

Streams and Wetlands Staff Report

Introduction

Findings

A. Ecosystem Services and Climate Change

1. Ecosystem services are the direct and indirect benefits that ecosystems provide humans. These services are typically broken down into four categories:
 - Provisioning services: the material or energy outputs from an ecosystem, including food, forage, fiber, fresh water, and other resources
 - Regulating services: benefits obtained through moderation or control of ecosystem processes, including regulation of local climate, air, or soil quality; carbon sequestration; flood, erosion, or disease control; and pollination
 - Supporting services: services that maintain fundamental ecosystem processes, such as habitat for plants and wildlife, or the maintenance of genetic and biological diversity
 - Cultural services: the non-material benefits that ecosystems provide to human societies and culture, including opportunities for recreation, tourism, aesthetic or artistic appreciation, and spirituality.¹
2. Surface water (rivers, streams, lakes, ponds, and wetlands) and undeveloped land provide important ecosystem services that support human health, longevity, and resilience to stress and disaster. Vegetated buffers in riparian areas and wetlands are critical for filtering pollutants, stabilizing soils, infiltrating stormwater, providing groundwater recharge, fire risk reduction, air and water temperature moderation, and wildlife habitat.
3. Higher rates of biodiversity generally yield higher functioning ecosystem services.
4. Salem residents can expect higher average air and water temperatures, more prolonged periods of drought, more frequent heat waves, increased winter flooding, increased invasive species pressure, and new diseases as a result of climate change. Maintaining and restoring natural systems helps buffer these impacts.
5. Healthy ecosystems, an extensive tree canopy, and green infrastructure reduce the impact of climate change on urban communities including but not limited to mitigating heat and flooding, storing and filtering water, improving air quality, and providing access to nature.

¹ USDA. (N.D.) Ecosystem Services. Climate Hub. U.S. Department of Agriculture. <https://www.climatehubs.usda.gov/ecosystem-services>

6. The City of Salem does currently not use an ecosystem framework as an overarching concept to plan or manage the City's natural resources.

B. Rivers

1. Rivers mean the Willamette River. The Willamette River has a five mile reach that runs through Salem with a volume that ranges considerably but has been 32,000 and 36,000 cubic feet per second (CFS) recently.
2. The Willamette River is designated by the Oregon Department of Lands as essential salmonid habitat and supports Winter Steelhead and Spring Chinook salmon.
3. The City of Salem has a 75 foot buffer around the Willamette River with associated regulations.

C. Streams

1. Stream means a flowing body of water that typically follows a channel or bed. Streams may be perennial, seasonal, or intermittent. Streams include fish-bearing ditches.
2. Salem has approximately 91 miles of open streams.
3. Streams running through Salem are significantly degraded. Salem's urban streams are characterized by: altered hydrology, increased water temperatures, simplified channel morphology, hardened banks, turbidity, and contamination.
4. Streams entering the City of Salem may also already be degraded by upstream management.
5. Salem streams are a vital component of Salem's stormwater management system.
6. Although permitted, the City's stormwater system still creates significant challenges for natural streams. Thousands of outfall pipes discharge into local waterways. Even when stormwater is filtered, the unnaturally rapid, concentrated flows delivered through these pipes contribute to streambank instability, erosion, and sedimentation, degrading habitat quality and stream function.

D. Riparian Buffer

1. Riparian Buffer means a segment of land that runs alongside a body of surface water (rivers, streams, lakes, or ponds) or wetland and has specific dimensions established by ordinance or statute.
2. The city has approximately 1,350 acres of land that are within 50' feet of a stream bank (excluding piped stream segments).
3. The City has not established a riparian buffer for Salem streams.
4. The City requires a permit to remove native vegetation in riparian areas.

5. The City's failure to establish riparian buffers for City streams is inconsistent with State Land Use Planning Goal 5, which calls for a minimum of 50 foot riparian buffers on streams with flow rates lower than 1,000 cubic feet per second.

E. Wetlands

1. Wetland means an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. This concept includes wet prairies and other more specific wetland types.
2. Salem has approximately 1,239 acres of wetlands, of which X-amount is constructed wetlands managed by the City.
3. The City of Salem does not protect wetlands beyond the requirements set by the State of Oregon.
4. The City of Salem has not adopted a local wetland inventory per Oregon Land Planning Goal 5.

F. Floodplains

1. Floodplain means an area that has a one percent (1%) annual chance of flooding also known as Federal Emergency Management Agency (FEMA) Special Floodplain Hazard Areas.
2. Salem has approximately 6,192 acres of floodplain. Eighty percent of the Salem's floodplain is owned by the City of Salem and another ten percent is owned by the State of Oregon.
3. The City of Salem permits floodplain development pursuant to FEMA regulations.
4. Floodplains are vital to the health of anadromous fish because they provide important habitat during the freshwater phase of the anadromous life cycle.
5. Development in the floodplain increases the risk and severity of flooding, poses a threat to human health and safety, and increases pollutants and stormwater runoff to streams and rivers.

G. Open Spaces

1. Open spaces means land that is not developed for residential or economic uses (other than farmland), that contains minimal amounts of impervious surfaces, and that has few or no structures.
2. The City owns and manages 2,335 acres of parkland distributed across 90 parks. Ten parks are classified as natural areas and total 1,391 acres. Minto-Brown Island Park accounts for 1,216 acres (87%) of natural areas.
3. Open space is an Oregon Goal 5 resource, which Goal 5 defines as "parks, forests, wildlife preserves, nature reservations or sanctuaries, and public or private golf courses."

4. Salem has approximately 119 acres of land providing golf course recreation.
5. Salem has approximately 109 acres of cemetery land.

H. Wildlife Habitat

1. Wildlife habitat means an area upon which native flora and fauna depend in order to meet their requirements for food, water, shelter, and reproduction.
2. The Oregon Department of Lands have designated the Willamette River, Mill Creek, and portions of Glenn Creek, Gibson Creek, Pringle Creek, and the Lower Pudding River as Essential Salmonid Habitat (ESH).
3. Salem has not designated any land as wildlife habitat.

I. Lakes and Ponds

1. Lake means a large body of water surrounded by land. A lake is larger and/or deeper than a pond. A lake may be constructed.
2. Pond means a small body of surface water that is less than 12 acres wide, less than 16 feet deep, and has less than 30 percent cover of emergent vegetation. Ponds have different geochemical profiles than lakes, streams, or wetlands and serve different ecological functions.
3. The City's does not distinguish between lakes and ponds and also does not distinguish between constructed and naturally occurring bodies of water.

J. Regulatory Environment

1. The City must comply with the provisions of the Clean Water Act through its National Pollutant Discharge Elimination System permit, regulating stormwater discharge into Salem's streams.
2. City programs or projects that receive federal funds must comply with the Endangered Species Act.
3. The Army Corp of Engineers (Corps) has jurisdiction over the waters of the United States, which includes the Willamette River and its tributaries.
4. The State of Oregon has co-jurisdiction over waters of Oregon.
5. The City has co-jurisdiction of rivers and streams within its boundaries and may promulgate regulations so long as they do not conflict with federal or state regulations.
6. The State of Oregon has primary jurisdiction over wetlands. The State requires a permit and associated mitigation to develop within a wetland. Cities may regulate wetlands so long as municipal regulations do not conflict with state regulations.
7. The City is subject to the Migratory Bird Treaty Act (MBTA), which prohibits the take (killing, capture, or harassment) of migratory birds, their active nests, and eggs. The MBTA applies broadly across City projects involving vegetation management, tree

removal, construction, utility maintenance, airport operations, and other disturbance-related work.

8. The City is subject to the Bald and Gold Eagle Protection Act (BGEPA), which prohibits disturbance, take, or destruction of eagles, their nests, and their eggs without a permit from the U.S. Fish and Wildlife Service. Because Salem supports multiple active bald eagle nesting territories, the City must ensure that its operations, facilities, and public events avoid disturbing nesting eagles and comply with federal eagle management guidelines.

K. City Policies & Practices

1. The City's natural resource policies and programs have historically been driven by the desire to comply with state and federal regulatory requirements.
2. The City operates a comprehensive flood monitoring and drainage system maintenance program, which includes routine inspection of streams, culverts, drainage channels, and known problem sites to identify obstructions and flood hazards before they escalate.
3. The City has an effective program to manage drinking water and monitor storm water quality.
4. The City actively monitors bald eagle nests on and near City-owned properties and manages its operations to avoid disturbance.
5. In 2023, the City adopted an Integrated Pest Management (IPM) Policy (APP 3.23) to provide clear requirements and guidance for pesticide use on City managed properties.
6. The City's floodplain management program exceeds the minimum requirements set forth by FEMA's National Flood Insurance Program (NFIP).

Recommendations

1. Align Salem natural resource policies with Oregon Land Use Goal 5 and the Oregon Conservation Strategy.
2. Update the Natural Resources section of Salem's Comprehensive Plan.
3. Recognize the Willamette River, its tributary streams, riparian buffers, wetlands, and floodplains as environmentally significant lands.
4. Adopt a riparian inventory and establish an appropriate riparian buffer consistent with Oregon Land Use Planning Goal 5.
5. Conduct a wetland inventory and identify and preserve significant wetlands consistent with Oregon Land Use Planning Goal 5.
6. Prohibit development within publicly owned undeveloped floodplains.
7. Manage environmentally significant lands for ecosystem services and wildlife habitat.

8. Conserve environmentally significant lands through easements, deed restrictions, and other legal mechanisms.
9. Develop rehabilitation and management plans to maximize ecosystem services and benefits for each class of environmentally significant lands.
10. Make better use of GIS capabilities to track and report on natural resource management. Consider producing public-facing maps where appropriate.
11. Improve cross-departmental planning and coordination among staff that set policy and manage natural resources.

Conclusion

Salem's rivers, streams, riparian areas, wetlands, floodplains, and open spaces are not amenities at the margins of city life: they are functional infrastructure. They filter pollutants, recharge groundwater, moderate temperatures, convey and store floodwaters, sequester carbon, and provide habitat for salmonids, eagles, and migratory birds that the City is legally obligated to protect. The findings in this report make clear that these systems are under sustained pressure: streams are degraded by altered hydrology and stormwater discharge, wetlands lack a local inventory, riparian areas remain unbuffered in conflict with Oregon Land Use Planning Goal 5, and the cumulative effects of climate change, such as hotter summers, deeper droughts, heavier winter rains, new disease and invasive species pressures, will continue to test the resilience of both natural systems and the residents who depend on them.

The City has built genuine strengths to draw on, including a robust flood monitoring program, drinking water and stormwater quality oversight, active bald eagle nest management, an Integrated Pest Management Policy, and a floodplain program that exceeds federal minimums. What is missing is an overarching framework that organizes these efforts around the ecosystem services Salem's natural resources provide. A framework that brings the City into full alignment with state planning goals. Historically, Salem's natural resource work has been shaped largely by the obligation to comply with state and federal regulation. The recommendations in this report offer a path to move from partial compliance to active stewardship.

Completing the riparian and wetland inventories called for under Goal 5, prohibiting development on publicly owned undeveloped floodplains, and managing these lands with ecosystem services in mind would represent a beneficial and necessary update to Salem's natural resource policy. Implementation will require improved cross-departmental coordination, better use of the City's GIS capabilities, and conservation tools such as easements and deed restrictions to secure long-term protection. Taken together, the actions recommended here would strengthen Salem's compliance posture, reduce long-term risk and cost to the City, and leave a measurably healthier landscape for the residents, wildlife, and waterways that depend on it.