
Chapter 7: Environment and Watershed Health

What is this chapter about?

The goals and policies in this chapter convey the City's intent to:

- Recognize the economic, health, cultural, and intrinsic values of nature, and the importance of community stewardship.
- Preserve natural resources and the beneficial functions and services they provide.
- Improve air quality and watershed health, including hydrology, water quality, fish and wildlife habitat, and biodiversity.
- Ensure all Portlanders experience the benefits of a livable environment and healthy watersheds, and reduce environmental disparities affecting under-served and under-represented communities.
- Recognize the city's impact on global climate change, opportunities to reduce carbon emissions, and sequester carbon.
- Recognize the importance of a healthy urban forest and natural systems in reducing the impacts of natural hazards, such as landslides, flooding, and wildfire, and in adapting to climate change.
- Prevent incremental environmental degradation including the spread of invasive species, loss of habitat, and adverse impacts of additional impervious surfaces.
- Ensure that environmental protection programs and regulations reflect current data, the best available science, and evaluation of impacts to under-served and under-represented communities.
- Advance good decisions and adaptive management through better data collection.
- Provide guidance that addresses the distinct ecological issues of specific watersheds.
- Ensure that plans and investments are coordinated with relevant policies from other City plans such as the Portland Watershed Management Plan, Urban Forest Management Plan, Climate Action Plan, Climate Change Preparation Strategy, Parks plans, Natural Hazard Mitigation Plan, and plans addressing environmental equity.

Why is this important?

Located at the confluence of two major rivers, between two mountain ranges, and adjacent to some of the most fertile agricultural land in the world, Portland's wealth of natural resources provides an array of ecologically, economically, culturally, and aesthetically valuable ecosystem services. Rivers, streams, and floodplains convey and store water and provide critical habitat for native fish and aquatic species. Wetlands, trees, and vegetation clean and cool Portland's air and water, stabilize hillsides, soak up rainwater, and provide habitat for an abundance of birds and other wildlife. These resources also trap carbon and reduce urban heat island effects, which are increasingly important given the potential impacts of climate change. These natural resources and healthy environment are key contributors to Portland's identity, sense of place, and reputation as a great place to live, work, and play.

The City has a long-standing commitment to maintaining a high-quality environment; however, many of Portland's natural resources have been lost over time or are currently at risk. Urbanization has filled floodplains, contributing to seasonal flooding damage. Stormwater runoff from paved areas and rooftops has eroded our stream channels and polluted our streams, many of which are unable to support healthy fish populations. There is concern that anticipated growth and development will result in substantial tree removal, increased risks of natural hazards, continued habitat loss, and negative impacts on at-risk plant and animal species. In addition, there is concern that further environmental degradation will disproportionately affect communities of color and other under-served and under-represented communities.

The City's land use plans and investments have been, and will continue to be, instrumental in helping improve air and water quality over time, preserve natural resources and the benefits they provide, and reduce environment-related disparities. In addition, the City and community have made substantial investments of time and money to restore our watersheds. The goals and policies in this chapter protect these investments and help the City meet various regulations to protect public health and the environment. With thoughtful guidance, we can achieve and sustain healthy watersheds and a healthful environment as the city grows.

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Goals

Goal 7.A: Climate

Carbon emissions are reduced to 50 percent below 1990 levels by 2035.

Goal 7.B: Healthy watersheds and environment

Ecosystem services and ecosystem functions are maintained and watershed conditions have improved over time, supporting public health and safety, environmental quality, fish and wildlife, cultural values, economic prosperity, and the intrinsic value of nature.

Goal 7.C: Resilience

Portland's built and natural environments function in complementary ways and are resilient in the face of climate change and natural hazards.

Goal 7.D: Environmental equity

All Portlanders have access to clean air and water, can experience nature in their daily lives, and benefit from development designed to lessen the impacts of natural hazards and environmental contamination.

Goal 7.E: Community stewardship

Portlanders actively participate in efforts to maintain and improve the environment, including watershed health.

Policies

Improving environmental quality and resilience

The following policies are intended to support improving environmental quality and watershed health over time as the city grows. They support Portland's watershed plan goals to restore hydrology, water quality, habitat, and biological communities.

This section calls for preventing incremental environmental degradation, including the spread of invasive species, soil loss, habitat fragmentation, and introduction of hazards to wildlife. Like preventive medicine, preventing environmental degradation is more successful and cost-effective than addressing problems as they increase in severity. These policies support a healthy urban forest and recognize that healthy natural systems reduce natural hazard risks; they also help the City mitigate and adapt to climate change.

These policies recognize that degraded environmental conditions disproportionately affect under-served and under-represented communities. They provide guidance to avoid future disparities and their implementation can help improve existing environmental conditions and the well-being of under-served and under-represented communities.

While some of the impact areas listed below are regulated by other agencies, the City's land use plans and investments can help avoid or reduce impacts, while also improving or supporting efforts to improve conditions over time.

Policy 7.1 Environmental quality. Protect or support efforts to protect air, water, and soil quality, and associated benefits to public and ecological health and safety, through plans and investments.

Policy 7.2 Environmental equity. Prevent or reduce adverse environment-related disparities affecting under-served and under-represented communities through plans and investments. This includes addressing disparities relating to air and water quality, natural hazards, contamination, climate change, and access to nature.

Policy 7.3 Ecosystem services. Consider the benefits provided by healthy ecosystems that contribute to the livability and economic health of the city.

Policy 7.4 Climate change. Update and implement strategies to reduce carbon emissions and impacts, and increase resilience through plans and investments and public education.

7.4.a. Carbon sequestration. Enhance the capacity of Portland's urban forest, soils, wetlands, and other water bodies to serve as carbon reserves.

7.4.b. Climate adaptation and resilience. Enhance the ability of rivers, streams, wetlands, floodplains, urban forest, habitats, and wildlife to limit and adapt to climate-exacerbated flooding, landslides, wildfire, and urban heat island effects.

Policy 7.5 **Air quality.** Improve, or support efforts to improve, air quality through plans and investments, including reducing exposure to air toxics, criteria pollutants, and urban heat island effects. Consider the impacts of air quality on the health of all Portlanders.

Policy 7.6 **Hydrology.** Through plans and investments, improve or support efforts to improve watershed hydrology to achieve more natural flow and enhance conveyance and storage capacity in rivers, streams, floodplains, wetlands, and aquifers. Minimize impacts from development and associated impervious surfaces, especially in areas with poorly-infiltrating soils and limited public stormwater discharge points, and encourage restoration of degraded hydrologic functions.

Policy 7.7 **Water quality.** Improve, or support efforts to improve, water quality in rivers, streams, floodplains, groundwater, and wetlands through land use plans and investments, to address water quality issues including toxics, bacteria, temperature, metals, and sediment pollution. Consider the impacts of water quality on the health of all Portlanders.

Policy 7.8 **Biodiversity.** Strive to achieve and maintain self-sustaining populations of native species, including native plants, native resident and migratory fish and wildlife species, at-risk species, and beneficial insects (such as pollinators) through plans and investments.

Policy 7.9 **Habitat and biological communities.** Ensure that plans and investments are consistent with and advance efforts to improve, or support efforts to improve fish and wildlife habitat and biological communities. Use plans and investments to enhance the diversity, quantity, and quality of habitats habitat corridors, and especially habitats that:

- Are rare or declining.
- Support at-risk plant and animal species and communities.
- Support recovery of species under the Endangered Species Act, and prevent new listings.
- Provide culturally important food sources, including those associated with Native American fishing rights.

Policy 7.10 **Habitat connectivity.** Improve or support efforts to improve terrestrial and aquatic habitat connectivity for fish and wildlife by using plans and investments, to:

- Prevent and repair habitat fragmentation.
- Improve habitat quality.
- Weave habitat into sites as new development occurs.
- Enhance or create habitat corridors that allow fish and wildlife to safely access and move through and between habitat areas.
- Promote restoration and protection of floodplains.

Policy 7.11 **Urban forest.** Improve, or support efforts to improve the quantity, quality, and equitable distribution of Portland’s urban forest through plans and investments.

7.11.a. Tree preservation. Require or encourage preservation of large healthy trees, native trees and vegetation, tree groves, and forested areas.

7.11.b. Urban forest diversity. Coordinate plans and investments with efforts to improve tree species diversity and age diversity.

7.11.c. Tree canopy. Support progress toward meeting City tree canopy targets.

7.11.d. Tree planting. Invest in tree planting and maintenance, especially in low-canopy areas, neighborhoods with under-served or under-represented communities, and within and near urban habitat corridors.

7.11.e. Vegetation in natural resource areas. Require native trees and vegetation in significant natural resource areas.

7.11.f. Resilient urban forest. Encourage planting of Pacific Northwest hardy and climate change resilient native trees and vegetation generally, and especially in urban habitat corridors.

7.11.g. Trees in land use planning. Identify priority areas for tree preservation and planting in land use plans.

7.11.h. Managing wildfire risk. Address wildfire hazard risks and management priorities through plans and investments.

Policy 7.12 **Invasive species.** Prevent the spread of invasive plants, and support efforts to reduce the impacts of invasive plants, animals, and insects, through plans, investments, and education.

Policy 7.13 **Soils.** Coordinate plans and investments with programs that address human-induced soil loss, erosion, contamination, or other impairments to soil quality and function.

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- Policy 7.14** **Natural hazards.** Prevent development-related degradation of natural systems and associated increases in landslide, wildfire, flooding, and earthquake risks.
- Policy 7.15** **Brownfield remediation.** Improve environmental quality and watershed health by promoting and facilitating brownfield remediation and redevelopment that incorporates ecological site design and resource enhancement.
- Policy 7.16** **Adaptive management.** Evaluate trends in watershed and environmental health using current monitoring data and information to guide and support improvements in the effectiveness of City plans and investments.
- Policy 7.17** **Restoration partnerships.** Coordinate plans and investments with other jurisdictions, air and water quality regulators, watershed councils, soil and water conservation districts, Sovereign nations, and community organizations and groups including under-served and under-represented communities, to optimize the benefits, distribution, and cost-effectiveness of watershed restoration and enhancement efforts.
- Policy 7.18** **Community stewardship.** Encourage voluntary cooperation between property owners, community organizations, and public agencies to restore or re-create habitat on their property, including removing invasive plants and planting native species.

Other policies in Chapters 3: Urban Form and Chapter 4: Design and Development are essential counterparts to policies in the section above.

Planning for natural resource protection

Portland's quality of life depends on maintaining clean air, water, soil, and a healthy environment overall. The policies in this section will preserve and maintain environmental quality by emphasizing protection of natural resources and their functions, consistent with widely accepted ecological principles and scientific literature. These policies call for an up-to-date natural resource inventory, and plans, regulations, and coordinated land acquisition programs to protect significant natural resources and watershed health. They also call for considering potential impacts on public health and safety, equity, and the economy.

Policy 7.19 **Natural resource protection.** Protect the quantity, quality, and function of significant natural resources identified in the City's natural resource inventory, including:

- Rivers, streams, sloughs, and drainageways.
- Floodplains.
- Riparian corridors.

- Wetlands.
- Groundwater.
- Native and other beneficial vegetation species and communities.
- Aquatic and terrestrial habitats, including special habitats or habitats of concern, large anchor habitats, habitat complexes and corridors, rare and declining habitats such as wetlands, native oak, bottomland hardwood forest, grassland habitat, shallow water habitat, and habitats that support special-status or at-risk plant and wildlife species.
- Other resources identified in natural resource inventories.

Policy 7.20 **Natural resource inventory.** Maintain an up-to-date inventory by identifying the location and evaluating the relative quantity and quality of natural resources.

Policy 7.21 **Environmental plans and regulations.** Maintain up-to-date environmental protection plans and regulations that specify the significant natural resources to be protected and the types of protections to be applied, based on the best data and science available and on an evaluation of cumulative environmental, social, and economic impacts and tradeoffs. *See Figure 7-2 — Adopted Environmental Plans.*

7.21.a. Improve the effectiveness of environmental protection plans and regulations to protect and encourage enhancement of ecological functions and ecosystem services.

7.21.b. Prevent or reduce disproportionate environmental impacts on under-served and under-represented communities.

Policy 7.22 **Land acquisition priorities and coordination.** Maintain a land acquisition program as a tool to protect and support natural resources and their functions. Coordinate land acquisition with the programs of City bureaus and other agencies and organizations.

Protecting natural resources in development situations

The following policies provide guidance for land use regulations that address significant natural resources where new development is proposed. They will help ensure that the potential adverse impacts of development are well understood, and avoided where practicable. These policies also call for an evaluation of design alternatives to minimize negative impacts, and the use of mitigation approaches that fully mitigate unavoidable impacts.

Policy 7.23 Impact evaluation. Evaluate the potential adverse impacts of proposed development on significant natural resources, their functions, and the ecosystem services they provide to inform and guide development design and mitigation consistent with policies 7.24-7.26, and other relevant Comprehensive Plan policies.

Policy 7.24 Regulatory hierarchy: avoid, minimize, mitigate. Maintain regulations requiring that the potential adverse impacts of new development on significant natural resources and their functions first be avoided where practicable, then minimized, then lastly, mitigated.

Policy 7.25 Mitigation effectiveness. Require that mitigation approaches compensate fully for adverse impacts on locally and regionally significant natural resources and functions. Require mitigation to be located as close to the impact as possible. Mitigation must also take place within the same watershed or portion of the watershed that is within the Portland Urban Services Boundary, unless mitigating outside of these areas will provide a greater local ecological benefit. Mitigation will be subject to the following preference hierarchy:

1. On the site of the resource subject to impact with the same kind of resource; if that is not possible, then
2. Off-site with the same kind of resource; if that is not possible, then
3. On-site with a different kind of resource; if that is not possible, then
4. Off-site with a different kind of resource.

Policy 7.26 Improving environmental conditions through development. Encourage ecological site design, site enhancement, or other tools to improve ecological functions and ecosystem services in conjunction with new development and alterations to existing development.

Aggregate resources

- Policy 7.27** **Aggregate resource protection.** Protect aggregate resource sites for current and future use where there are no major conflicts with urban needs, or where these conflicts may be resolved.
- Policy 7.28** **Aggregate resource development.** Ensure that development of aggregate resources minimizes adverse environmental impacts and impacts on adjacent land uses.
- Policy 7.29** **Mining site reclamation.** Ensure that the reclamation of mining sites protects public health and safety, protects fish and wildlife (including at-risk species), enhances or restores habitat (including rare and declining habitat types), restores adequate watershed conditions and functions on the site, and is compatible with the surrounding land uses and conditions of nearby land.

Watershed specific policies

The policies above guide planning, actions, and investments citywide. The following policies are intended to augment the citywide Watershed Health and Environment policies by providing additional guidance relating and responding to the characteristics within each of Portland's distinctive watersheds. They address watershed-specific habitat types, hydrology, water quality issues, and stormwater management challenges. Together, the citywide and watershed-specific policies support the close coordination of watershed health and land use programs, guiding land use planning-related activities and future infrastructure investments. While these watersheds are not entirely within Portland's urban services boundary, Portland's actions can have significant benefits for the watershed as a whole.

Columbia River Watershed

- Policy 7.30** **In-water habitat.** Enhance in-water habitat for native fish and wildlife, particularly in the Oregon Slough and near-shore environments along the Columbia River.
- Policy 7.31** **Sensitive habitats.** Enhance grassland, beach, riverbanks, wetlands, bottomland forests, shallow water habitats, and other key habitats for wildlife traveling along the Columbia River migratory corridor, while continuing to manage the levees and floodplain for flood control.
- Policy 7.32** **River-dependent and river-related uses.** Maintain plans and regulations that recognize the needs of river-dependent and river-related uses while also supporting ecologically-sensitive site design and practices.

Willamette River Watershed

- Policy 7.33** **Fish habitat.** Provide adequate intervals of ecologically-functional shallow-water habitat for native fish along the entire length of the Willamette River within the city, and at the confluences of its tributaries.
- Policy 7.34** **Stream connectivity.** Improve stream connectivity between the Willamette River and its tributaries.
- Policy 7.35** **River bank conditions.** Preserve existing river bank habitat and encourage the rehabilitation of river bank sections that have been significantly altered due to development with more fish and wildlife friendly riverbank conditions.
- Policy 7.36** **South Reach ecological complex.** Enhance habitat quality and connections between Ross Island, Oaks Bottom, and riverfront parks and natural areas south of the Central City, to enhance the area as a functioning ecological complex.
- Policy 7.37** **Contaminated sites.** Promote and support programs that facilitate the cleanup, reuse, and restoration of the Portland Harbor Superfund site and other contaminated upland sites.
- Policy 7.38** **Sensitive habitats.** Protect and enhance grasslands, beaches, floodplains, wetlands, remnant native oak, bottomland hardwood forest, and other key habitats for native wildlife including shorebirds, waterfowl, and species that migrate along the Pacific Flyway and the Willamette River corridor.
- Policy 7.39** **Riparian corridors.** Increase the width and quality of vegetated riparian buffers along the Willamette River.
- Policy 7.40** **Connected upland and river habitats.** Enhance habitat quality and connectivity between the Willamette riverfront, the Willamette's floodplain, and upland natural resource areas.
- Policy 7.41** **River-dependent and river-related uses.** Develop and maintain plans and regulations that recognize the needs of river-dependent and river-related uses, while also supporting ecologically-sensitive site design and practices.
- Policy 7.42** **Forest Park.** Enhance Forest Park as an anchor habitat and recreational resource.

Columbia Slough Watershed

- Policy 7.43** **Fish passage.** Restore in-stream habitat and improve fish passage within the Columbia Slough, including for salmonids in the lower slough.
- Policy 7.44** **Flow constriction removal.** Reduce constriction, such as culverts, in the slough channels, to improve the flow of water and water quality.
- Policy 7.45** **Riparian corridors.** Increase the width, quality, and native plant diversity of vegetated riparian buffers along Columbia Slough channels and other drainageways within the watershed, while also managing the slough for flood control.
- Policy 7.46** **Sensitive habitats.** Enhance grasslands and wetland habitats in the Columbia Slough, such as those found in the Smith and Bybee Lakes and at the St. Johns Landfill site, to provide habitat for sensitive species, and for wildlife traveling along the Columbia and Willamette river migratory corridors.
- Policy 7.47** **Connected rivers habitats.** Enhance upland habitat connections to the Willamette and Columbia rivers.
- Policy 7.48** **Contaminated sites.** Ensure that plans and investments are consistent with and advance programs that facilitate the cleanup, reuse, and restoration of contaminated sites that are adjacent, or that discharge stormwater, to the Columbia Slough.
- Policy 7.49** **Portland International Airport.** Protect, restore, and enhance natural resources and functions in the Portland International Airport plan district, as identified in Portland International Airport/Middle Columbia Slough Natural Resources Inventory. Accomplish this through regulations, voluntary strategies, and the implementation of special development standards.

Fanno and Tryon Creek Watersheds

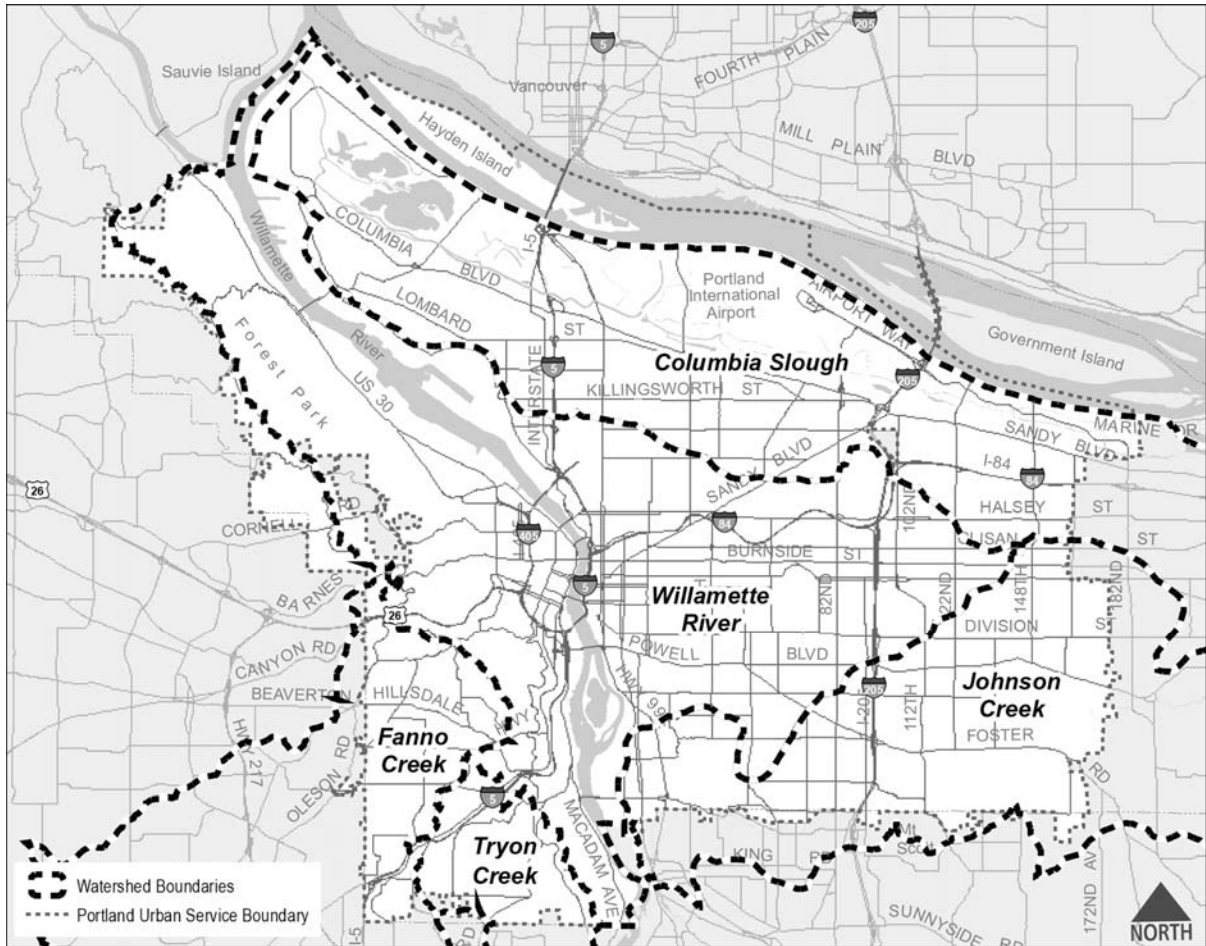
- Policy 7.50** **Stream connectivity.** Encourage the daylighting of piped portions of Tryon and Fanno creeks and their tributaries.
- Policy 7.51** **Riparian and habitat corridors.** Protect and enhance riparian habitat quality and connectivity along Tryon and Fanno creeks and their tributaries. Enhance connections between riparian areas, parks, anchor habitats, and areas with significant tree canopy. Enhance in-stream and upland habitat connections between Tryon Creek State Natural Area and the Willamette River.
- Policy 7.52** **Reduced hazard risks.** Reduce the risks of landslides and streambank erosion by protecting trees and vegetation that absorb stormwater, especially in areas with steep slopes or limited access to stormwater infrastructure.

Johnson Creek Watershed

- Policy 7.53 In-stream and riparian habitat.** Enhance in-stream and riparian habitat and improve fish passage for salmonids along Johnson Creek and its tributaries.
- Policy 7.54 Floodplain restoration.** Enhance Johnson Creek floodplain functions to increase flood-storage capacity, improve water quality, and enhance fish and wildlife habitat.
- Policy 7.55 Connected floodplains, springs, and wetlands.** Enhance hydrologic and habitat connectivity between the Johnson Creek floodplain and its springs and wetlands.
- Policy 7.56 Reduced natural hazards.** Reduce the risks of landslides, streambank erosion and downstream flooding by protecting seeps, springs, trees, vegetation, and soils that absorb stormwater in the East Buttes.
- Policy 7.57 Greenspace network.** Enhance the network of parks, trails, and natural areas near the Springwater Corridor Trail and the East Buttes to enhance habitat connectivity and nature-based recreation in East Portland.

For additional policy guidance regarding geographically-specific issues and opportunities, see Chapter 4: Design and Development. More specific flood management policies are in Chapter 8: Public Facilities and Services.

Figure 7-1. Portland's Watersheds



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Figure 7-2. Adopted Environmental Plans

Plan	Ordinance No.	Effective dates
Columbia Corridor Industrial and Environmental Mapping Project	NA	1989
Balch Creek Watershed Protection Plan	163770	1990
Columbia South Shore Plan	163609, 167127	1990, 1993
Johnson Creek Basin Protection Plan	164472	1991
Northwest Hills Natural Areas Protection Plan	164517, 168699	1991, 1995
Southwest Hills Resource Protection Plan	165002	1992
East Buttes, Terraces and Wetlands Conservation Plan	166572	1993
Fanno Creek and Tributaries Conservation Plan	167293	1994
Skyline West Conservation Plan	168154	1994
Boring Lava Domes Supplement to the Johnson creek Basin Protection Plan	171740	1997
Portland International Raceway Plan	172978	1999
Multnomah County-Portland Unincorporated Urban Areas Functional Plan Compliance Project	County Ordinance No. 967	2001
Pleasant Valley Plan	178961	2004
Cascade Station/Portland International Center Plan	179076	2005
Portland International Airport Plan	184521	2011