. The mix of contaminants washed from these impervious surfaces can be toxic to fish, especially with the “first flush” of stormwater following a dry period. Thermal pollution can also be a problem with summer rainfalls flowing into streams from hot paved surfaces. Preventing pollution at its source is a more effective method to protect surface water quality than water quality treatment after contamination has occurred.

Each individual, business, and government entity is a potential contributor to water quality improvements by reducing or eliminating erosion, the use of herbicides, pesticides and fertilizers; and by properly using and disposing of oil and grease and hazardous materials like paints and solvents. Because of the diverse and diffuse sources of pollutants, the city and the public must be involved in efforts to reduce non-point source pollution. Bellevue encourages its residents and businesses to prevent water pollution by raising public awareness of the problems; demonstrating pollution control techniques; and providing guidelines for landscaping and parking lot maintenance. Regulations prohibit illicit discharges into surface waters, and repeat violators are subject to enforcement actions and penalties.

## **Regulations**

Limitations and conditions on land activities can minimize the effect of development on water resources. Land use regulations include measures that identify and designate a Protection Zone, which is not suitable for development. These regulations also include controls on development such as impervious surface coverage, land use intensity; location of uses, preserving vegetation, and replanting with appropriate vegetation both inside and outside the Protection Zone. During construction, best management practices to reduce erosion, flooding, and sedimentation are required.

All of these measures utilize the best available technology and science to prevent, mitigate or control drainage or water quality problems, and fish and wildlife habitat degradation. To protect stream channels and shorelines from destructive erosion due to urban stormwater runoff, both the volume and duration of stormwater flows are addressed.

Engineered designs should improve the effectiveness of natural systems rather than negate, replace, or ignore them. Technological solutions should emphasize the use of nonstructural or natural engineering approaches. Low impact development techniques should apply to both new development and redevelopment citywide. These approaches should be consistent with the best available science and development practices to protect the functions and values of natural systems with the intent of preserving and enhancing Bellevue's natural features.

## **POLICIES**

**POLICY EN-32.** Retain existing open surface water systems in a natural state and restore conditions that have become degraded.

**POLICY EN-33.** Maintain surface water quality, defined as meeting federal and state standards and restore surface water that has become degraded, to the maximum extent practicable.

**POLICY EN-34.** Monitor surface water quality and implement measures to identify and address the sources of contamination.

**POLICY EN-35.** Employ the best management practices and technology, education, and enforcement strategies to minimize non-point source pollution.

**POLICY EN-36.** Retrofit public storm drainage systems and prioritize investments where there is a significant potential for restoring surface water quality important to preserving or enhancing aquatic life.

**POLICY EN-37.** Reduce runoff from streets, parking lots and other impervious surfaces and improve surface water quality by utilizing low impact development techniques in new development and redevelopment.

**POLICY EN-38.** Restore and protect the biological health and diversity of the Lake Washington and Lake Sammamish watersheds in Bellevue's jurisdiction.

**POLICY EN-39.** Restrict the runoff rate, volume, and quality to predevelopment levels for all new development and redevelopment.

**POLICY EN-40.** Preserve and maintain the 100-year floodplain in a natural and undeveloped state, and restore conditions that have become degraded.

**POLICY EN-41.** Preserve and maintain fish and wildlife habitat conservation areas and wetlands in a natural state and restore similar areas that have become degraded.

**POLICY EN-42.** Conserve groundwater resources.

**POLICY EN-43.** Allow existing farming and agriculture in wetlands and in the 100-year floodplain so long as water quality and buffer functions are not substantially impacted.

## **Earth Resources and Geologic Hazards**

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### **GOAL:**

**To preserve and enhance vegetation and earth resources.**

Bellevue's natural environment is composed of a wide variety of land forms, soils, water courses, and vegetation. The city's terrain ranges from steep hills and ridges to flat valleys and floodplains. Soil types vary from peat and loam in the lowlands to sand, gravel, and glacial till in the uplands. Some unstable soils are located in wetlands and on steep slopes.

Native vegetation ranges from water-dependent vegetation types associated with wetlands to coniferous and deciduous forests associated with uplands. This diverse vegetative habitat supports many species of wildlife. These topographical, geological, hydrological, and vegetational characteristics combine to produce an environment that in some areas of the city is compatible with development of varying intensities and, in other areas of the city, is not compatible with development.

Construction and development activities alter the natural environment. The impact of construction is less in areas where the environment is compatible with development. Land use and development activities are regulated to protect [in order of priority]:

- a. Public health, safety, and welfare; and
- b. Natural features such as soil, steep slopes, fish and wildlife habitat, and existing vegetation.



*Siting houses off the slopes helps preserve wooded hillsides.*

Restricting development on Bellevue's geologically hazardous areas assures the preservation of steep slopes, forest-covered hillsides and ravines, and other unique and scenic natural features. Protecting steep slopes and managing vegetation maintains slope stability, protects lakes, streams and wetlands, and enhances fish and wildlife habitat. It is the intent of these policies to achieve and support land use and development practices that are compatible with Bellevue's environment. These development practices should protect, rather than overcome, natural features of the land.

These policies are intended to protect public health, safety and welfare by identifying geologically unstable and potentially hazardous areas where development should be restricted and, in appropriate cases, development may be prohibited. Consideration is given to creative solutions such as on-site density credit for critical areas where development may be prohibited and in other appropriate circumstances where natural resources should be protected.

## **Soils and Slopes**

Bellevue can be divided into three land management categories based principally on the steepness of slope, with variable factors such as soil types and the underlying geologic materials.

### **Gentle slopes**

Gently sloping land is suitable for most types of development. Slopes are less than 15 percent and are generally stable. Certain soil types may be susceptible to liquefaction when saturated or subjected to an earthquake, and soil erosion and slides may occasionally occur under special conditions such as prolonged periods of intense rainfall. Common underlying geologic materials are glacial till and outwash. Development on gentle slopes poses the lowest risk to public health and safety, environmental destruction, and property damage. Development regulations focus on preventing soil erosion, protecting vegetation, and preserving natural features and visual amenities.

### **Moderate Slopes**

Moderately sloped land may have landslide and erosion hazards associated with it if developed. These slopes vary from 15 percent to 40 percent. The degree of development hazard depends upon the type of soil and the underlying geology. Generally, the greatest geologic hazard exists where relatively porous geologic layers that drain water readily overlie relatively impervious layers that are barriers to water drainage. Erosion hazards are greatest on sandy and gravelly soils. Areas underlain by sand, gravel, and till are relatively more stable than areas underlain by silt and clay. Localized areas of high water tables and erosion hazards are also found on these moderate slopes.

Development on moderate slopes may be limited or, in some cases, prohibited because of risk to public safety and health, the environment, and property. Development regulations should require geotechnical engineering studies detailing the potential geological problems of developing the site. A special review of critical areas functions and values should be required for non-single family development proposed near a designated critical area to identify and avoid potential adverse impacts. Site design requirements, erosion control measures, and other environmental protections may then be implemented. Using low impact development techniques in site design and in constructing buildings and infrastructure can minimize the environmental impacts.

### **Steep Slopes**

Steep slopes greater than 40 percent are designated critical areas and are unstable under most circumstances. The instability of steep slopes is often exacerbated by an association with geologic layers such as permeable materials overlying less permeable materials. Springs and seepages from groundwater tables located near

the slope surface are common. Development on steep slopes is generally prohibited because of high risks of landslides, uneven settlement, property destruction, and environmental damage. A structure setback from the top and toe of a steep slope may reduce the risk to public health and safety in the event of a landslide.

Certain small, isolated, or artificially created steep slopes may be removed from critical areas designation if the applicant can demonstrate that: the underlying geology is stable, the steep slope is not part of a larger steep slope system, that public health, safety, and welfare and community values will be protected, and the functions and values of nearby critical areas will not be impaired.

Engineering solutions to environmental constraints on steep slopes may be extremely costly and are not always effective. Engineering solutions cannot predict with 100 percent accuracy the long range problems caused by developing the land. Engineering solutions also typically do not address the multiple environmental functions that steep slopes provide. Therefore, the burden to establish adequate long-term safety measures must be on the property owner rather than the public.



*Unstable slopes are not suitable for development.*

## **Clearing and Grading**

Construction and development activities alter the natural environment and destroy wildlife habitat, potentially leading to the loss of some species due to habitat fragmentation and human disturbance. In addition, such activities decrease natural amenities, and expose soil to erosion. Land alteration for other than approved development proposals is prohibited within the city. When land is cleared in the absence of a development proposal, several problems can occur. Soil is compacted and lost from the site by erosion, landslides and slumps can occur, and vegetation and fish and wildlife habitat are destroyed. Property surrounding the cleared land can be adversely affected by these problems. The costs, both on-site and off-site, to clean up this environmental damage can be quite large and are generally borne by the public. Additional indirect adverse impacts can occur due to the inability of the city to review or limit clearing in conjunction with a specific site design. With a definite proposal, grading can be restricted to the minimum required.

Vegetation is an important element of soil stability and the natural drainage system, as well as a visual amenity. The removal of vegetation may lead to adverse environmental effects, including soil erosion.. Erosion causes property damage through loss of topsoil and by depositing sediment on downstream properties and in

waterways. This reduction in the natural capacity of waterways may cause flooding. Seasonally heavy rainfall in winter accelerates the erosion process. Delta formations due to sediment-laden stormwater have become a serious and costly problem in Lake Sammamish and Lake Washington.

Limitations and conditions on land use activities can reduce the potential adverse effects on the environment. Land use regulations which control development can reduce erosion, settlement, landslides, and property damage and preserve important natural features and amenities. Such regulations include limiting lot coverage, impervious surface area, and density; requiring special engineering attention on moderate to steep slopes; limiting the amount of vegetation removed and restricting construction activities based on weather or site conditions.



*Erosion control practices minimize erosion and protect vegetation.*

During construction the use of erosion control techniques is required in order to reduce erosion, settlement, landslides, and property damage and to preserve fish and wildlife habitat. Erosion control measures include minimizing areas of grading and vegetation removal, restricting clearing and grading during the rainy season, using erosion control best management practices, and requiring immediate revegetation following clearing. Especially important is erosion control for development and clearing activity near streams, lakes and wetlands. All of these measures are of a mitigative and preventive nature. The best available technology should be used for construction and to prevent erosion.

## **Seismic Hazards**

### **Seattle Fault**

The Seattle Fault is a thrust fault zone approximately 2 to 4 miles wide. It extends from the Kitsap Peninsula near Bremerton to the Sammamish Plateau east of Lake Sammamish. In Bellevue, the northern edge of the fault zone is approximately parallel to I-90.

Geologic evidence suggests that movement of this fault zone occurred as recently as 1,100 years ago. Recent research indicates that there have been about three surface-rupturing earthquakes in the last 10,000 years. Observations at an excavation west of Vasa Park indicate the presence of a surface-rupturing fault in the city. The Seattle Fault is considered capable of generating a magnitude 7.0 to 7.5 earthquake.

Structural design in consideration of movement of the Seattle Fault is important to protect public health and safety, and to minimize potential property damage. In managing the potential hazard, the risk of ground rupture should be considered in building and infrastructure siting and design.

### **Soil Liquefaction**

Soil liquefaction may occur during an earthquake in areas where fine to medium grain soil materials (silt and sand) are saturated. When subject to shaking, these soils become like quicksand and lose their capacity to support structures. Liquefaction hazard is highest on non-engineered fills and recent alluvial deposits, with a moderate hazard on older sediments that have not been overridden and compacted by glacial ice. Development in these areas should include a site-specific liquefaction assessment, followed by appropriate engineering and design to reduce the risks to the public from potential liquefaction.

### **Seismic Seiche**

A seismic seiche is an oscillation of an enclosed body of water caused by seismic motion or large landslide displacement. Such movement of the waters of Lake Washington and Lake Sammamish has occurred, and could cause a seiche runup as much as 5 feet above lake level. The potential frequency and risk of a seiche is being studied.

### **Public Information**

As additional information becomes known about the Seattle Fault, soil liquefaction areas, seismic seiches, and other geologic hazards, the city will make that information available. Such information could include building techniques, disaster preparedness, accurate geologic maps, and other general information to minimize safety risks and property damage due to geologic hazards.

### **Coal Mine Hazards**

Some areas of the city in the Newcastle Subarea are potentially impacted by past coal mining practices. Abandoned coal mines consist of underground voids which can cause the ground surface to subside. Mine openings, waste dumps, fire hazards, and underground gases pose other risks. Catastrophic risks could include ground openings and very localized subsidence. Subsidence that occurs over a large area can cause usually non-catastrophic problems such as foundation cracks, roadway failures, and separation of utility pipes.

## **POLICIES**

**POLICY EN-44.** Regulate land use and development to protect natural topographic, geologic, vegetational, and hydrological features.

**POLICY EN-45.** Protect geologically hazardous areas, especially forested steep slopes, recognizing that these areas provide multiple critical areas functions.

**POLICY EN-46.** Prepare geologic maps of the city, in conjunction with regional geologic mapping efforts.

**POLICY EN-47.** Incorporate information from geotechnical reports and documented landslides and erosion problems into the city's Geographic Information System.

**POLICY EN-48.** Promote soil stability and the use of the natural drainage system by retaining critical areas of existing native vegetation.

**POLICY EN-49.** Preserve existing vegetation or provide or enhance vegetation that is compatible with the natural character of Bellevue.

**POLICY EN-50.** Prohibit development on unstable land and restrict development on potentially unstable land to ensure public safety and conformity with natural constraints.

**POLICY EN-51.** Require an analysis of soil liquefaction potential where appropriate, in the siting and design of structures and infrastructure.

**POLICY EN-52.** Utilize geotechnical information and an analysis of critical areas functions and values to evaluate the geologic and environmental risks of potential development on slopes between 15% and 40%, and implement appropriate controls on development.

**POLICY EN-53.** Require a structure setback from the top and the toe of a steep slope (40%+) to protect public safety.

**POLICY EN-54.** Utilize specific criteria in decisions to exempt specific small, isolated, or artificially created steep slopes from critical areas designation.

**POLICY EN-55.** Minimize and control soil erosion during and after development through the use of the best available technology and other development restrictions.

**POLICY EN-56.** Allow land alteration only for approved development proposals.

**POLICY EN-57.** Provide information to the public about potential geologic hazards, including site development and building techniques and disaster preparedness.

**POLICY EN-58.** Regulate development in coal mine hazard areas by requiring that a project proponent (with review, oversight, and approval by the city):

- Conservatively evaluate risks,
- Eliminate the potential for catastrophic effects and keep development out of catastrophic risk areas,
- Mitigate any non-catastrophic impacts,
- Protect ratepayers from costs associated with development in areas potentially impacted by mining, and
- Provide disclosure mechanisms to inform property purchasers of past mining activities.

## **Fish and Wildlife Habitat Conservation Areas**

### **GOAL:**

**To provide fish and wildlife habitat of sufficient diversity and abundance to sustain existing indigenous wildlife populations.**

This section provides the guidelines for preserving fish and wildlife habitat, on both public and private lands. Designated fish and wildlife habitat conservation areas in Bellevue include riparian corridors, wetlands, naturally occurring ponds, lakes and shorelines, and steep slopes over 40 percent. Other lands may be given special consideration for fish and wildlife habitat if there is a primary association with an endangered, threatened or sensitive species. In general, fish and wildlife require habitat that provides forage, water, vegetation, and areas for breeding, nesting, roosting and cover.



*Bellevue provides fish and wildlife habitat in its open space and surface water network.*

Some of these fish and wildlife habitat conservation areas are discussed in other sections of this Element, including water resources, earth resources and geologic

hazards. The policies here relating to the fish and wildlife habitat functions and values that these areas provide are additive to the other functions and values identified in the other sections of this Element.

Bellevue's waters subject to the jurisdiction of the state Shoreline Management Act (SMA) are discussed here as fish and wildlife habitat conservation areas. These areas are also governed by the state Shoreline Management Act and the city's Shoreline Master Program, including the Shoreline Management Program Element of the Comprehensive Plan. Because these shoreline areas provide fish and wildlife habitat, they are discussed here as part of the city's protection of critical areas under the Growth Management Act. When the city prepares and completes its update to the Shoreline Master Program under separate state mandate, protection of the critical areas that are within the jurisdiction of the SMA will be addressed in the Shoreline Master Program. Until that update occurs, protection of the critical areas within the jurisdiction of the SMA is addressed in the Environmental Element of the Comprehensive Plan and regulations, incentives and programs that implement the policies of this Element. Policies in the Shoreline Management Program Element of the Comprehensive Plan supplement the policies here and address circumstances unique to the shoreline.

Bellevue's fish and wildlife habitat exists primarily in the open space and surface water network managed by the city. The Parks, Open Space, and Recreation Element of the Comprehensive Plan and the Parks and Open Space System Plan contain additional policies and strategies for preserving open space for wildlife habitat. These plans, together with the policies of the Shoreline Management Program Element, also identify the city's priorities related to



*Lakefront parks provide shoreline access and contain natural habitat (Newcastle Beach Park).*

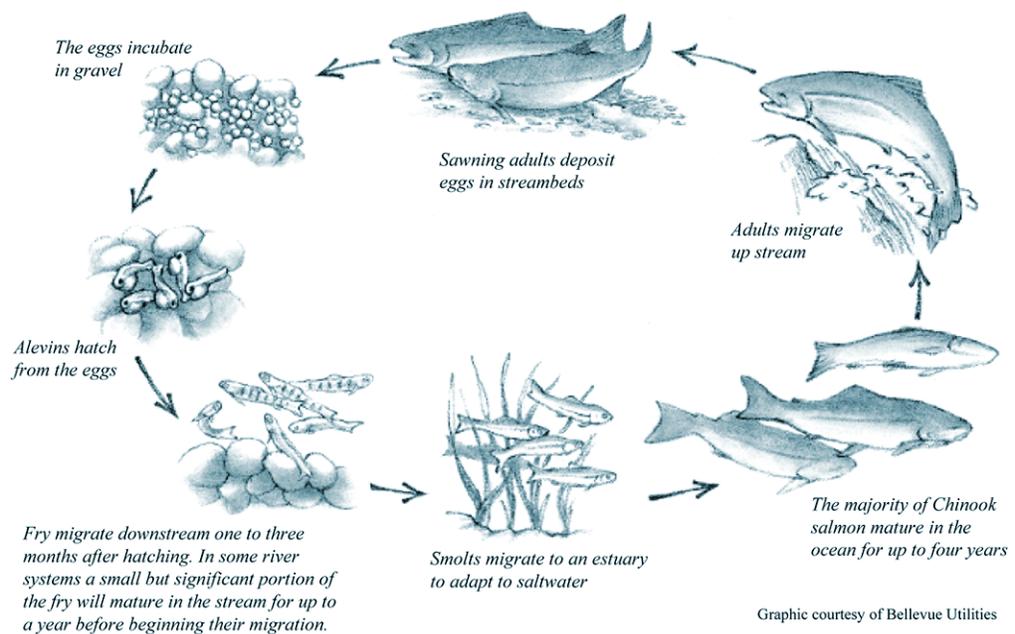
public access to the shorelines and other open space areas, and priorities for providing recreational opportunities. Public lands contain much of the upland, lakeside, riparian and wetland wildlife habitat. Improving the habitat characteristics in these areas will benefit wildlife, and with appropriate public access and information, will demonstrate habitat improvement techniques that can be adapted to private settings.

Significant habitat also exists in shoreline, aquatic, wetland, and riparian areas and on steep slopes that are privately owned but protected as critical areas by development regulations. However, protecting habitat in designated critical areas alone is not sufficient to sustain the natural functions of those systems. To supplement critical areas protections, development and redevelopment throughout Bellevue’s watersheds incorporates techniques to promote environmental sustainability. Linking public and private natural areas can provide food, shelter, water, space and migration corridors for healthy and sustainable populations of fish, birds, amphibians, reptiles, and invertebrates.

## Anadromous Salmonids

State law requires jurisdictions to give “special consideration” to preserve or enhance anadromous fish. The term “anadromous” refers to fish that spawn in fresh water streams or lakes, migrate to salt water for a portion of their life cycle, and then return to fresh water. In Bellevue’s lakes and streams, protected anadromous fish are salmonids – salmon and trout. Some salmonids die after spawning, while others live to repeat the cycle.

*Figure EN.1 Chinook Salmon Life Cycle*



Urbanization in a watershed may degrade habitat conditions, and therefore limit the extent to which lakes and streams can support salmonids and other aquatic organisms. Notably, salmonids successfully use most of Bellevue’s stream basins, even where the habitat is not optimal. The Kelsey Creek basin is the primary Chinook salmon stream system in Bellevue. Coal Creek and lower Lewis Creek also provide Chinook habitat. Coho and sockeye salmon inhabit most of Bellevue’s streams where suitable and accessible habitat exists. Salmonids migrate through portions of Lake Washington

and Lake Sammamish within Bellevue's jurisdiction. Along these migration routes, the nearshore environment provides important habitat functions and values, including cover from predator species.

To give special consideration includes protecting the habitat functions important for all salmonid life stages that occur in Bellevue's streams, wetlands and lakes. Fish species listed as threatened or endangered under the federal Endangered Species Act (ESA) are protected in accordance with the Act. Bellevue's ESA response is coordinated with regional salmon recovery planning efforts.

## **Streams, Riparian Corridors and Shorelines**

Special consideration for anadromous salmonids in Bellevue will be accomplished in the context of an urban environment. Existing development encroaches on stream corridors and the shorelines, and impervious surfaces in the watershed affect hydrology. Effective measures to conserve and protect salmonids and other species of native fish must comprehensively address hydrology, plus aquatic habitat, and adjacent buffers. Protection and conservation strategies on several scales, from the stream reach or shoreline segment to the watershed as a whole should be designed to improve the essential habitat conditions for salmonids, including, as appropriate: clean, cold and adequate water; sufficient dissolved oxygen; spawning gravel; food sources; rearing habitat; refuges from predators; and unconstrained migration routes.



*Stream Team salmon watchers count fish as they migrate in streams (Kelsey Creek).*

Urban streams, compared to streams in a typical Pacific Northwest forested environment, are typically degraded due to the impacts of urbanization. Small improvements to a degraded urban stream, for instance, removing a fish-passage barrier or an armored stream bank, or expanding a buffer, in combination with watershed-scale conservation strategies, may provide significant benefits to salmonid populations.

Similarly, urban lakes, compared to lakes in a typical Pacific Northwest forested environment, are typically degraded due to the impacts of urbanization. For example, in Bellevue, significant portions of the shorelines along Lake Washington and

Lake Sammamish have been altered with bulkheads. In the shoreline environment, improvements that restore elements of a natural beach environment may also provide significant benefits.

Restoration projects within the aquatic environment, planned carefully in the context of basin-wide conditions, can improve habitat function. Restoring fish passage is an effective way to increase the availability of habitat. Improving water quality is essential, together with lake, stream and wetland area restoration, to create a habitable and sustainable aquatic environment.

Although rarely done historically in Bellevue compared to other cities, some stream segments have been placed in pipes to accommodate development. Opening these stream segments to daylight – restoring them to a more natural condition – can improve habitat and may improve property values. However, the costs of daylighting a stream segment may be quite large relative to the environmental value of the habitat improvement.



*Restoration projects improve habitat function (Weowna Park).*

Partnerships and incentives may be essential components of a viable stream daylighting project. Decisions on daylighting Bellevue’s few piped stream segments should take into consideration scientifically documented potential community and environmental benefits and the costs of achieving the habitat improvement.

Healthy salmonid populations rely on processes sustained by interactions between lakes and streams and adjacent bank and shore areas. These bank and shore areas support healthy lake and stream conditions by maintaining water temperature through shading; improving water quality by filtering sediment and pollutants; attenuating flood waters by retaining and slowing storm water; recruiting large woody debris and spawning gravel; and providing insects and organic matter for food supply. An armored stream bank or shoreline diminishes some of these functions. While routine maintenance of existing structures is allowed, opportunities to restore habitat through the use of bioengineering stream bank and shoreline stabilization techniques are encouraged.



*Natural engineering approaches provide shoreline stabilization and natural systems enhancement (Lake Sammamish).*

Science provides a range of recommendations regarding the width of streamside buffers to provide these and other essential functions. This buffer vegetation helps mitigate the adverse effects of urbanization; the wider the corridor buffer and the more structurally diverse the vegetation, the better.

## **Wetlands**

Wetlands are designated critical areas that are integral features of Bellevue's urban landscape and the local hydrologic cycle. In wetlands, the presence of water at or near the surface creates distinct soil types and supports a prevalence of vegetation typically adapted for life in saturated soil conditions.



*Wetlands are found throughout Bellevue's urban landscape.*

Wetlands reduce floods, contribute to stream flows, and improve water quality. Each wetland provides various beneficial functions, but not all wetlands perform all functions, nor do they perform all functions equally well. Large wetlands, and those hydrologically associated with lakes and streams, have relatively more important

function in the watershed than small, hydrologically isolated wetlands. Urbanization in the watershed diminishes the function of individual wetlands by increasing stormwater volume, reducing runoff quality, isolating wetlands from other habitats, and decreasing vegetation.

Undeveloped land adjacent to a wetland provides a buffer to help minimize the impacts of urbanization. The long-term function of the wetland is dependent on land development strategies that protect and restore wetland buffers. Science indicates that an undeveloped vegetated buffer contributes to the function of the wetland by providing wildlife habitat, retaining stormwater, filtering sediment and pollution, and moderating water temperature.



*Wetland enhancement and restoration adjacent to Valley Creek.*

Bellevue has successfully (through acquisition and regulation) protected larger wetlands and those wetlands associated with streams – recognizing and preserving the multiple and related functions of wetlands and streams. In addition to fish and wildlife benefits, publicly-owned wetlands provide significant value to the community in the form of open space, passive recreation, education, and cultural resources. Privately-owned wetlands are important components of the hydrologic cycle and are amenities for property owners.

### **Special Status Fish and Wildlife Species**

Special status wildlife are those designated by federal or state government agencies as endangered, threatened, proposed, candidate, sensitive, and monitor species, and species of local importance in King County. Of the 23 special status species known in 2002 to exist in Bellevue, 13 live in the city full time or breed here, and 10 are migrants or are rarely observed. The Chinook salmon and the bald eagle are both threatened species that are commonly found in Bellevue. Most of the special status species are adapted to particular habitat characteristics and are known as “specialist” species. Specialist species require particular habitats or food sources that may

be limited or no longer present in the urban environment. Bellevue has protected significant habitat areas to allow for the continued existence of some of these species in the city. Generalist species, in contrast, include both native and non-native species that can use a variety of habitat types, even those habitats that are highly disturbed by human activity and development. Crows, coyotes and gray squirrels are generalist species typically found in Bellevue.

## **Urban Wildlife Habitat**

Natural areas are an integral part of Bellevue's environment. Natural areas provide fish and wildlife habitat and contribute to the city's economic vitality and to residents's overall quality of life. Through city regulations, programs and incentives, Bellevue acquires and protects key habitat areas, preserves diverse vegetation types and improves habitat that is degraded. Degraded habitat is often characterized by vegetation that, in species composition and diversity bears little resemblance to natural forested conditions. Therefore, habitat improvements are focused on creating a diverse vegetation structure typical of the Pacific Northwest.

Bellevue's natural areas are fragmented by urban development. An urban wildlife habitat is a mosaic of public natural areas and private backyard wildlife landscapes that sustain a wide variety of wildlife species. Natural wildlife habitat can be supplemented by landscaping that includes native plants that provide food and shelter for wildlife. Native plants are well adapted to the soils and climate of the area and many species can flourish without much watering or fertilization. An effective way for property owners to improve wildlife habitat is to decrease the amount of lawn area and replant with native trees, shrubs and ground cover. Several organizations offer urban or backyard wildlife certification programs and technical resources for improving habitat, including the National Wildlife Federation, the National Institute for Urban Wildlife, and the Washington Department of Fish and Wildlife. Property owners should also control noxious and invasive weeds, as these degrade fish and wildlife habitat.

## **Naturally Occurring Ponds**

Naturally occurring ponds in Bellevue are less than 20-acres in size and include Larsen Lake and Lake Bellevue, plus smaller ponds associated with wetlands. With the exception of most of Lake Bellevue, these ponds are surrounded by herbaceous and woody vegetation. Naturally occurring ponds provide wildlife habitat, recreation, and stormwater management. Open water habitat provides important breeding and foraging opportunities for special status wildlife species. Key habitat characteristics that influence the value of that habitat for wildlife include: water quality, level of human disturbance, and the presence of invasive aquatic plants. The shallow, shoreline areas of ponds commonly exhibit wetland characteristics and they are designated and managed as such.

## **POLICIES**

**POLICY EN-59.** Manage aquatic habitats, including shoreline and riparian (streamside) habitats, to preserve and enhance their natural functions of providing fish and wildlife habitat and protecting water quality.

**POLICY EN-60.** Stabilize streambanks and shorelines if necessary by using bioengineering techniques except where hydrology, excessive cost, or other factors make this approach infeasible.

**POLICY EN-61.** Give special consideration to conservation or protection measures necessary to preserve or enhance anadromous salmonids, recognizing that requirements will vary depending on the aquatic resources involved, including differing stream classification, and that additional efforts may be identified in the regional salmon recovery planning process.

**POLICY EN-62.** Prohibit creating new fish passage barriers and remove existing artificial fish passage barriers in accordance with applicable state law regarding water crossing structures.

**POLICY EN-63.** Require and provide incentives for the opening of piped stream segments during redevelopment where scientific analysis demonstrates that substantial habitat function can be restored, and where the cost of restoration is not disproportionate to the community and environmental benefit.

**POLICY EN-64.** Preserve and enhance native vegetation in the Protection Zone and integrate suitable native plants in urban landscape development.

**POLICY EN-65.** Improve wildlife habitat especially in patches and linkages by enhancing vegetation composition and structure, and incorporating indigenous plant species compatible with the site.

**POLICY EN-66.** Minimize habitat fragmentation, especially along existing linkages and in patches of native habitat.

**POLICY EN-67.** Preserve a proportion of the significant trees throughout the city in order to sustain fish and wildlife habitat.

**POLICY EN-68.** Encourage residents and professional landscaping firms to utilize native plants in residential and commercial landscapes.

**POLICY EN-69.** Promote urban backyard wildlife habitat programs, and support “certification” of community and private backyard wildlife habitats.

**POLICY EN-70.** Develop and support additional habitat enhancement demonstration projects.

**POLICY EN-71.** Protect wildlife corridors in subdivisions, plats, and city projects.

**POLICY EN-72.** Develop programs and regulations acknowledging that designated critical areas such as wetlands, shorelines, riparian corridors, floodplains, and steep slopes provide multiple functions including fish and wildlife habitat.

**POLICY EN-73.** Utilize studies and management recommendations to protect important wildlife habitat characteristics on land that is not a designated critical area.

**POLICY EN-74.** Obtain, for protection and restoration, areas that are sensitive to urbanization, represent valuable natural and aesthetic resources to the community, or provide the functions of critical areas that benefit the community’s environment.

**POLICY EN-75.** Manage fish and wildlife habitat conservation areas to protect overall habitat functions and values (food, water, cover, space), except where a “special status species” requires targeted habitat management.

**POLICY EN-76.** Rely on federal, state, and county agencies to identify “special status” wildlife species, but allow for a process to identify species of local importance to Bellevue.

**POLICY EN-77.** Manage naturally occurring ponds to provide fish and wildlife habitat, promote good water quality, and control invasive aquatic plants.

## **Air Quality**

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### **GOAL:**

**To meet federal, state, regional, and local air quality standards through coordinated, long-term strategies that address the many contributors to air pollution.**



*Vehicle emissions are the primary source of air pollution in the Puget Sound region.*

One of the basic elements of a sustainable urban environment is clean air. Many federal, state, regional, and local agencies enact and enforce legislation intended to protect air quality. Good air quality in Bellevue, and in much of the Puget Sound area, is fundamentally tied to controlling emissions from all sources, including: internal combustion engines, industrial operations, indoor and outdoor burning, and wind-borne particulates.

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.

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 Air Pollution Control Agency.

**POLICY EN-78.** Support federal, state, and regional policies intended to protect clean air in Bellevue and the Puget Sound Basin.

**POLICY EN-79.** Work with the private sector to reduce growth in vehicle trips as a key strategy for reducing automobile-related air pollution.

**POLICY EN-80.** Implement transportation projects that provide significant air quality improvements to areas with existing air quality problems, even where the project does not bring all locations up to adopted standards, provided that the project is the best feasible solution and it significantly improves the air quality at each substandard location.

**POLICY EN-81.** Provide transportation improvements for the purpose of relieving localized air quality problems by shifting traffic to less congested facilities nearby, provided this does not encourage cut-through traffic in neighborhoods.

**POLICY EN-82.** Support federal and state actions to reduce vehicle emissions through continued improvements in federal vehicle emission controls and state inspection and maintenance requirements, to include expansion to cover more vehicle classes and additional geographic area.

**POLICY EN-83.** Promote the use of alternative fuels such as electricity and compressed natural gas and investigate the use of such fuels for the city's vehicles.

**POLICY EN-84.** Address transportation-related air quality developments in the annual "State of Mobility" report.

**POLICY EN-85.** Reduce automobile dependency by implementing growth management strategies that fully integrate land use and transportation planning and continue to develop downtown Bellevue as an Urban Center in order to improve regional air quality.

**POLICY EN-86.** Maintain the ban on outdoor burning within the urban area and encourage the composting of leaves and other yard debris and other actions as alternatives to burning.

**POLICY EN-87.** Reduce the amount of air-borne particulates through a street sweeping program, dust abatement on construction sites, and other methods to reduce the sources of dust.

## Noise

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### **GOAL:**

**To control the level of noise pollution in a manner which promotes the use, value, and enjoyment of property; sleep and repose; and a quality urban environment.**

Excessive noise is a form of pollution that has direct and harmful effects upon the public's health and welfare and generally adversely affects the livability, peace, and comfort of neighborhoods and the city as a whole. In addition, excessive noise may have both short-term and long-term effects upon people's physical and mental health.

Noise, like many other forms of pollution, is both a local and a regional problem. Noise that originates on residential, commercial, or industrial land within the city is regulated through enforcement of Bellevue's comprehensive noise control ordinance.

The city directs its efforts to protecting residential neighborhoods from excessive noise. Commercial and industrial land uses create more noise than residential areas, but they are generally not as sensitive to exterior noise, and the noise standards for these areas are not as restrictive. However, when such uses cause noise that impacts a noise-sensitive area, more rigorous standards apply.

Traffic noise affects many residential neighborhoods. The city considers noise mitigation when designing new roadway improvements. Decisions on mitigation must include the full range of environmental analysis, as well as the impacts on community character. For example, while noise walls reduce the traffic noise in residential areas, they often seriously degrade the pedestrian environment and “harden” the street edge by walling off the street corridor from the adjoining neighborhood. See the Transportation Element for additional policies relating to traffic noise.



*Traffic noise is ameliorated by sound walls along NE 8<sup>th</sup> Street.*

## **POLICIES**

**POLICY EN-88.** Ensure that excessive noise does not impair the permitted land use activities in residential, commercial, and industrial land use districts.

**POLICY EN-89.** Protect residential neighborhoods from noise levels that interfere with sleep and repose through development standards and code enforcement.

**POLICY EN-90.** Require a noise analysis for arterial improvements in residential areas if existing or projected noise levels exceed city-adopted standards, and implement reasonable and effective noise mitigation measures when appropriate.

**POLICY EN-91.** Work with the state to mitigate freeway noise, while addressing aesthetic concerns.

**POLICY EN-92.** Require new residential development to include traffic noise abatement design and materials where necessary to minimize noise impacts from arterials and freeways.

**POLICY EN-93.** Evaluate the benefit of measures designed to mitigate arterial noise, particularly noise walls, along with impacts on the pedestrian environment and neighborhood character.

**POLICY EN-94.** Consider noise impacts when evaluating measures designed to keep traffic volumes and speeds within reasonable limits on collector arterials.

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