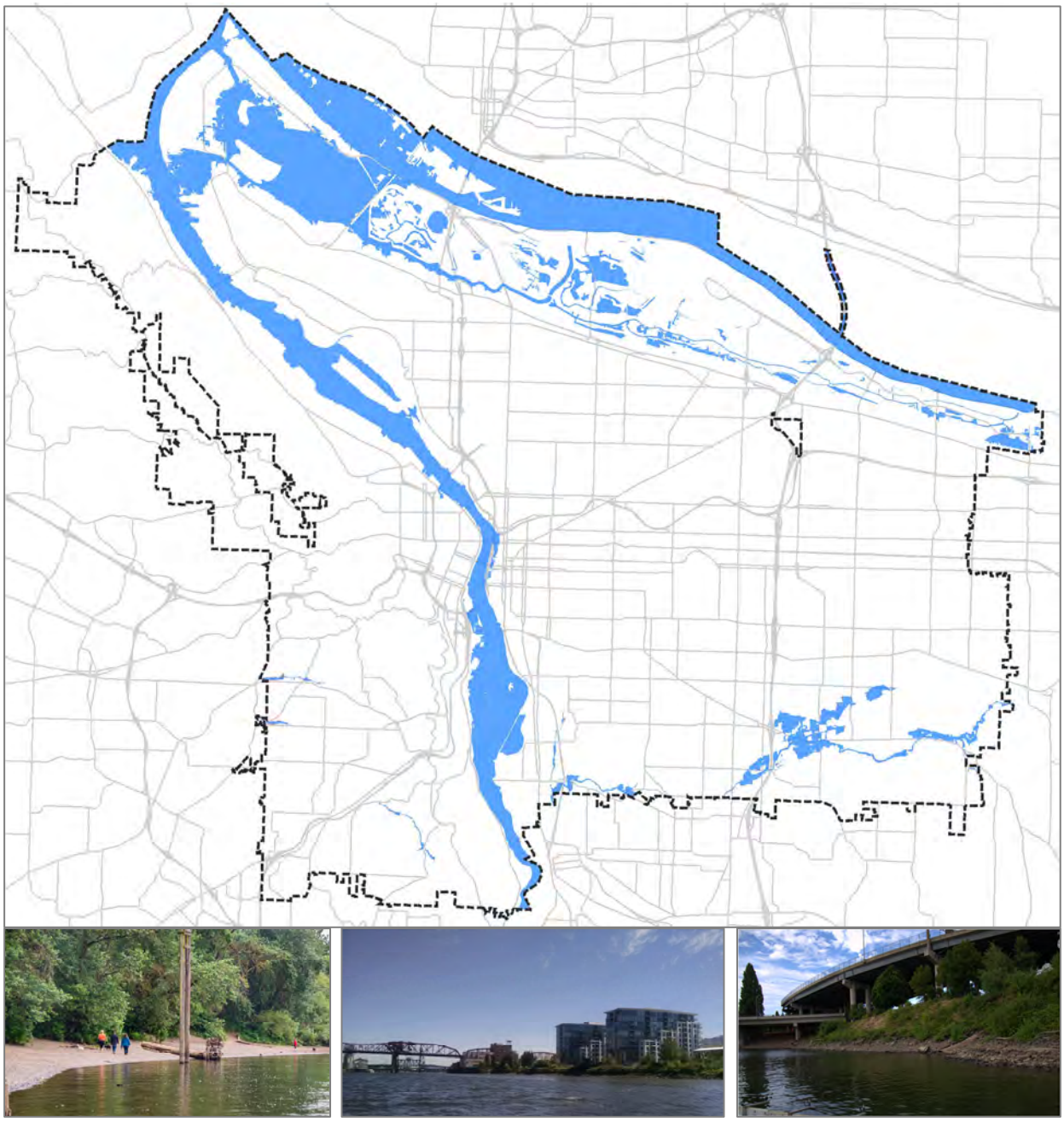


Floodplain Resilience Plan Discussion Draft

City of Portland

November 2021

THE BUREAU OF PLANNING & SUSTAINABILITY

LANGUAGE ACCESS

The City of Portland is committed to providing meaningful access.
To request translation, interpretation, modifications, accommodations, or other auxiliary aids or services, contact 503-823-7700, Relay: 711.

Traducción e Interpretación | Biên Dịch và Thông Dịch | अनुवादन तथा व्याख्या | 口笔译服务 | Устный и письменный перевод | Turjumaad iyo Fasiraad | Письмовий і усний переклад | Traducere și interpretariat | Chiaku me Awewen Kapas | 翻訳または通訳 | ການແປພາສາ ຫຼື ການອະທິບາຍ | الترجمة التحريرية أو الشفهية

www.portland.gov/bps/accommodation

Acknowledgements

Portland City Council

Ted Wheeler, Mayor
Carmen Rubio, Commissioner-in-Charge
Jo Ann Hardesty, Commissioner
Mingus Mapps, Commissioner
Dan Ryan, Commissioner

Portland Planning and Sustainability Commission

Eli Spevak, Chair
Jeff Bachrach, Vice Chair
Steph Routh, Vice Chair
Johnell Bell
Jessica Gittemeier (Youth Commissioner)
Katie Larsell
Oriana Magnera
Valeria McWilliams
Gabe Sheoships
Erica Thompson

Bureau of Planning and Sustainability

Andrea Durbin, Director
Sallie Edmunds, Central City, River & Environmental Planning Manager
Jeff Caudill, City Planner II, Project Manager
Daniel Soebbing, City Planner II

Contributing staff:

Shannon Buono, Senior Planner
Eden Dabbs, Communications Coordinator III
Krista Gust, Graphics Designer III
Emma Kohlsmith, City Planner II
Neil Loehlein, GIS Technician
Carmen Piekarski, GIS Analyst

Previous contributing staff: Ethan Brown, City Planner II, Mindy Brooks, City Planner II

Inter-bureau Team

Stephanie Beckman and Jason Butler-Brown, Bureau of Development Services

Dan Eisenbeis and Nils Tillstrom, Office of Government Affairs

Brett Horner and Laura Lehman, Portland Parks and Recreation

Kaitlin Lovell, Bureau of Environmental Services

Michael Phillips, Bureau of Emergency Management

Eric Shaffner, Office of the City Attorney

Previous members:
Joana Filgueiras, Prosper Portland; Alex Howard, Office of Management and Finance; Lauren King, Office of the City Attorney; Doug Morgan, Bureau of Development Services

Consultants: Camille E. Trummer Consulting, Equity, public engagement and facilitation

Table of Contents

I. Overview

A. Introduction

The City of Portland is undertaking the Floodplain Resilience Plan to reduce the impacts of future flooding and prevent the degradation of floodplain habitat for endangered and threatened fish species. The proposals described below respond to the recommendations of the 2016 FEMA National Flood Insurance Program (NFIP) Biological Opinion (FEMA BiOp) that was issued by the National Marine Fisheries Service (NMFS) and the Draft Implementation Plan FEMA prepared in response to it. Per the FEMA BiOp, FEMA must update its NFIP floodplain regulations to bring them into compliance with the Endangered Species Act to protect threatened runs of salmon and steelhead. The Floodplain Resilience Plan will also bring floodplain regulations further into compliance with existing City goals, objectives and policies, including the *2035 Comprehensive Plan*, which contain directives to reduce hazards, address environmental equity, enhance the natural environment and to make Portland's urban environment more resilient.

The Floodplain Resilience Plan is part of a five-year City of Portland (City) work plan, established in 2019, to update regulations that apply to Portland's floodplains in three phases. Phase 1 was completed in December of 2020 with the passage of the River Plan / South Reach, which applied floodplain management regulations in the southern portion of the Willamette River, including the City of Portland and areas of unincorporated Multnomah County where the City has jurisdiction.

The Floodplain Resilience Plan is Phase 2 of the implementation of the City's work plan and contains the draft recommendations for additional updates to citywide floodplain regulations. These recommendations address floodplains throughout many parts of the city, though specific areas have been not been included this phase due to their unique characteristics that warrant area-specific plans. These areas, which include the North Reach of the Willamette River, portions of the Columbia Slough and Columbia River floodplains in which the land uses are predominantly industrial, and the Johnson Creek floodplain will be addressed in Phase 3.

B. What is the Floodplain Resilience Plan?

The Floodplain Resilience Plan will update sections of the zoning and building codes that apply to Portland's floodplains. The recommendations summarized below include requirements for the mitigation of the placement of fill or structures in the floodplain, as well as mitigation for impacts to natural resources that make up the riparian and riverine habitat of streams, rivers, and floodplains. Once adopted, these requirements will ensure that when new development occurs in the floodplain, floodwater storage is not reduced, floodwaters will not be displaced elsewhere in the floodplain or

surrounding area, and that the ecological functions of rivers, streams and their floodplains are not impaired by future development.

As described in more detail below, these changes are consistent with FEMA BiOp guidance and implement a variety of existing City floodplain- and natural resource-related goals, objectives and policies. Updates that go beyond the NFIP minimum requirements will also improve the City's rating in FEMA's voluntary Community Rating System, reducing insurance rates for properties in the City of Portland's jurisdiction.

C. Summary of Plan Recommendations

Floodplain Resilience Plan recommendations described in more detail in this document fall into three categories:

1) Update relevant regulatory maps to apply and clarify regulations in the city's floodplains, including:

    - Apply the Environmental Conservation (c) overlay zone to undeveloped and developed floodplains not currently in the 'c' overlay zone in Fanno Creek, Tryon Creek and non-industrial portions of the Columbia Corridor.
    - Apply the River Environmental (e) overlay zone to undeveloped and developed Willamette River Central Reach floodplains not currently in the 'e' overlay zone.
    - Add a new "Portland Flood Management Areas Map" to Chapter 24.50, Flood Hazard Areas

2) Revise building regulations in the city's flood hazard areas, as well as the applicable floodplain regulations in the South Waterfront, Central City, Tryon Creek, Fanno Creek and non-industrial lands subject to the Environmental Conservation overlay zones. Proposed changes include:

    - Add riparian buffer area requirements to floodplain areas within 170 feet of ordinary high water in Central Reach floodplains (33.475).
    - Update the Environmental overlay zones chapter (33.430) to better manage tree and vegetation removal and maintenance and ensure no net-loss in floodplain functions.
    - Add standards for tree and vegetation removal and maintenance and clarify where the exterior lighting standards apply in the South Waterfront Greenway overlay zone (33.510.253). Also, update the code to allow South Waterfront greenway reviews to be processed through a Type II procedure, instead of always requiring a Type III procedure.

3) Expand the Bureau of Environmental Services restoration program to include mitigation banks to provide another option for mitigating development impacts in the floodplain.

II. Background

A. Floodplains and their Functions

Floodplains are the low-lying areas around rivers and streams that are inundated with water during flood events, and which are typically dry during normal conditions. Prior to settlement by European Americans and the establishment of the City of Portland, the floodplains in the region were dynamic systems of marshes, wetlands and braided channels. Spring snowmelt in the Cascade Mountains brought seasonal inundation to areas around the Willamette and Columbia Rivers, and the Columbia slough was a complex network of channels that shifted and changed over time. Presently, the majority of Portland's floodplain marshes and wetlands have been filled or confined to static channels and flows in the Willamette and the Columbia have been regulated by a system of dams and reservoirs. A substantial portion of the Columbia slough is now regulated by a system of levies.

City's Watersheds

As shown in Figure 1, there are six distinct watersheds in the City of Portland: the Columbia River, the Columbia Slough, the Willamette River, Johnson Creek, Fanno Creek and Tryon Creek. Each of these waterways and their associated floodplains are distinct in character. Land uses in the floodplain vary significantly in the different watersheds, with some locations, such as the Columbia Slough and the North Reach of the Willamette, being dominated by industrial and commercial activities and others, such as Tryon and Fanno Creek, being primarily residential in character. Many of the areas in the floodplain that are most prone to flooding are designated as parks and are zoned for open space uses.

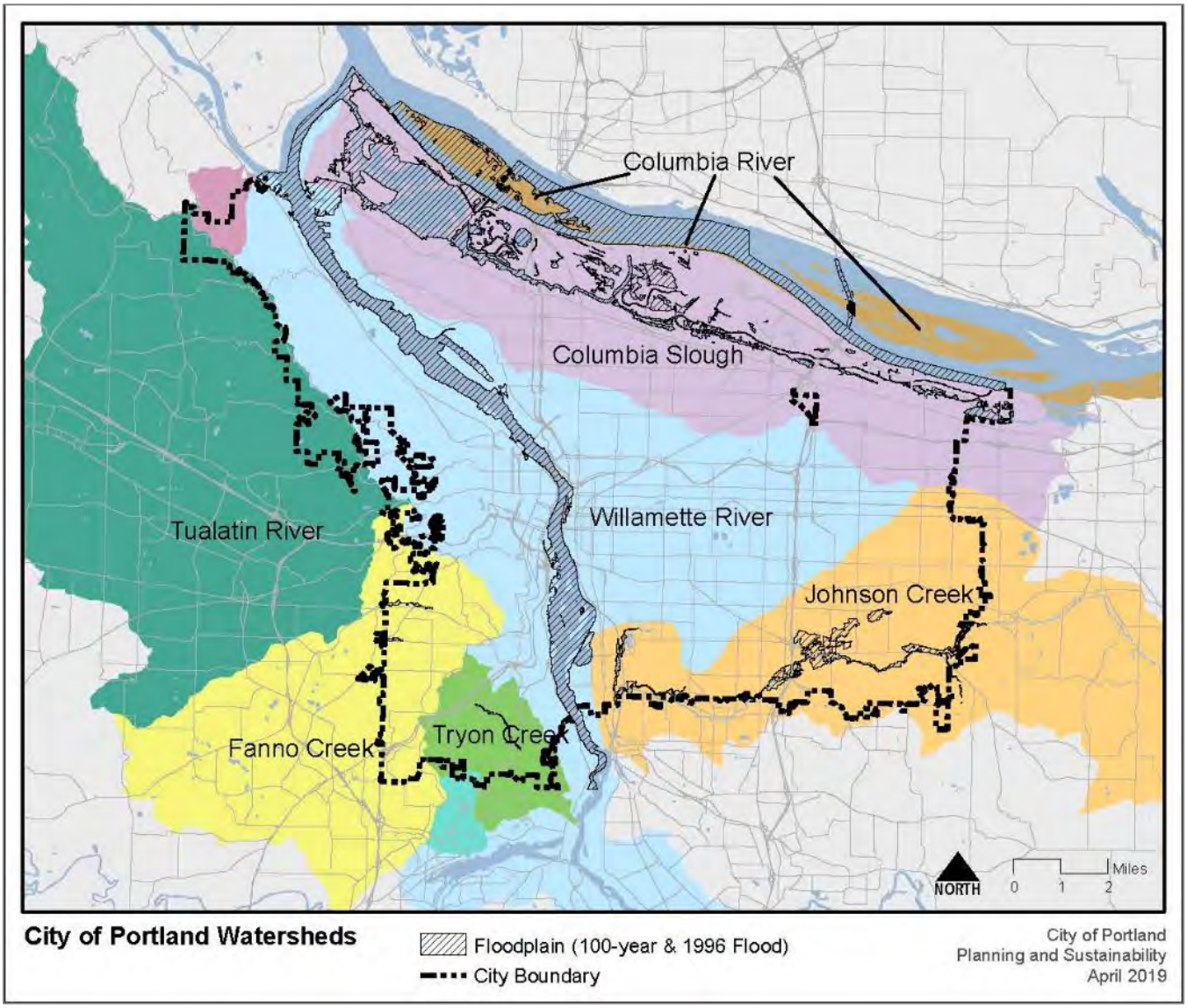


Figure 1. City of Portland Watersheds

The Floodplain Resilience Plan proposes changes to Zoning Code and/or building code requirements for all of the City's six watersheds. At this time, there are no changes proposed for the North or South reaches of the Willamette River, and changes in the Johnson Creek Watershed are proposed only for those properties with Environmental overlay zones applied. Below is a brief summary of each of the six watersheds. More detailed descriptions of the characteristics of each watershed can be found in the Floodplain Resilience Project Existing Conditions Report.

Willamette River

The Willamette River watershed drains roughly 11,478 square miles of Oregon (about 12 percent of the state's land area) and flows 187 miles from its headwaters to the confluence with the Columbia River in Portland. The lower Willamette River, which extends from Willamette Falls in Oregon City to the confluence with the Columbia River, is defined by its connection to the Columbia River. River flows, water levels, and flooding, among other characteristics, are strongly influenced by tides and flows in the Columbia River. In addition, the U.S. Army Corps of Engineers operates 13 dams on tributaries to the Willamette River upstream of Portland. The management of these dams results in less variable flows downstream and reduced peak flows, but has had significant detrimental impact on salmon populations. The Willamette River is mapped within the 1996 Flood Inundation Area.

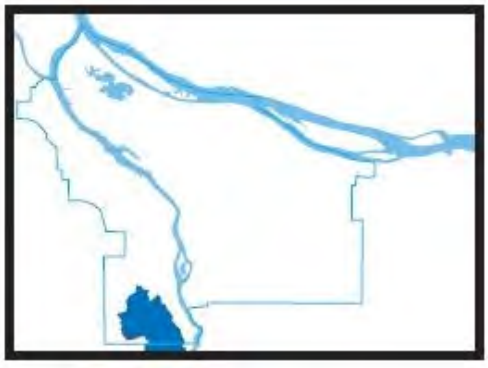
Columbia River

The Columbia River watershed encompasses more than 200,000 square miles of lands across seven states and British Columbia, Canada. The river itself flows over 1,200 miles from its source in the Canadian Rockies to the Pacific Ocean. The 130 square miles of the City of Portland, 1/16 of 1 percent of the Columbia River Basin, is a small, but ecologically and economically important part. The mainstem of the Columbia River is blocked by 14 dams in the U.S. and Canada, while there are over 60 dams in the Columbia River Basin. These dams provide a range of benefits, including electricity, irrigation, and downstream flood protection, but have also had devastating and lasting impacts on salmonid species. The Columbia River is mapped in the 1996 Flood Inundation Area map.

Columbia Slough

The Columbia Slough watershed encompasses approximately 51 square miles (32,640 acres) and flows for 19 miles from Fairview Lake through portions of Troutdale, Fairview, Gresham, Maywood Park, and Wood Village to the Willamette River at Kelley Point Park. There are also roughly 30 miles of secondary waterways and water features in the slough. The Columbia Slough is often divided into three sections: Lower Slough, Middle Slough, and Upper Slough. The Lower Slough is the only section free of fish passage barriers and is tidally influenced. Although the entire slough has seen significant channelization and modification by development and dike and levee systems, the Middle and Upper Sloughs are actively managed by a system of pumps to provide hydrologic management and flood control. The Columbia Slough is mapped within the 1996 Flood Inundation Area.

Tryon Creek



Tryon Creek is a free-flowing stream in Southwest Portland that drains a 4,237-acre watershed and extends seven miles from its source in the West Hills of Portland to the Willamette River near Lake Oswego. It is primarily a low gradient stream with steep hillslopes and limited floodplain habitat. A substantial portion of the creek is located in the Tryon Creek State Natural Area, managed by Oregon State Parks, as well in Marshall Park. Culvert and road crossings have resulted in degraded habitat and fish migration barriers. Tryon Creek has mapped FEMA floodplain but it is not mapped within the 1996 Flood Inundation Area.

Fanno Creek

Fanno Creek is a tributary to the Tualatin River, which encompasses 20,500 acres and eventually flows into the Willamette River south of Oregon City. Unlike the other tributaries to the Willamette River in Portland, the mouth of the Tualatin River is upstream of Willamette Falls. Most of Fanno Creek within the City of Portland is inaccessible to anadromous fish because of impassable culverts downstream of City limits. However, anadromous salmon and steelhead likely historically used upper Fanno Creek for spawning and rearing. Fanno Creek has mapped FEMA floodplain but it is not mapped within the 1996 Flood Inundation Area.

Johnson Creek

The Johnson Creek watershed covers 54 square miles (34,560 acres) across Multnomah and Clackamas counties. From its source in the foothills of Mount Hood near Boring, Johnson Creek passes through the jurisdictions of Gresham, Happy Valley, Portland, and Milwaukie before entering the Willamette River in the City of Milwaukie, 18.5 miles upstream from the mouth of the Willamette River. Although restoration projects have resulted in significant improvements to the biological conditions in the watershed, a history of development, including extensive alterations performed in the 1930s by the Works Progress Administration, has negatively impacted habitat and increased flood risks along the creek. Crystal Springs Creek and Kelley Creek are the most significant tributaries to Johnson Creek and both have mapped floodplain. While Crystal Springs Creek is entirely within the City of Portland, Kelley Creek has only a small segment within the city. Johnson Creek is mapped within the 1996 Flood Inundation Area.

City's Flood Areas

The City of Portland currently regulates two identified floodplain areas: the FEMA 100-year floodplain (also known as the Special Flood Hazard Area), and 1996 Flood Inundation Area (also known as the Metro Title 3 map). Though most of the area that flooded in 1996 is captured in the 1996 Flood Inundation Area, it did not capture the full extent of the 1996 flood. Led by the U.S. Army Corps of Engineers, the Oregon Silver Jackets Team is developing a model of the Lower Willamette River that will provide an up-to-date estimate of the Willamette River floodplain, based on the most recent river bathymetry, upland topography and development patterns. Each of these flood areas is described below.

FEMA 100-Year Floodplain/Special Flood Hazard Area

The FEMA100-year floodplain is defined in the Flood Insurance Study for the City of Portland, Oregon: Multnomah, Clackamas and Washington Counties (2010). This area, which is also called the Special Flood Hazard Area (SFHA), has a one percent (or one in one hundred) chance of flooding each year, based on FEMA's models. Since the 100-year floodplain map represents the mandated geographic scope of the NFIP, the 100-year floodplain defines the area where Endangered Species Act compliance is required to maintain access to FEMA's NFIP for Portland residents and businesses (property owners outside the 100-year floodplain can voluntarily obtain flood insurance from FEMA).

FEMA's 100-year floodplain map for the Willamette River is out of date because the floodplain extent and estimated flood elevation are primarily based on a model completed in 1979. A more accurate estimate of the floodplain that incorporates current river bathymetry, hydrology, topography and development patterns is needed.

Metro Title 3 Map/1996 Flood Inundation Area

The Metro Title 3 Map, also referred to as the 1996 Flood Inundation Area, is a regional water quality and flood management map. The map was created after the 1996 flood and includes most but not all of the areas flooded in 1996. For example, South Waterfront flooded in 1996, but was excluded from the Metro Title 3 map. This map was created using aerial photography from the day after the peak of the flood. The flood peaked at night, so aerial photos of the actual peak were not available.

Flood insurance is not required in the Metro Title 3 area, but Title 24, Building Regulations, of the City's code does require buildings in the areas shown on the map to be built to floodplain development standards. In these areas, the City requires compensatory excavation (also known as "cut") to offset fill placed in the floodplain as a part of development. To comply with these requirements, the volume of cut must be equal to the volume of fill that is proposed. This requirement is often referred to as "balanced cut and fill."

As a part of this plan, the Metro Title 3 map will be updated to incorporate a more up-to-date estimate of the extent of flooding that would be expected if a flood similar to the 1996 flood were to occur today. New estimates of the 1996 flood area and flood elevations used to update the Title 3 map will be based on the outcomes of the U.S. Army Corps of Engineers 2022 Lower Willamette River hydraulic model, described below.

1996 Full Flood Extent

As stated above, the Metro Title 3 map does not include all of the 1996 flooded area. Areas that were not in the map include South Waterfront, the Rivergate industrial area near Smith and Bybee Lakes and the ODOT blocks in Portland's Central Eastside. In order to more fully understand the full extent of potential flooding and future flood risk, the full 1996 flood extent was referenced during the development of the Floodplain Resilience Plan proposals.

U.S. Army Corps of Engineers 2022 Lower Willamette River Hydraulic Model

The hydrologic and hydraulic models that serve as the basis of the FEMA-mapped floodplains on the Willamette River in Portland were developed in the 1970s. These models have not been significantly updated in the last four decades. In the intervening years, there has been significant development in the Portland floodplains and in the floodplains of communities that are upstream of Portland. There have also been changes to riverbeds as a result of dredging, siltation and other natural processes. The existing FEMA floodplain maps do not reflect these changes.

Similarly, as described above, the Metro Title 3 map (known as the 1996 Flood Inundation) is based on an aerial photo the day after the peak of the flood and does not include robust data on the flood elevations of the event. Currently, the Bureau of Development Services estimates the 1996 flood elevation based on Willamette River and other stream gauge data available at the time. As with the

100-year floodplain, the 1996 Flood Inundation map does not take into account current topography, bathymetry and development patterns.

The United States Army Corps of Engineers is working, in collaboration with the Oregon Silver Jackets, on a hydraulic model to estimate current floodplain extents taking into account existing river bathymetry, topography and development patterns. Silver Jackets teams have been established in a large number of states and, according to their website, state-based teams "bring together multiple state, federal, and sometimes tribal and local agencies to learn from one another and apply their knowledge to reduce the risk of flooding and other natural disasters in the United States and enhance response and recovery efforts when such events do occur."[1] The Oregon Silver Jackets Team is an interagency team of state and federal agencies, including the U.S. Army Corps of Engineers, FEMA, U.S. Geological Survey (USGS), Oregon Department of Land Conservation and Development (DLCD), Oregon Department of Geology and Mineral Industries (DOGAMI), and others.

The first draft of the U.S. Army Corps of Engineers 2022 Lower Willamette River hydraulic model is expected to be complete by the end of 2021 and will allow for updated estimates of the flood extents and elevations of 1996 flood event flows and the FEMA 100-year floodplains. The modeling effort will leverage available data sources, including updated Light Detection and Ranging (LiDAR) and bathymetric surveys, and hydrologic and hydraulic investigations conducted by the Army Corps as a part of the ongoing basin-wide study of the Columbia River supporting the Columbia River Treaty water management negotiations with Canada and tribal nations. This new mapping will better define which areas of Portland (and communities in the rest of the Lower Willamette) are likely to be susceptible to future flooding.

Once the model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to update the map and replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the Army Corps-modeled February 1996 flood extent and elevations. The Army Corps-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

---

[1] https://silverjackets.nfrmp.us/Home/About-The-Silver-Jackets-Program. Accessed October 29, 2021. The name "Silver Jackets" is used to represent that the individual team members wear different colors during emergency response but the "silver jackets" represent the "common mission of a single team of diverse agencies working together to reduce flood risk at the state level."

Additionally, the City will evaluate the potential for using the Army Corps model outputs to define a more accurate estimate of the 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not currently identified in the combined flood hazard area.

The City and Army Corps are working with FEMA on a timeline for formally adopting updated federal flood insurance rate maps that FEMA will use to implement the National Flood Insurance Program going forward. Adoption of the FEMA floodplain maps is expected to take up to five years. Once FEMA completes its process to adopt a new 100-year floodplain map of the Lower Willamette River, the city will update the combined flood hazard area accordingly.

Floodplain Functions

Development has brought drastic changes to Portland's floodplains through the addition of fill and the removal of native vegetation and alterations to hydrologic functions. Nonetheless, the vegetated area in the floodplain still serves important ecological functions. Shrubs, herbaceous vegetation and, most importantly, trees absorb and filter water that falls as precipitation, reducing surface runoff, siltation and other forms of pollution that would otherwise end up in streams and rivers. Floodplain vegetation stores and slows the flow of floodwaters. When vegetation in the floodplain is removed and replaced with impervious surfaces, the capacity to store and slow floodwater is lost, and the impact of flooding is exacerbated.

The volume of open space that is in the floodplain below the base flood elevation is also important, as it is able to fill with water when floods occur. When new structures or new soil is added to the floodplain, the water that would otherwise fill this space is displaced, which may put other sites at risk by changing the extent of the area that is subject to inundation.

In addition to the impacts on flood storage and flood water displacement, vegetation in the floodplain has a critical impact on the riverine habitat that is utilized by endangered runs of salmon and steelhead. Riparian vegetation provides shade, which is critical for keeping water temperatures in a range that is habitable to salmonids, and it is also a source of woody debris, which is a necessary component of salmon habitat.

B. Floodplain Characteristics and Demographics

Portland's floodplains are important areas in Portland's human environment. They are home to a diverse population from different socioeconomic backgrounds who live in a variety of housing typologies. Four percent of Portland's population lives in the floodplain, but the people that live there

are significantly more diverse than the city as a whole. The floodplain also plays a key role in Portland's economy. A large proportion of Portland's industrial employers are located in and around the floodplain. The jobs that are provided by these employers represent a significant percentage of the middle wage jobs that are available to non-college educated adults in the city.

Housing/development summary

The population living in the floodplain has been growing much faster than Portland's population overall. In fact, over the last 20 years, the majority of the growth in new housing units has occurred in the floodplain. Because there are still a number of vacant lots located in the floodplain with significant development capacity in key growth areas of Portland's Central City, such as the South Waterfront, the disproportionately large growth in housing in the floodplain is likely to continue into the future. While most of the growth in housing has occurred in high rise developments in the Central City, the floodplain also contains significant numbers of single-dwelling residential developments, particularly in the Johnson Creek watershed.

There is also significant variability in the affordability of the housing stock in the various watersheds. In 2019, the median price of a three-bedroom unit in the Columbia Slough floodplain was in a range that would be considered to be affordable for a household that was earning 80 percent of the median family income, which is significantly lower than the citywide median price. But median prices for similar units in the South Waterfront floodplain, where new housing growth has been the greatest, and other parts of the Central City were more than double what they are in the Columbia Slough floodplain.

Demographics summary

When taken as a whole, the racial and ethnic diversity of the floodplains are roughly comparable to Portland overall. Thirty percent of Portlanders identify as people of color. But there is significant variability in the diversity of populations in the different watersheds. The Columbia Slough and Johnson Creek watersheds are made up of 36 and 39 percent, respectively, of people of color. Though the percentage of people of color in the Columbia River watershed is lower than the city as a whole (26 percent vs, 29 percent), it represents the large total number of people of color, when compared with all of the other watersheds. The remaining watersheds are comprised of a smaller percentage of people of color than the city as a whole.

In addition to being among the most diverse of the city's watersheds, the Columbia Slough and the Columbia River floodplains have some of the largest percentages of residents that earn less than 80 percent of the median household income (55% and 58%, respectively). Other watersheds have low-income population percentages that are lower than the Portland citywide average, which is 45 percent.

Diversity in language and ethnic origin of immigrant populations in the Floodplain Resilience Plan watersheds also varies widely. The Columbia Slough and Columbia River watersheds have significant

populations of Spanish and Russian speaking immigrants, as well as immigrants of Laotian and Ethiopian origin. In the Fanno Creek watershed, there are significant Ukranian and Spanish-speaking immigrant communities. The Tryon Creek watershed is the least diverse but it does have a significant Japanese immigrant community.

C. Key Drivers of City's Floodplain Management Updates

Development of the City's 5-year work plan was initiated in the wake of the 2016 FEMA BiOp that was issued by the National Marine Fisheries Service, which found that the FEMA NFIP was being administered in a way that conflicted with the Endangered Species Act and, therefore, jeopardized the continued existence of threatened and endangered runs of salmon and steelhead. As a result, the City of Portland is required to better manage floodplain development by adopting new regulations to comply with the recommendations of the FEMA BiOp. Preserving habitat in the floodplain and reducing future flood risk for residents and employees in the floodplain is also consistent with a large number of Portland's existing goals, objectives and policies.

Federal Requirements and Legal Action

All recipients of federally backed mortgages and loans for the purchase of floodplain properties are required to obtain flood insurance. The NFIP is a federal government-backed program that provides flood insurance policies to the owners of properties in floodplains that are relatively low cost. Property owners may only become eligible for NFIP loans if their governing jurisdiction voluntarily enrolls in the NFIP program and adopts a set of policies and programs that meet or exceed minimum standards established by the National Flood Insurance Act. If jurisdictions adopt regulations that exceed minimum requirements, they may earn points in FEMA's Community Rating System program, which allows residents to become eligible for additional discounts on their NFIP policies. Portland has been a participant in the NFIP since 1980 and the Community Rating System since 2001. As a result of floodplain protection measures implemented by the City of Portland, Portlanders currently receive a 25 percent discount in their insurance rates.

The FEMA BiOp was issued in response to a lawsuit that was filed against FEMA by local and national plaintiff organizations that claimed that the NFIP was being administered in the State of Oregon in a way that negatively impacted the habitat of threatened and endangered runs of salmon and steelhead. The program was deemed likely to jeopardize the continued existence of those salmon and steelhead, in violation of section 7 of the Endangered Species Act. The FEMA BiOp included a Reasonable and Prudent Alternative (RPA) with six constituent "elements" that recommended actions for FEMA to take to bring local floodplain management into compliance with the Endangered Species Act. The overall aim of implementing the RPA elements is to achieve no-net-loss in floodplain habitat and floodwater storage in the floodplain.

FEMA has developed a Draft Implementation Plan that includes proposed NFIP updates to ensure the long-term compliance of the project with the Endangered Species Act. FEMA is at the early stages of a formal National Environmental Policy Act (NEPA) review of the framework. Once the NEPA review is complete, communities will be required to implement the final guidance to maintain access to the NFIP. The proposed framework includes four available compliance pathways that range from complete avoidance of new development in the floodplain to allowing new development only with mitigation for floodplain impacts. FEMA's Draft Implementation Plan can be found at https://oregonnfip.org.

The Floodplain Resilience Plan recommendations described below draw on the components of the four proposed pathways, as well as the original FEMA BiOp. The Floodplain Resilience Plan recommendations are expected to meet the intent of the FEMA BiOp by ensuring no-net-loss to floodplain habitat and flood storage over time.

Endangered and Threatened Species Recovery

There are 13 threatened or endangered salmon and steelhead species that have been found in Portland's waterways. Runs of these anadromous fish species have been in serious decline throughout the Pacific Northwest for a century and a half, since the region came under the jurisdiction of the United States and the arrival of European American settlers, who displaced many indigenous peoples. Overfishing and the installation of dams had some of the biggest impacts on native fish populations, but declines have continued as ongoing development and resource extraction in floodplains and riparian areas has further degraded the habitat. Even though existing regulations in communities may require that impacts to vegetation and fill in the floodplain must be mitigated, one of the key findings of the FEMA BiOp was that, in practice, the mitigation rarely succeeded in replacing the habitat functions that were removed to facilitate development. The recommended actions in the FEMA BiOp, including the identified habitat and flood storage capacity mitigation ratios, were determined to adequately avoid future impacts to threatened and endangered salmon and steelhead species.

City Goals

Portland's *2035 Comprehensive Plan* and other existing plans and policies direct City bureaus to achieve a number of goals that pertain to floodplain functions and habitat. Flood management is specifically highlighted, as is resilience, in regard to natural hazards, urban form and environmental function. Other goals that are applicable to floodplains and floodplain regulation are those that promote human health and the environment and healthy watersheds. *2035 Comprehensive Plan* goals also highlight the importance of natural areas and environmental equity. Regulatory updates that limit future impacts to riparian vegetation and prevent the loss of flood storage capacity will further implementation of *2035 Comprehensive Plan* goals and policies. More detailed information on key City goals, objectives and policies is contained in Chapter III. Planning and Policy Context.

III. Planning and Policy Context

As described in previous sections, the FEMA BiOp and Draft Implementation Plan provide recommendations on necessary updates to floodplain regulations that will protect threatened and endangered salmon and steelhead and their habitat. At the same time, Portland is obligated by other federal, state and regional requirements to manage and regulate floodplains and riparian areas to protect and promote human health, wellbeing and livelihood and environmental health and function. The recommendations in the FEMA BiOp are consistent with applicable state and regional planning requirements to protect natural resources and direct new development away from flood hazard areas. This chapter provides a brief summary of the key planning and policy documents at the three levels that guide the Floodplain Resilience Plan recommendations.

A. Federal

FEMA and Flood Management

The National Flood Insurance Act was passed in 1968 and amended with the passage of the Flood Disaster Protection Act in 1973, the National Flood Insurance Reform Act of 1994, and the Flood Insurance Reform Act of 2004. These laws established the requirement for the owners of properties that are located in floodplains to acquire flood insurance and led to the establishment of the NFIP. They authorized FEMA to map floodplains and to determine the extent to which individual properties are at risk of flooding. These acts set out the minimum floodplain management requirements that jurisdictions must implement for their residents to be eligible to participate in the NFIP.

Endangered Species Act

The Endangered Species Act was passed in 1973 with the intention of preventing the extinction of threatened and endangered species of plants and animals. The Endangered Species Act is administered by the Fish and Wildlife Service and the National Marine Fisheries Service, who have the authority to identify species that are in danger of going extinct in specific areas. Once species are listed as threatened or endangered, these agencies are tasked with identifying and protecting habitat that is critical to species survival. Section 7 of the Endangered Species Act requires federal agencies to consider the impacts that rulemaking or programs have on threatened and endangered species, and to avoid taking actions that would impair critical habitat or jeopardize the continued existence of species that are listed as threatened or endangered. The City of Portland must adopt regulations that are consistent with the NFIP in order for Portland residents to continue to have access to the program, and the NFIP must comply with the Endangered Species Act.

B. State

State Planning Goals 5, 6, 7, 15

Local jurisdictions in the State of Oregon are required to comply with 19 Statewide Planning Goals, 4 of which are applicable to floodplain management and regulations. Goal 5 requires local governments to inventory natural resources and apply an Economic, Environmental, Social and Energy analysis to natural resources to balance the need for development and natural resource protection. Goal 6 requires local governments to consider the impact that development has on air, land, and water resources, to buffer and separate uses, and to comply with state and federal water quality regulations. Goal 7 requires local governments to identify natural hazards, such as areas that are likely to flood, and to apply appropriate regulations to areas with a high risk of natural hazard impacts. Goal 15 applies to the Willamette River Greenway. It requires governments of municipalities that border the Willamette River to manage the waterfront to conserve and maintain habitat, and to provide for economic and recreational uses.

C. Regional

Metro Titles 3 and 13

Metro is the regional government that has been tasked with coordinating land use planning within the Portland Metropolitan Region. Metro created the Urban Growth Management Functional Plan, which consists of code that is divided into 14 titles, to ensure that local governments that are located within its jurisdiction are in compliance with State Land Use Planning Goals. Two chapters apply directly to floodplain management, Title 3 and Title 13.

Title 3 pertains to State Land Use Planning Goals 6 and 7. Title 3 stipulates that in addition to adopting floodplain regulations that apply the FEMA 100-year floodplain, local governments are required to apply floodplain regulations to areas that were inundated by the 1996 flood, except for specific areas of Portland's Central City and the North Reach of the Willamette that were excluded from the Metro-adopted floodplain maps. Metro has determined that Portland is in substantial compliance with Title 3.

Title 13 pertains to State Land Use Planning Goals 5 and 6. It requires that protections be applied to river and stream riparian areas and wildlife habitat areas. Local governments within Metro's jurisdiction must adopt regulations that require mitigation for impacts to significant natural resources that have been inventoried by Metro. Metro has found that with the adopted Environmental Overlay Zone program and Natural Resource Inventory, Portland is in substantial compliance with Title 13.

D. City

Goals, objectives and policies

A variety of established City goals, objectives and policies serve as the foundation for the Floodplain Resilience Plan proposals. Of these, the *2035 Comprehensive Plan* (2016) and *Climate Action Plan* (2015) both provide important guidance for this work. The list below highlights a number of the important goals, objectives and policies contained in these documents.

2035 Comprehensive Plan

Goals

Goal 4.D: Urban resilience. Buildings, streets, and open spaces are designed to ensure long-term resilience and to adjust to changing demographics, climate, and economy, and withstand and recover from natural disasters.

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 8.F: Flood management. Flood management systems and facilities support watershed health and manage flooding to reduce adverse impacts on Portlanders' health, safety, and property.

Policies

Policy 3.73, Habitat. Enhance the roles of the Willamette and Columbia rivers and their confluence as an ecological hub that provides locally and regionally significant habitat for fish and wildlife and habitat restoration opportunities.

Policy 3.80, Willamette River Central Reach. Enhance the role of the Willamette River Central Reach as the Central City and region's primary riverfront destination for recreation, history and culture, emergency response, water transportation, and as habitat for fish and wildlife.

Policy 4.77, Hazards to wildlife. Encourage building, lighting, site, and infrastructure design and practices that provide safe fish and wildlife passage, and reduce or mitigate hazards to birds, bats, and other wildlife.

Policy 4.79, Natural hazards and climate change risks and impacts. Limit development in or near areas prone to natural hazards, using the most current hazard and climate change-related information and maps

Policy 4.81, Disaster-resilient development. Encourage development and site-management approaches that reduce the risks and impacts of natural disasters or other major disturbances and that improve the ability of people, wildlife, natural systems, and property to withstand and recover from such events.

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

> **7.4.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 7.6, 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 7.9, 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 7.14, Natural hazards. Prevent development-related degradation of natural systems and associated increases in landslide, wildfire, flooding, and earthquake risks.

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 7.21, 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.*

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 7.31. 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 7.35, 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 7.38, 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 7.45. 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 7.51 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 8.76, Flood management. Improve and maintain the functions of natural and managed drainageways, wetlands, and floodplains to protect health, safety, and property, provide water conveyance and storage, improve water quality, and maintain and enhance fish and wildlife habitat.

Policy 8.77, Floodplain management. Manage floodplains to protect and restore associated natural resources and functions and to minimize the risks to life and property from flooding.

Policy 8.97, Natural resources. Preserve, enhance, and manage City-owned natural areas and resources to protect and improve their ecological health, in accordance with both the natural area acquisition and restoration strategies, and to provide compatible public access.

Climate Action Plan

Objective 15. Climate Change Preparation Reduce risks and impacts from flooding and landslides by preparing for warmer winters with the potential for more intense rain events.

> **Action 15A Floodplains.** Increase community and ecological resilience by working with local, state and federal partners to update floodplain data, maps, policies and programs to reflect climate change projections and variability and improve floodplain function.
>
> **Action 15B Managing Stormwater Naturally.** Protect and restore streams, wetlands and floodplains, reduce paved surfaces, utilize green infrastructure, update stormwater plans, manuals and drainage rules and prepare to manage increased stormwater runoff.

2020 Climate Emergency Declaration

On June 30, 2020, Portland City Council adopted a Climate Emergency Declaration[2] that recognized the accelerating climate emergency and its impacts on frontline communities, including Black and Indigenous people, people of color, immigrants, refugees, children and youth, women, people living with disabilities, the elderly, people experiencing homelessness, and low-income people. The declaration acknowledged that "protecting, restoring, and managing our urban natural resources – including rivers, streams, wetlands, floodplains, trees, and unique habitats – mitigates risks, sequesters carbon, and builds resilience to the impacts of climate change, provides benefits to human physical and mental health, protects private property and public infrastructure, and supports the intrinsic value of natural ecosystems and biodiversity."

In response to the importance of protecting, restoring, and managing our urban natural resources, including rivers, streams, and floodplains, the declaration directed BPS to do the following:

- Work collaboratively with Bureau of Environmental Services, Portland Parks & Recreation, as well as other City bureaus, Metro, and state and federal agencies to incorporate information from climate modelling related to hydrology and flooding for the metro area in the update of regulations that protect and restore flood areas to reduce the impacts of future flooding on property, public infrastructure, and public health, and support recovery of threatened and endangered species.

[2] https://www.portland.gov/sites/default/files/2021/climate-emergency-declaration-resolution-37494-june-30-2020.pdf

IV. Planning Process

A. Overview

Prior to and since the release of the NFIP Biological Opinion in 2016, the City of Portland has been preparing for the floodplain regulatory updates that are necessary to ensure protections for threatened and endangered species in Portland's waterways. Around the time of the release of the FEMA BiOp, an inter-bureau team was established to evaluate its recommendations and begin the process of developing the City's response. The inter-bureau team was comprised of representatives from eight city bureaus:

- City Attorney (CAO)
- Development Services (BDS)
- Environmental Services (BES)
- Government Relations (OGR)
- Office of Management and Finance (OMF)
- Parks & Recreation (PP&R)
- Planning and Sustainability (BPS)
- Prosper Portland (Prosper)

Additionally, outreach to and coordination with other bureaus not on the inter-bureau team was conducted at various point in this effort. These bureaus include the bureaus of Emergency Management (PBEM), Housing, and Water, among others.

From the beginning, the inter-bureau team recognized the importance of a multi-faceted strategy for meeting the intent of the BiOp, including regulatory updates, allowing the use of mitigation bank credits to offset floodplain development impacts, and an expanded floodplain restoration program. This approach was built upon existing policies and programs, such as the BPS River and Environmental Planning Program and the BES stormwater management and watershed services programs. Generally, the overall strategy is governed by the adopted the *2035 Comprehensive Plan*'s guiding principles, goals, and policies, with an emphasis on equity and inclusion (see Figure 1).

Figure 2. Conceptual framework of the City's FEMA BiOp compliance strategy

B. Floodplain Management 5-year Work Plan

In September of 2019, the directors of the eight City bureaus that were part of the inter-bureau team approved a 5-year work plan that established the overall approach to updating floodplain regulations and meeting the intent of the FEMA BiOp. There were two general categories of directives in the work plan. To meet federal requirements, while also promoting adopted City goals and policies and supporting existing bureau work plans, the work plan aims to achieve the following in Portland' floodplains (including the FEMA-designated 100-year floodplain and 1996 flood extent):

- Maintain current flood storage and floodplain habitat through updates to development regulations to support no-net-loss of flood water storage and floodplain habitat function.
- Restore and increase floodplain habitat and improve resilience through continued and ensured protection of natural areas and improvement of degraded.

Additionally, to support City goals and policies, including minimizing and off-setting impacts to people, housing, and job development, and preparing to manage the effects of and adapting to climate change, implementation of the work plan will apply an equity lens and include equity analyses of all major tasks, complete thorough conditions analyses, seek to create cross-bureau program connections, explore new program needs and prepare technical analyses to better understand and communicate flood risk.

The work plan includes two key task areas: Task Area 1 is focused on updating the City's regulations to be consistent with the FEMA BiOp and Task Area 2 aims to strengthen the City's restoration program to ensure the overall effort achieves a no-net-loss standard for flood water storage and floodplain function.

Regulations (Task Area 1) is focused on improving the array of regulations that govern how and to what extent floodplains are developed in Portland. To maintain flood storage and floodplain function, regulatory updates should:

- Preserve floodplains as floodplains and allow them to flood periodically to support biodiversity and the emergence of off-channel habitat, which can help reduce river velocity and provide safe places for wildlife.
- Provide natural river and stream banks with vegetation and natural debris that provide spawning and rearing grounds for fish and help keep the water cool.
- Keep pollutants such as mercury, copper, cadmium and zinc; and pesticides, herbicides, fertilizers and gasoline from entering rivers and streams.

To that end, it was recognized that amendments to Title 33 (Planning and Zoning), Title 24 (Building), and Title 17.38 (Drainage and Water Quality) would be needed. Through these updates, flood storage and floodplain function will be protected by:

- Limiting the addition of impervious area created with development.
- Requiring the planting of appropriate trees and shrubs.
- Requiring all fill (whether dirt fill or the addition of buildings) to be mitigated.
- Carefully designing reconstructed river and stream banks to avoid fish stranding and by limiting floodplain development, particularly near river and stream banks.

These updates will be made in the Zoning Code and associated maps; Chapter 24.50, Flood Hazard Areas, in Title 24, Building Regulations; and the Stormwater Management Manual (SWMM) and, potentially, other components of Title 17. Additionally, a tracking system will be needed to monitor floodplain development so that the City can provide required data to FEMA annually.

In support of this work plan task, the Floodplain Resilience Plan is focused on updates to Zoning Code requirements and maps, as well as to Chapter 24.50 requirements in Title 24. The changes will apply to properties throughout the City's jurisdiction, though the scope of applicable changes varies based on site-specific characteristics.

Restoration (Task Area 2) focused on identifying and restoring important floodplain sites throughout the city. In the FEMA BiOp, the National Marine Fisheries Service found that maintaining the current level of floodplain habitat and flood storage is not enough to keep salmon and steelhead populations viable. To help salmon and steelhead recover, it is necessary to improve conditions, which is described as providing a net benefit for the species over time. The work plan determined that the following steps are needed:

- Increase the amount and quality of floodplain area and habitat that supports salmon and steelhead.
- Quantify the anticipated improvements to habitat based on research, analysis, monitoring, and the best available science.
- Ensure that appropriate restoration projects are likely to occur.

The Floodplain Resilience Plan supports strengthening and expanding the City's restoration program through the updates and future actions identified in Chapter V and VI below.

C. Intergovernmental Coordination

Since the release of the FEMA BiOp in 2016, City staff have been actively engaged in discussions with FEMA and the State of Oregon Department of Land Conservation and Development (DLCD) to understand and provide feedback on drafts of implementation guidance for local jurisdictions along the way. Starting in the summer of 2016, City staff met with FEMA and DLCD staff to review the components of the FEMA BiOp and understand its implications for the City of Portland. Since then, the City inter-bureau team has met with FEMA staff every six months or so to discuss the City's direction and gather feedback from FEMA staff.

Early on, FEMA collaborated with DLCD to establish a number of work groups to address different concerns and considerations with the implementation of the FEMA BiOp. The work groups focused on a number of topics, including process (permitting), assessment and mitigation of habitat impacts, legal considerations (including Endangered Species Act compliance and state law), and mapping. Additionally, a separate working group focused on business concerns, including ports and other waterfront developments, was established. City staff participated and contributed to all of these working groups. A number of memos highlighting implementation concerns and challenges were generated from these work groups.

After the conclusion of these work groups, FEMA determined that additional input was needed to best-tailor their recommendations to the unique requirements and characteristics of Oregon communities. To that end, a separate engagement process was initiated in early 2020 to build on the outcomes of the previous work groups and gather additional input to shape potential implementation pathways for compliance with the FEMA BiOp. This engagement process has continued through 2020 and 2021 (with some delays due to the challenges of the COVID-19 pandemic). City staff have attended all of these engagement events and provided feedback on proposals as they have been released.

Collectively, these discussions and meetings, along with FEMA and DLCD resources and drafts of implementation guidance released throughout the process, have helped shape the recommendations in this document.

Tribal Governments

In 2012, the Portland City Council adopted Resolution #36941 to formalize its intergovernmental relationship with tribal partners. The Resolution documented the City's policy to implement programs and activities to honor tribal treaty rights, federal tribal trust responsibilities and traditional native religious beliefs. It also affirmed the City's commitment to tribal governments and partnering on economic, environmental and social initiatives. The resolution acknowledged that the protection of cultural and natural resources as well as "customary use" locations are critical to the preservation of treaty rights, cultural heritage and the pursuit of traditional lifeways for present and future generations.

Portland's rivers, streams and floodplains and the salmon, steelhead, lamprey and other species they support are significant cultural resources for tribal governments and play an important role in their members' traditional lifeways. Therefore, collaboration with tribal governments is a key component of the Floodplain Resilience Plan. Prior to the release of this Discussion Draft, BPS staff reached out to tribal governments with a summary of the proposal and invited them to engage in the process. As the project moves forward, additional efforts will be made to gather input from tribal government representatives and staff.

D. Public Engagement

Ensuring effective public engagement and meaningful input is a tenet of the Floodplain Resilience Plan. Public engagement efforts will include a variety of opportunities for stakeholders to understand the project proposals and provide feedback on them both directly to staff and to decision makers, including the Planning and Sustainability Commission and City Council. Feedback on this Discussion Draft will be provided directly to project staff and updates will be made in a Proposed Draft that will be considered by the Planning and Sustainability Commission. The Planning and Sustainability Commission will hold at least one hearing and work session to consider recommended amendments to the plan. Once those amendments have been incorporated into a Recommended Draft it will be considered by the City Council. City Council will also hold at least one hearing and work session to consider amendments to the plan prior to its official adoption.

Public engagement efforts will be guided by the City of Portland Public Involvement Principles, adopted by the Portland City Council in August 2010. The principles, listed below, represent a road map to guide government officials and staff in establishing consistent, effective and high-quality community engagement across Portland's City government (http://www.portlandoregon.gov/oni/article/312804):

Partnership: Community members have a right to be involved in decisions that affect them. Participants can influence decision-making and receive feedback on how their input was used. The public can recommend projects and issues for government consideration.

Early Involvement: Public involvement is an early and integral part of issue and opportunity identification, concept development, design, and implementation of City policies, programs, and projects.

Building Relationships and Community Capacity: Public involvement processes invest in and develop long-term, collaborative working relationships and learning opportunities with community partners and stakeholders.

Inclusiveness and Equity: Public dialogue and decision-making processes identify, reach out to, and encourage participation of the community in its full diversity. Processes respect a range of values and

interests and the knowledge of those involved. Historically excluded individuals and groups are included authentically in processes, activities, and decision- and policy-making. Impacts, including costs and benefits, are identified and distributed fairly.

Good Quality Process Design and Implementation: Public involvement processes and techniques are well-designed to appropriately fit the scope, character, and impact of a policy or project. Processes adapt to changing needs and issues as they move forward.

Transparency: Public decision-making processes are accessible, open, honest, and understandable. Members of the public receive the information they need, and with enough lead time, to participate effectively.

Accountability: City leaders and staff are accountable for ensuring meaningful public involvement in the work of city government.

The Discussion Draft public engagement period will include a variety of opportunities for stakeholders to learn about the project and provide feedback on the plan's proposals. An important part of this engagement effort will be reaching out to potentially-impacted communities to understand potential impacts on them and identify programs or other approaches address potential impacts, especially on low-income owners and renters, Communities of Color, the urban Native community and other underserved communities.

The Discussion Draft public engagement process will begin in November 2021 and go through January 2022. Engagement opportunities will include, but not be limited to, the following:

- Project introduction open houses to describe the project and answer initial stakeholder questions.
- Project helpline and dedicated one-on-one appointments for people to speak to City staff directly and discuss property-specific questions or concerns.
- Presentations to stakeholder groups, including neighborhood associations, community-based organizations, environmental organizations, and others.
- Focus group sessions with key stakeholders identified through previous outreach efforts, including those potentially impacted by the proposed changes, to dig deeper into concerns and potential impacts and to identify potential programs and approaches to address them.

V. Overview of Recommendations

To ensure that the City of Portland continues to be in compliance with the FEMA BiOp in floodplains throughout the city, a number of updates are included in the Floodplain Resilience Plan. Proposals include:

1) Modifications to relevant regulatory maps to apply appropriate regulations to all of the city's floodplains;

2) Updates to building regulations in the city's flood hazard areas, as well as the applicable floodplain regulations in the South Waterfront, Central City, Tryon Creek, Fanno Creek and non-industrial lands subject to the Environmental Conservation overlay zones; and

3) Expansion of the Bureau of Environmental Services restoration program to include mitigation banks to provide another option for mitigating development impacts in the floodplain.

Together, these proposals will continue progress toward compliance with the FEMA BiOp and further the City's commitment to contribute to the restoration of endangered and threatened salmon and steelhead species in its waterways.

A. Mapping

Background/Overview

Zoning Code maps and building code maps, found in titles 33 and 24, respectively, identify the locations where relevant floodplain regulations apply. Zoning Code maps identify where overlay zones with floodplain-specific requirements apply. Title 24 maps, including a number of maps referenced in Chapter 24.50, Flood Hazard Areas, and Figure 1, located at the end of Title 24, identify floodplains regulated by the chapter and their constituent areas where additional regulations may apply.

The FEMA BiOp and Draft Implementation Plan contain a number of recommendations related to where development activities should be managed to limit impacts on threatened and endangered salmon and steelhead species. Most importantly, in recognition of the importance of all floodplains in providing flood storage and fish habitat, the FEMA BiOp recommends that development impacts be managed and mitigated in both undeveloped and developed floodplains. The FEMA BiOp also directed FEMA to require higher mitigation ratios for both floodplain habitat and storage capacity in areas closest to waterways, including in the high-hazard area (farthest landward extent of the floodway and 10-year flood interval) and the riparian buffer area, defined in the BiOp as floodplain areas within 170 feet of ordinary high water.

Additionally, the FEMA BiOp recognized the limitations of many existing 100-year floodplain maps and identified the updating of flood hazard maps as a key component of the RPA. In Element 3 of the RPA,

NMFS states that the "adoption of maps is prerequisite to effective management of flood-related hazards areas." NMFS also quotes a portion of the 2013 Community Rating System Coordinator's Manual (440-2) that asserts "the map a community uses for floodplain management can and should be updated frequently to account for annexations, new divisions, site-by-site analyses, better ground elevation data, and incorporation of new hazard data. To make the map more useful and easier to use, it should include detailed topography, building footprints, natural features and other data that can help relate the floodplain information to conditions on the ground and to other programs."

FEMA's 100-year floodplain map for the Willamette River is out of date because the large majority of the floodplain extent is based on a model completed in 1979. Since then, there has been significant development in the Portland floodplains and in the floodplains of communities that are upstream of Portland. There have also been changes to riverbeds as a result of dredging, siltation and other natural processes. The existing FEMA floodplain maps do not reflect these changes. As NMFS stated, effective floodplain management is contingent upon having up-to-date maps based on best available science.

The Army Corps of Engineers model of the Lower Willamette River, described in more detail on page 8, will incorporate recent river bathymetry, topography based on up-to-date Light Detection and Ranging (LiDAR) data, and current development patterns to determine the expected extent of flood events with flow characteristics similar to those in the existing FEMA 100-year floodplain and those known to have resulted in the 1996 flood event. A public draft of the Army Corps model is expected to be complete by the end of 2021.

Once the model is complete, the City will work with Metro to update the City's Title 3 Map to replace the existing 1996 Flood Inundation area with the Army Corps-modeled February 1996 flood extent and elevations. The Army Corps-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event.

Additionally, the City will evaluate the potential for using the Army Corps model outputs to define a more accurate estimate of the 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in areas prone to flooding but not currently identified in the FEMA 100-year floodplain or 1996 Flood Inundation area (based on the Army Corps model).

Proposed Regulatory Map Updates

To be consistent with the FEMA BiOp and Draft Implementation Plan and ensure that future floodplain development in the city adequately avoids or mitigates habitat and flood storage impacts, it is important to clearly identify those areas in relevant regulatory maps so that the appropriate requirements can be applied. To that end, the general recommendations included in the draft are the following:

1) Update Zoning Code maps to apply the Environmental Conservation overlay zone to both undeveloped and developed floodplains in the following areas:
    a. Taxlots in the Columbia Corridor but not in the Heavy Industrial (IH), General Industrial 2 (IG2) or General Employment (EG2) zones.
    b. Fanno Creek and Tryon Creek 100-year floodplains.
2) Apply the River Environmental overlay zone to all floodplains within the Willamette River Central Reach and add a Central Reach riparian buffer area map to chapter 33.475, River Overlay Zones, in the Zoning Code.
3) Add a new "Portland Flood Management Areas Map" to Chapter 24.50, Flood Hazard Areas.

Environmental Conservation Overlay Zone Maps

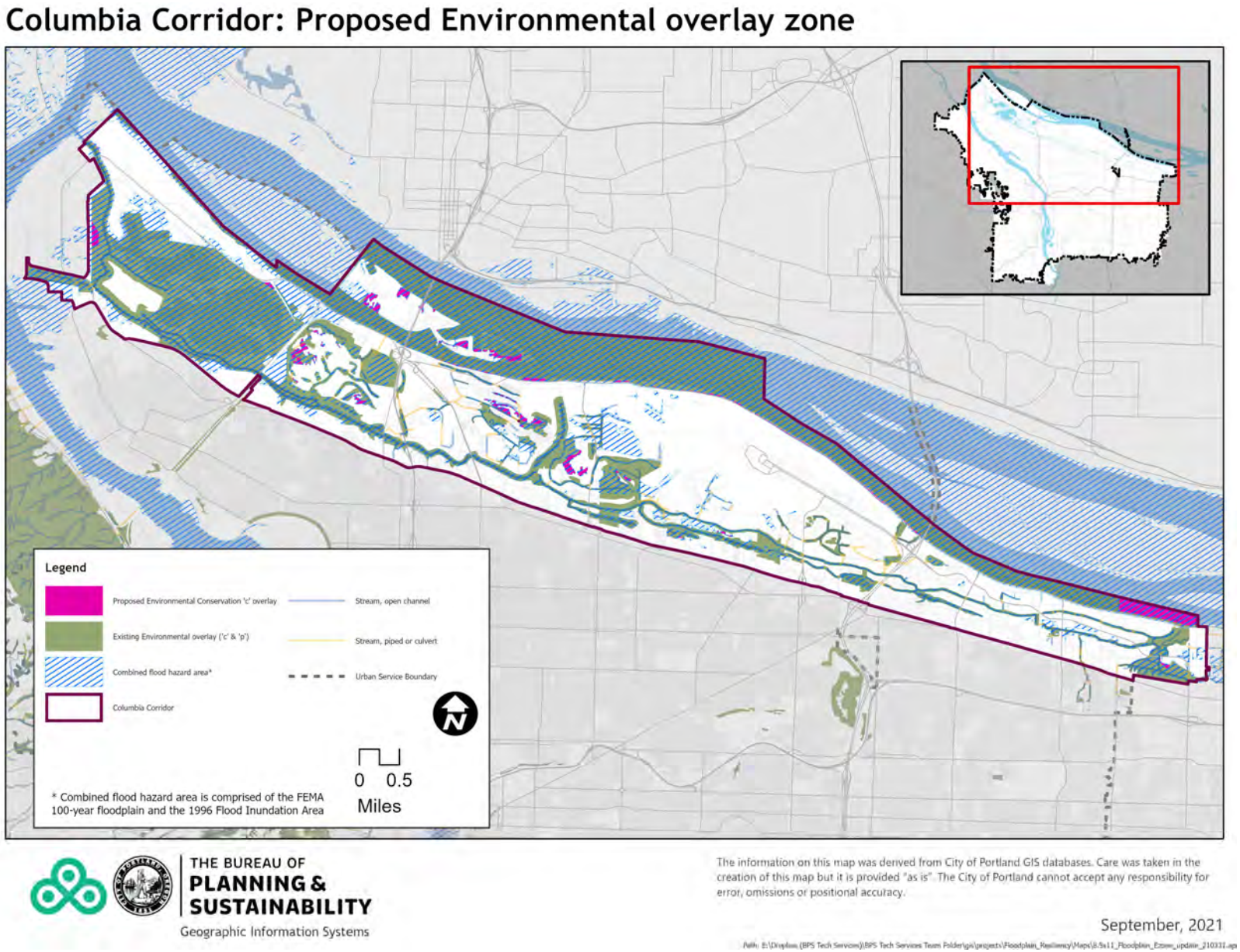
As described above, the FEMA BiOp and Draft Implementation Plan include guidance on addressing development impacts in both undeveloped and developed floodplains. To be compliant with FEMA guidance, the long-term goal is to apply environmental regulations to all of the city's floodplains. Environmental regulations have been applied to many of the city's floodplains through the Environmental and River overlay zones, but they are not consistently applied to all floodplains under the City's jurisdiction (which includes, for example, portions of unincorporated Multnomah County). As a part of this project, the term "combined flood hazard area" is proposed to be added to the Zoning Code and Title 24, Building Regulations. The combined flood hazard area will encompass the 100-year floodplain and the 1996 Flood Inundation Area, shown on the updated Metro Title 3 Map once it is finalized.

In addition to an updated 1996 Flood Inundation area, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain).

As shown in Map 1, there are a number of Columbia Corridor tax lots where at least some portion of the floodplain is not covered by the Environmental Conservation or Environmental Protection overlay zone. This project is proposing to apply the Environmental Protection overlay zone to the floodplain of properties within the Columbia Corridor that are not zoned Heavy Industrial (IH), General Industrial 2 (IG2) or General Employment (EG2). A future phase of the FEMA BiOp compliance effort will include code updates for these three zones (IH, IG2 and EG2) once the City adopts a new Economic Opportunities Analysis to show that there is sufficient industrial development capacity with the code changes. A reduction in industrial development capacity in this area now would move the City of Portland out of compliance with Statewide Planning Goal 9, Economic Development.

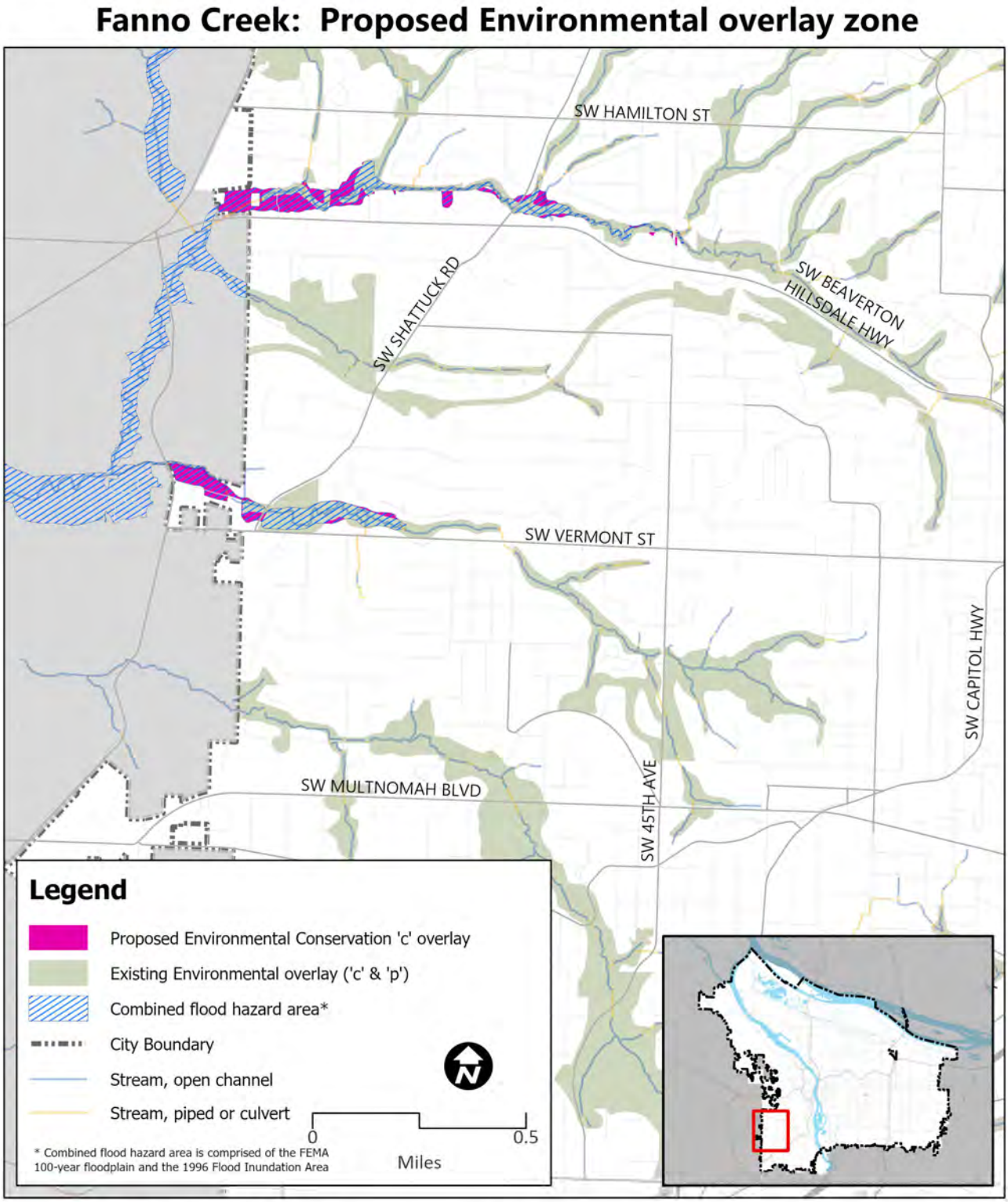
The Bureau of Planning and Sustainability has started to update the Goal 9-required Economic Opportunities Analysis. The updated Economic Opportunities Analysis is anticipated to incorporate and account for a handful of additional environmental regulations for floodplains and wetlands, among others. The Economic Opportunities Analysis is expected to be completed within the next two years. At that time, the Environmental Conservation or Environmental Protection overlay zone would be expected to be applied to all floodplains in the Columbia Corridor.

Map 1. Proposed Environmental Conservation Overlay Zone in the Columbia Corridor

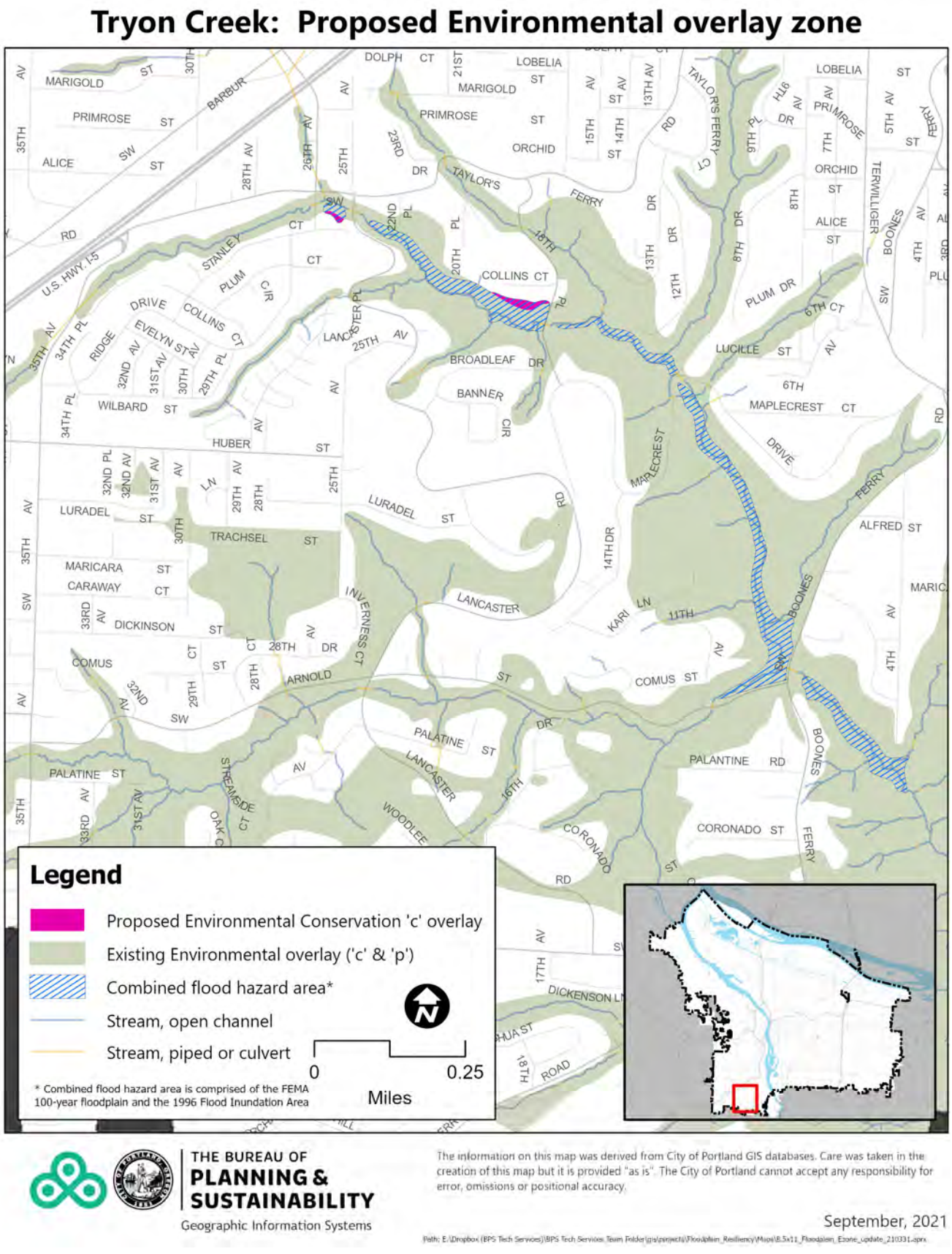


In addition to the changes proposed in the Columbia Corridor, the Environmental Conservation overlay zone will be applied to lands where the overlay zone is not currently applied in the Tryon Creek and Fanno Creek FEMA 100-year floodplain (see Map 2 and Map 3). (Note: the map of the 1996 Flood Inundation Area does not include Tryon and Fanno creeks.) The majority of this expansion will be within the Fanno Creek floodplain. The areas of expansion along Fanno Creek are a mix of developed and undeveloped portions of tax lots. Proposed expansions of the Environmental Conservation overlay zone along Tryon Creek are generally located on existing developed single-dwelling lots.

Map 2. Proposed Environmental Conservation Overlay Zone in the Fanno Creek floodplain



Map 3. Proposed Environmental Conservation Overlay Zone in the Tryon Creek floodplain



Central Reach Maps

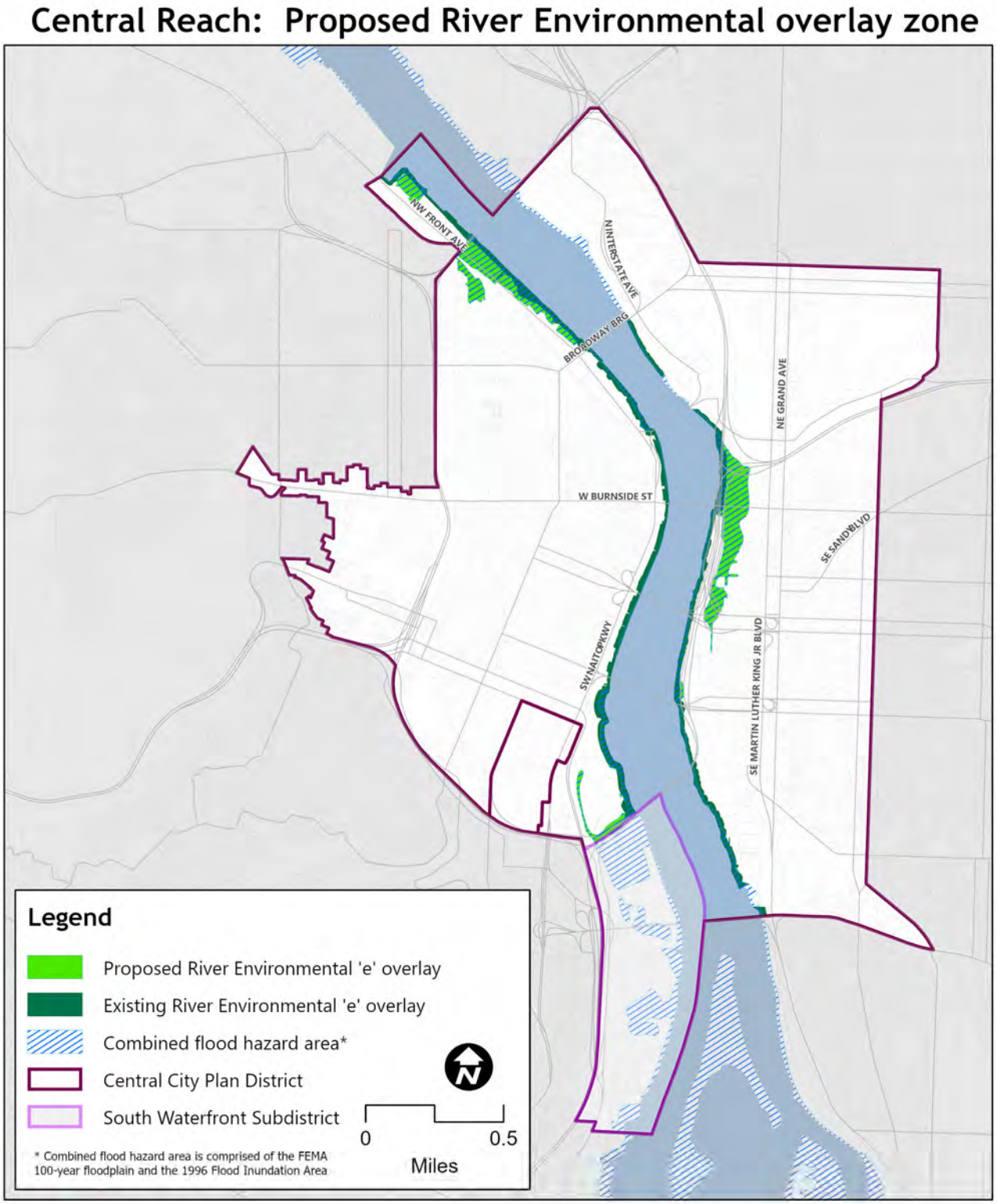
As stated above, the FEMA BiOp and Draft Implementation Plan recommend that development impacts be managed in both undeveloped and developed floodplains and established the importance of the riparian buffer area (floodplain areas 170 feet landward of ordinary high water). Adopted in December of 2020, the River Plan / South Reach applied the River overlay zones to the Willamette River South Reach and incorporated the floodplain regulations recommended in the FEMA BiOp. Updates in the plan included application of the River Environmental overlay zone to all South Reach floodplains and the implementation of riparian buffer area-specific requirements, among others.

The *Central City 2035 Plan*, originally adopted in 2016 and then re-adopted in 2018 after an appeal, applied the River overlay zones in the Willamette River Central Reach. At that time, the River Environmental overlay zone was generally applied to land within the 50-foot river setback but not to the remainder of the floodplain. Since the FEMA BiOp was released in the same year as the 2016 adoption of the *Central City 2035 Plan*, the plan did not fully address the FEMA BiOp or Draft Implementation Plan guidance.

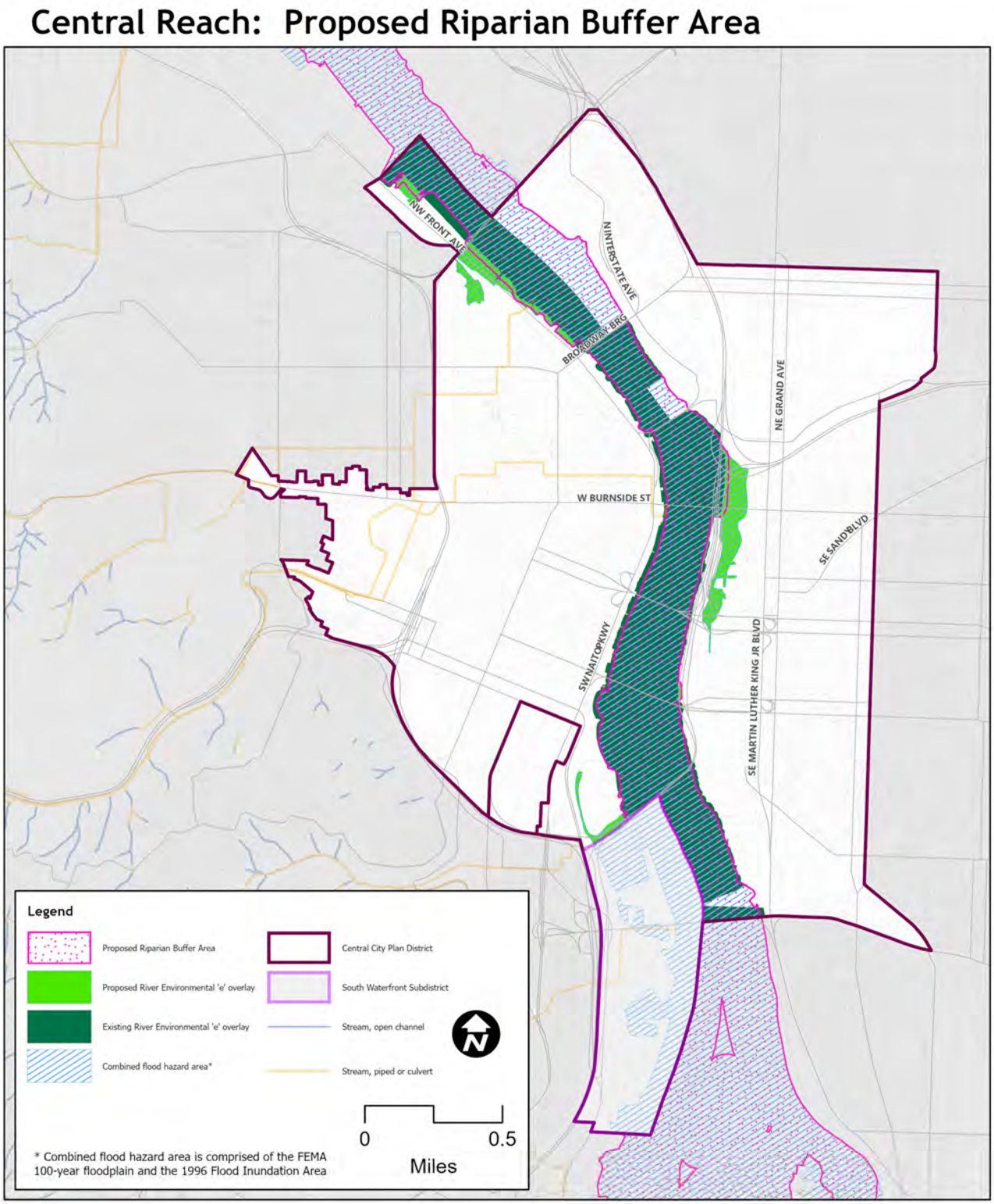
An expansion of the River Environmental overlay zone to encompass both developed and undeveloped Central Reach floodplains is proposed (see Map 4). Additionally, a Central Reach riparian buffer area map – similar to the existing South Reach riparian buffer map – is proposed to be added to the River Overlay Zones chapter (see Map 5). The draft Zoning Code map can be found in Chapter VI, Implementation.

These proposed map changes implement the FEMA BiOp and Draft Implementation Plan recommendations while also achieving greater consistency in the Willamette River Central and South reaches floodplain regulations.

Map 4. Proposed River Environmental Overlay Zone in the Willamette River Central Reach



Map 5. Proposed Riparian Buffer Area in the Willamette River Central Reach



THE BUREAU OF PLANNING & SUSTAINABILITY
Geographic Information Systems

The information on this map was derived from City of Portland GIS databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland cannot accept any responsibility for error, omissions or positional accuracy.

September, 2021

Path: E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Floodplain_Resiliency\Maps\8.5x11_Floodplain_Ezone_update_210331.aprx

Title 24, Chapter 24.50, Flood Hazard Area, Maps

The final proposed map amendment is the addition of a new "Portland Flood Management Areas Map" in Chapter 24.50 of Title 24. Title 24 contains the City's building regulations and addresses a wide variety of building requirements. Chapter 24.50, Flood Hazard Areas, provides specific guidance for how structures should be constructed – and what flood storage mitigation is needed – in flood hazard areas. A number of key updates are proposed for Chapter 24.50 to ensure compliance with the FEMA BiOp, including updates to the required compensatory excavation (cut) ratios required when fill or structures are placed in different areas of the floodplain, including the "high hazard area", riparian buffer area and elsewhere (see the Floodplain Code Amendments section below for more information on these updates). To provide clarity on these new requirements, the Portland Flood Management Areas Map includes the constituent floodplains of the combined flood hazard area (e.g., FEMA 100-year and 1996 Flood Inundation Area) and areas within the floodplain with additional cut/fill requirements, including the high hazard area and riparian buffer area (see Figure XX-1). The high hazard area is the farthest landward extent of the floodway and the 10-year flood interval. The draft Portland Flood Management Areas Map can be found in the proposed Title 24 Chapter 24.50 changes in Chapter V, Implementation.

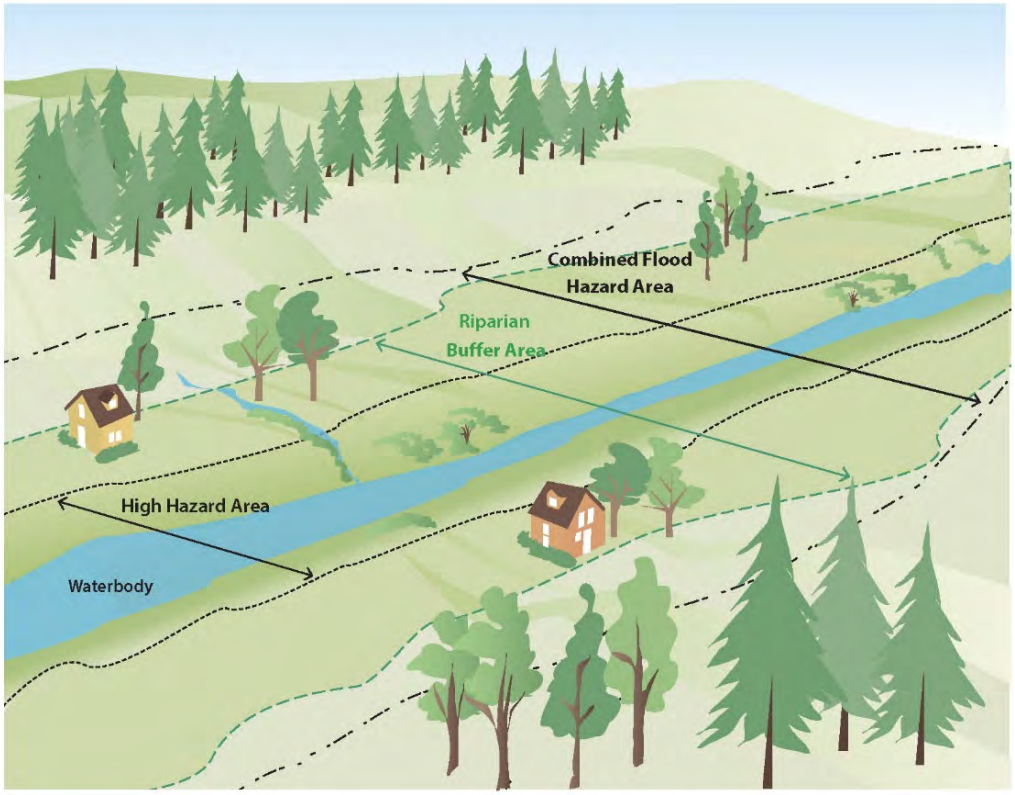


Figure 2 – Graphic showing the combined flood hazard area, riparian buffer area, and high hazard area.

B. Floodplain Code Amendments

Overview

The FEMA BiOp and Draft Implementation Plan provided clear recommendations on the updates to floodplain regulations needed to avoid impacts on threatened and endangered salmon and steelhead species. As stated previously, to comply with FEMA guidance, the City has established a long-term goal of applying environmental regulations to all floodplains, including already-developed and undeveloped floodplains. This effort began with the updates included in the River Plan / South Reach and will continue through this and subsequent phases. Proposed map updates were discussed in the previous section. These map changes are coupled with a number of amendments to the Zoning Code and Title 24 Chapter 24.50, Flood Hazard Areas, that modify habitat mitigation and flood storage requirements for floodplain development.

A property's Zoning Code designation guides how development can be conducted on the site and what mitigation, if any, must be completed to offset development impacts. A base zoning designation is applied to all properties in the city and establishes baseline regulatory requirements for development. There are no proposed changes to base zones in the Floodplain Resilience Plan. In addition to base zone requirements, a property may also be subject to the requirements of an overlay zone. Overlay zones are applied in addition to the base zone to account for unique aspects and priorities within a given area. A given parcel may have overlapping overlay zones applied in addition to the base zone, depending on a variety of considerations for the area. When an overlay zone regulation is more stringent than or in conflict with the base zone requirements, the overlay zone requirements take precedence and must be met.

The City of Portland has three primary environmental overlay zones: River overlay zones (River Environmental overlay), Greenway overlay zones (River Natural and River Water Quality overlays), and Environmental overlay zones (Protection and Conservation overlays). The River and Greenway overlay zones are applied along the Willamette River. The River overlay zones replaced the Greenway overlay zones in the Central Reach and South Reach as a part of the *Central City 2035 Plan* and *River Plan / South Reach*, respectively. The River Environmental overlay zone ensures that development impacts to important natural resources are avoided to the extent possible and, when impacts can't be avoided, mitigation is required. Any loss of habitat features and/or functions must be mitigated. As a part of the *River Plan / South Reach*, additional mitigation for development impacts in the South Reach riparian buffer area were established. The riparian buffer area encompasses land in the combined flood hazard area (i.e., the FEMA 100-year floodplain or 1996 Flood Inundation Area) that is within 170 feet of the top of bank. The River Environmental overlay zone mitigation requirements are consistent with the FEMA BiOp and Draft Implementation Plan. The North Reach of the Willamette River is still subject to the requirements of the Greenway overlay zones chapter (33.440).

The Greenway River General overlay zone is applied in the South Waterfront, though the requirements of the Greenway overlay zone chapter (33.440) do not apply. Instead, development in the South Waterfront River General overlay is guided by regulations in Zoning Code chapter 33.510.253, Greenway Overlay Zone in South Waterfront Subdistrict, in the Central City Plan District (33.510). Much of the South Waterfront combined flood hazard area is contained within the River General overlay zone and updates to the floodplain management requirements in South Waterfront are therefore proposed in the River General. Existing requirements within 33.510.253 are largely focused on proposed development within the South Waterfront Greenway Area, which includes the area from ordinary low water to 100 feet landward of top of bank. Land use reviews for proposed development in the South Waterfront Greenway must meet the requirements set out in 33.851, South Waterfront Greenway Review, instead of the Greenway Review process contained in the Greenway Overlay Zones chapter.

There are two Environmental overlay zones applied throughout the rest of the city, the Environmental Protection and Environmental Conservation overlay zones. The Protection overlay zone is applied to the most critical natural resources where new development and impacts should be avoided, except under rare circumstances. The Protection overlay zone is typically applied to open rivers, streams, drainageways and wetlands, as well as areas within roughly 50 feet of waterbodies. The Protection overlay zone may be applied to areas that provide unique upland habitat or are at a high risk of natural hazards like flooding, landslides or wildfire. The Conservation overlay zone is applied to significant natural resources where new development can be designed to minimize impacts to the resources and mitigation for unavoidable impacts can often be achieved through on-site actions. The Conservation overlay zone is typically applied to vegetated areas that are located more than 50 feet from open waterbodies. Development that minimizes impacts to natural resources may be permitted in the Conservation overlay zone but mitigation for impacts is required

Lastly, Title 24 contains the City's building regulations, which provide minimum performance standards to safeguard the health, safety, welfare, comfort, and security of occupants and users of buildings and structures. Chapter 24.50, Flood Hazard Areas, restricts or prohibits uses that are dangerous to health, safety, or property in times of flood or which result in increased flood heights or velocities. Chapter 24.50 also requires that uses and structures vulnerable to floods are adequately protected from flood danger at the time of initial construction. For example, the lowest habitable floor of buildings must be built above the FEMA 100-year base flood and the estimated 1996 flood elevations. In these areas, Chapter 24.50 also requires compensatory excavation (cut) that is equal to the volume of any fill placed in these flood areas. The protections of Chapter 24.50 improve the City's Community Rating System rating and therefore reduce insurance rates for floodplain properties.

Proposed Code Updates

There are a number of proposed updates for the regulations described in the previous section, including the River Environmental overlay, Environmental Conservation overlay, and Title 24 Chapter 24.50. A summary of these changes is provided below. The details of the proposed Zoning Code and Title 24 changes can be found in Chapter VI, Implementation.

There are no changes proposed for the Greenway overlay zones in this project. Updates to North Reach Greenway overlay zone regulations will be made as a part of a future River Plan / North Reach project.

Zoning Code Definitions

- Add a definition of "combined flood hazard area" to 33.910, Definitions, and replace references to specific floodplains (e.g., FEMA 100-year, 1996 Flood Inundation Area, etc.) with combined flood hazard area in a variety of Zoning Code chapters. The combined flood hazard area will be defined as the FEMA 100-year floodplain and the 1996 Flood Inundation Area. The City will evaluate the potential for using the forthcoming U.S. Army Corps of Engineers Lower Willamette River hydraulic model (draft for public review expected by the end of 2021) to define a more accurate estimate of the 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain).

  Adding this definition allows for the area to be referenced throughout the code and will allow for updates to the definition as better data becomes available. This will avoid the need to update every section of the code where floodplains are referenced in the future.

South Waterfront (as a part of 33.510, Central City Plan District)

- Update code so that South Waterfront greenway reviews (33.851) can be processed through a Type II procedure. When both design review and greenway review must be completed, a Type III procedure may still be required.

- Establish "General development standards" subparagraph (33.510.253.F.1.)
  - Move exterior lighting standards to this subparagraph so that they apply to all development in the Greenway River General overlay zone (g). These requirements are existing but were previously in the "South Waterfront Greenway Area" standards, though they were written to apply in all of the Greenway River General overlay zone. This amendment makes them apply throughout the River General overlay zone.

  - Add standards for removal or pruning of vegetation outside of the riparian buffer area but in the combined flood hazard area. These standards are similar to those in the River Environmental overlay zone, which is applied to the north and south of South Waterfront.

- Create separate "Greenway setback area development standards" subparagraph (33.510.253.F.2.), where the existing "South Waterfront Greenway Area" requirements will now be located.

River Overlay Zones

- Expand River Environmental overlay zone in the Central Reach to apply to developed and undeveloped floodplains, consistent with the Willamette River South Reach.
- Require "beneficial gain" standard for the Central Reach riparian buffer area (identified in a new map described in the previous section). The riparian buffer area includes land in the combined flood hazard area within 170 feet of ordinary high water. These riparian buffer area requirements are already applied in the South Reach. The same requirements will now be applied to the Central Reach. Beneficial gain is defined as no-net-loss in natural resource area or functional values and a significant improvement of at least one of three floodplain-related functional values: channel complexity, floodplain connectivity or floodplain complexity.

Environmental Overlay Zones (throughout the city)

- In the combined flood hazard area on lots not zoned Heavy Industrial (IH), General Industrial 2 (IG2) or General Employment (EG2), the following is proposed:
    - Limit vegetation that is allowed to be removed through exemptions.
    - Increase tree replacement requirements to a minimum 3:1 ratio.
    - Prohibit use of standards if a property line adjustment will result in a property entirely within the combined flood hazard area (similar to requirement for Environmental Protection zone).

See page 30 for more information about how floodplains in IH, IG2 and EG2 zones will be addressed in a future project.

Title 24 Chapter 24.50, Flood Hazard Areas

- New definition for "flood displacement" added to require compensatory excavation (cut) for the placement of fill (i.e., soil) and structures in the floodplain. Currently, compensatory excavation is only required for placement of fill.
- Compensatory excavation (cut) requirements increased for the high hazard area (2:1), riparian buffer area (1.5:1) and undeveloped floodplain (1.5:1) on all lots not zoned IH, IG2 or EG2. Already-developed floodplains will still be subject to balanced cut/fill requirements (1:1).
- Allow the use of mitigation bank credits to satisfy compensatory excavation (cut) requirements.

C. Restoration Projects and Mitigation Banks

Overview

To ensure that the City can achieve the no-net-loss standard required in the FEMA BiOp and fulfill City Council direction to contribute to the recovery of the species, regulatory updates will need to be combined with restoration and mitigation banking programs. An underlying assumption of the City's overall program – and FEMA's guidance – is that regulatory changes alone will not provide adequate protections or improvement in habitat over time. Therefore, a key component of the City's overall strategy is to achieve long-term preservation and protection of floodplain habitat by strengthening existing floodplain restoration programs and expanding options for mitigation banking to offset development impacts in the floodplain.

The Bureau of Environmental Services plays the primary role in floodplain restoration in the city. The Bureau designs and completes restoration projects throughout the city to help manage stormwater, support salmon recovery, reduce flooding, and improve habitat for plants, fish and wildlife species, including those that are considered threatened or endangered. Restoration work strives to repair the damage done to our environment and natural systems (like rivers and streams) by human development and activities, and protect people, property and city assets from flooding, especially in the face of climate changes.

The Bureau of Environmental Services frequently restores in-stream habitat and floodplains, focusing on floodplains that are at a high risk for small-scale, but frequent flooding and areas with high potential habitat for salmon spawning and rearing. Healthy, connected floodplains protect people, property and habitat from fast moving, polluted stormwater, provide safe places for fish and other aquatic life to seek refuge during a flood, and allow for infiltration that cleans and cools the water while also replenishing groundwater that provides important sources of stream flows during the hot, dry summer months. Typical floodplain habitat improvements include, but are not limited to, reconnecting rivers and streams to existing or newly restored habitat and removing fish passage barriers, creating or enhancing riparian wetlands, and providing complex spawning and rearing grounds, shallow water habitat, and shady, vegetated, slow-moving off-channel areas which offer cold water refugia for fish as they rear, migrate and spawn in and through Portland. These projects are often voluntary efforts to meet the bureau charter, mission, and values, and are guided by watershed and asset management plans and other bureaus' watershed priorities. Because these projects are mostly voluntary, the City cannot ensure FEMA that the projects will continue to happen over time. Because these projects are mostly voluntary, the City cannot provide certainty to FEMA that the projects will continue to happen over time.

Increased certainty on future restoration projects is necessary to achieve consistency with the FEMA BiOp and Draft Implementation Plan – and the Endangered Species Act, more generally. To do that, the City must institutionalize how restoration areas for Portland's 13 protected salmon and steelhead

species will be identified, acquired and restored, which is currently proposed through strengthening the City's charter. Adequate funding must be provided for acquisition and restoration of these sites and to ensure that the habitat benefits of the restoration program are quantified as a contributor to the City's overall FEMA BiOp compliance strategy, which are currently captured by BES' new Portfolio structure and process and in the City's Mitigation Action Plan.

In addition to a floodplain restoration program, increasing the availability of mitigation banks as an option for off-site mitigation of development impacts is an important step in providing additional flexibility in meeting expanded or increased mitigation requirements. Mitigation banks can be a more efficient option because they focus mitigation investments into larger mitigation projects designed and managed by professionals with long term stewardship obligations, as compared to on-site mitigation or other off-site options.

Mitigation banks may provide credits for habitat impacts and/or flood storage losses. There are three established mitigation banks within the City of Portland: the Linnton Mill restoration, the Harborton habitat restoration, and the Alder Creek restoration project. Harborton and Alder Creek are only available for impacts identified through a Natural Resource Damage Assessment (NRDA) process at this time. The Linnton Mill restoration is slated to provide credits to offset private development. Owners of the Linnton Mill restoration have applied for approval to sell credits for impacts related to Section 404 permits.

Because mitigation banks are typically large-scale, self-financed, and are intended to support regulatory market demands, effective planning and financing of mitigation banks can be complex and may sometimes benefit from or require a jurisdictional partner for feasibility.

Proposed Updates

Though availability of mitigation banks is currently limited, updates were made to the Zoning Code as a part of the *River Plan / South Reach* to allow for the use of mitigation banks for development impacts to existing habitat areas (in 33.475, River Overlay Zones, and 33.865, River Review). As described in the Floodplain Management section above, proposed updates to Title 24 Chapter 24.50 provide for the use of mitigation bank credits to meet the compensatory excavation (cut) requirements within the different portions of the floodplain, including the high hazard area, riparian buffer area and elsewhere in the combined flood hazard area. The ability to utilize flood storage mitigation credits to meet these requirements will expand the available options for mitigating development impacts in the floodplain.

The City is currently working on the development of a potential pilot mitigation bank in the OMSI area. The addition of this mitigation bank will be an important component of the City's successful implementation of the FEMA BiOp guidance, by providing another off-site option for meeting habitat and compensatory excavation (cut) mitigation requirements. The City is partnering with OMSI, Tribal Partners, and state agencies to identify barriers and opportunities for developing a robust mitigation banking program within the city limits.

VI. Implementation

This chapter includes an Action Plan and the specific Zoning Code and Building Code changes described in the Floodplain Code Amendments section (see page 39) of Chapter V. Section A, Action Plan, identifies a variety of actions needed to support and complement the implementation of the aims of the plan. Section B, City Code Changes, presents the detailed changes to existing code, with new code underlined and changes to existing code in strikethrough.

A. Action Plan

The following action chart describes projects, programs and other activities that are needed by City bureaus, agency partners, community organizations and others to effectively implement the Floodplain Resilience Plan. The action chart is adopted with the understanding that it is a starting point and that some actions may need to be refined, amended or replaced over time. Actions items are adopted by resolution and are non-binding.

Chart Order

The action charts are grouped by categories: 1) Mapping and Modeling; 2) Regulatory Updates; 3) Restoration and Mitigation; and 4) Property Owner and Renter Assistance Programs.

Action Identifier

The Code column provides the action's unique identifier. Each code begins with one letter, which corresponds to the category identified above. The letter code for each of the categories is as follows:

Mapping and Modeling	MM
Regulatory Updates	RG
Mitigation and Restoration	MR
Property Owner and Renter Assistance Programs	PR

The category code for each action is then followed by a number. The numbering of actions does not in any way correlate with importance or a priority ranking system.

Timeline

Each action identifies a proposed implementation timeline: Adopt with Plan, Ongoing, Next 5 years, and 6 – 20 years.

Implementers

Each action identifies one or more lead and partner implementers. Implementers include:

BDS	Portland Bureau of Development Services
BES	Portland Bureau of Environmental Services
BPS	Portland Bureau of Planning and Sustainability
City	City of Portland
County	Multnomah County
Metro	Metro (regional government)
OGR	Office of Government Relations
PBEM	Portland Bureau of Emergency Management
PHB	Portland Housing Bureau
FEMA	Federal Emergency Management Agency
Port	Port of Portland
Private	Private sector
Public	General public
Tribal	Tribal governments
USACE	United States Army Corps of Engineers

Action Plan

#	ACTION	ADOPT WITH PLAN	NEXT 5 YEARS	6-20 YEARS	ONGOING	LEAD	PARTNER(S)
MAPPING AND MODELING							
MM-1	**Floodplain map update by FEMA.** Work with other governmental entities with jurisdiction along the Willamette River to advocate for the prioritization of FEMA's adoption of a new 100-year floodplain extent based on the outcomes of the U.S. Army Corps of Engineers (as a part of the Oregon Silver Jackets Team) 2021/22 Willamette River modeling effort.		✓			BPS	FEMA OGR Metro Other Lower Willamette River jurisdictions
MM-2	**Flood Insurance Study and Flood Insurance Rate Map (FIRM) update.** Work with FEMA to produce an updated Willamette River Flood Insurance Study and Flood Insurance Rate Map (FIRM) then complete the following: • Update the City's adopted 100-year flood hazard area and the Metro Title 3, Water Quality and Flood Management, maps to incorporate its modeled extent • Remove all references to the 2022 U.S. Army Corps of Engineers Lower Willamette River hydraulic model from the Zoning Code and Title 24 Chapter 24.50, Flood Hazard Areas.			✓		BPS BDS	USACE FEMA Metro

#	ACTION	ADOPT WITH PLAN	NEXT 5 YEARS	6-20 YEARS	ONGOING	LEAD	PARTNER(S)
MM-3	**Johnson Creek flood mapping and flood storage mitigation.** Continue efforts to reduce flood risk and impacts and update floodplain maps in the Johnson Creek watershed by: • Improving the accuracy of existing Johnson Creek floodplain maps, including in areas around BES restoration sites • Analyze the impacts and benefits of allowing off-site compensatory cuts in the floodplain.		✓			BES	USACE FEMA
MM-4	**Future Climate Change Map**. Utilize the U.S Army Corps of Engineers 2021/22 Lower Willamette River and the Columbia River Treaty models as the basis for developing a model to estimate future flood risk due to climate change along the Willamette River, Columbia Slough and Columbia River. Floodplain regulations should then be applied to climate change-related flood risk area.			✓		BES	FEMA USACE BPS
REGULATORY UPDATES							
RG-1	**Economic Opportunities Analysis.** After or with the adoption of an updated Economic Opportunities Analysis, complete the following: • Expand Environmental overlay zones to apply to all floodplains, incl. industrial zones (IH, IG2, and EG2), and remove exemption from overlay requirements for those industrial zones. • Apply increased compensatory excavation (cut) requirements to industrial zones (IH, IG2, and EG2).		✓			BPS	BDS BES Port Public Private

#	ACTION	ADOPT WITH PLAN	NEXT 5 YEARS	6-20 YEARS	ONGOING	LEAD	PARTNER(S)
RG-2	**River Plan / North Reach Project**. After adoption of an updated Economic Opportunities Analysis, initiate the River Plan / North Reach project. This project will establish a new 20-year vision and update the policies, regulations, and future actions in the area.		✓			BPS	BDS BES Port Public Private
RG-3	**Johnson Creek Floodplain Resiliency Project.** Initiate a floodplain resiliency-focused project for the Johnson Creek watershed with the following components: • Apply Environmental overlay zones to all Johnson Creek floodplains and update relevant portions of the Zoning Code to ensure tree and vegetation requirements are consistent with the FEMA Final Implementation Plan. This may include updates to the Johnson Creek Plan District. • Review and amend, as needed, the Johnson Creek compensatory excavation (cut) requirements in Title 24 Chapter 24.50, Flood Hazard Areas, to be consistent with the FEMA Final Implementation Plan.			✓		BPS	BDS BES Public Private
MITIGATION AND RESTORATION							
MR-1	**Floodplain habitat and flood storage mitigation banks.** Identify potential locations for future floodplain habitat and flood storage mitigation banks, including as a part of the Eastbank Crescent redevelopment, and determine the appropriate level of City involvement in establishing and maintaining these mitigation banks.		✓			BES	BPS BDS

#	ACTION	ADOPT WITH PLAN	NEXT 5 YEARS	6-20 YEARS	ONGOING	LEAD	PARTNER(S)
MR-2	**Floodplain-focused restoration program.** Establish processes and on-going funding for a floodplain-focused restoration program to meet the FEMA BiOp no-net-loss standard.		✓			BES	
MR-3	**Floodplain land acquisition program.** Identify grants or other funding sources to expand the Johnson Creek Willing Seller Program and/or the Watershed Land Acquisition Program to more directly address the purchase of priority floodplain properties outside of the Johnson Creek watershed.				✓	BES	FEMA
MR-4	**Post-disaster land acquisition program.** Develop and implement a post-disaster land acquisition strategy to identify properties that are subject to high flood risk and establish a mechanism for ongoing funding for this program.		✓			PBEM	BES FEMA
PROPERTY OWNER AND RENTER ASSISTANCE PROGRAMS							
PR-1	**Tools to increase climate and flood resilience.** Explore options for developing financial tools to help property owners improve climate and flood resilience, such as a revolving loan fund. Explore limitations and conditions for different uses, year of property acquisition, etc.		✓			BPS	PHB FEMA County

B. City Code Amendments

Zoning Code Amendments

Substantive Amendments

Housekeeping Amendments: Replace Floodplain References with "Combined Flood Hazard Area"

Building Code Amendments

Commentary

33.430 Environmental Zones

The National Marine Fisheries Service (NMFS) determined that the Federal Emergency Management Agency's (FEMA) implementation of the National Flood Insurance Program (NFIP) in Oregon jeopardizes the continued existence of protected salmon and steelhead in a Biological Opinion released in April 2016 (referred to as the FEMA BiOp). The FEMA BiOp provides guidance to FEMA on amending minimum NFIP criteria to ensure that they adequately protect floodplain habitat and flood storage, consistent with the ESA. FEMA maintains that they do not have the authority to approve or deny floodplain development proposals and that changes to local development regulations must occur to effectively implement the FEMA BiOp guidance.

To that end, FEMA worked with Oregon jurisdictions to develop a Draft Implementation Plan for the FEMA BiOp that responds to local conditions, while protecting flood storage and floodplain habitat and improving conditions for salmon and steelhead. Per the Draft Implementation Plan, Portland must demonstrate that, collectively, development, mitigation and restoration efforts result in no net loss of floodplain habitat and flood storage capacity. ESA-compliant development regulations, in combination with habitat restoration projects, will help ensure Portlanders have on-going access to the Federally-backed flood insurance they rely upon to meet their mortgage requirements and to access to financial assistance for flood recovery.

Additional note: These code changes do not incorporate the changes proposed in the concurrent Ezones Map Correction Project. Once that project is adopted and an implementation date is confirmed, the existing code used in this chapter will be updated, as necessary.

33.430.080.C.1

This amendment removes the exemption for maintenance, repair and replacement of existing structures within combined flood hazard area. This change will ensure that the impacts of these activities are mitigated, either through development standards or Environmental Review.

This amendment and others throughout this chapter, reference the "combined flood hazard area," which is the area comprised of the farthest landward extent of the FEMA 100-year floodplain, which has a one percent chance of being flooded in any given year and is also known as the Special Flood Hazard Area, and the 1996 Flood Inundation Area.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

33.430 Environmental Zones

430

33.430.080 Items Exempt From These Regulations

The following items, unless prohibited by Section 33.430.090, below, are exempt from the regulations of this chapter. Other City regulations such as Title 10, Erosion Control, and Title 11, Trees, must still be met. When no development or other activities are proposed that are subject to the development standards or review requirements of this chapter, tree removal or pruning allowed under the exemptions below is subject to the tree permit requirements of Title 11, Trees.

A.-B. [No change]

C. Existing development, operations, and improvements, including the following activities:

1. Maintenance, repair, and replacement of existing structures, exterior improvements, roads, public trails, public rest points, public view areas, public interpretative facilities, and utilities. Replacement is not exempt within the combined flood hazard area or whenever coverage or utility size is increased;

2-6. [No change]

7. Removal or trimming when no development or other activities subject to the development standards or review requirements of this chapter are proposed, if the following are met:

   a. [No change]

   b. The vegetation proposed for removal or trimming is one of the following:

      (1)-(2) [No change]

      (3) Non-native non-nuisance trees and plants located outside of the combined flood hazard area or within the combined flood hazard area when on a lot zoned IH, IG2 or EG2;

      (4) Trees or tree limbs that are located within 10 feet of an existing building~~s~~ ~~and~~or structure~~s~~ attached to a building~~s~~, such as a deck~~s~~, stairs, ~~and~~or carport~~s~~. This exemption does not apply to tree removal within the combined flood hazard area unless the tree to be removed is located on a lot zoned IH, IG2 or EG2;

      (5)-(6) [No change]

8. [No change]

Commentary

33.430.080.C.1 (cont.)
Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

The City and USACE are working with FEMA to initiate a process to adopt updated federal flood insurance rate maps that FEMA will use to implement the National Flood Insurance Program going forward. Once FEMA completes its multi-year process to adopt a new 100-year floodplain map of the Lower Willamette River, the City will update the combined flood hazard area accordingly.

33.430.080.C.7.b.(3), and (4) (see previous page)
These two changes are intended to limit the exemptions for removal of trees and other vegetation, including the removal of tree limbs, to areas that are outside of the combined flood hazard area. In order to show no-net-loss of floodplain habitat, tree removal within the combined flood hazard area, including non-native non-nuisance trees, must be subject to tree replacement standards and can no longer be exempt.

The City of Portland Economic Opportunities Analysis (EOA), most recently adopted in 2016 as a supporting document for the *2035 Comprehensive Plan* (to comply with Statewide Planning Goal 9, Economic Development), identified a small amount of industrial land capacity in the combined Harbor Access Lands/Harbor-Airport geography. Much of this land capacity has been absorbed since EOA adoption and the Bureau of Planning and Sustainability is in the process of developing a new EOA. To ensure continued compliance with Statewide Planning Goal 9 while the new EOA is under development, the new combined flood hazard area requirements will not apply to lots in three industrial zones, Heavy Industrial (IH), General Industrial 2 (IG2), and General Employment 2 (EG2). Once the EOA is complete, these requirements are expected to be applied to all zoning designations.

33.430.080.C.9
This amendment prevents alterations and replacement from increasing the size of the houseboat without meeting standards or going through environmental review. Increasing the area covered by a houseboat results in additional detrimental impacts to in-water habitat that is critical to endangered and threatened species. These additional impacts must be mitigated.

33.430.080.C.10.
This amendment no longer exempts development over existing paved surfaces if the development is in the combined flood hazard area. Approval of development through standards or environmental review will ensure that any impacts within the combined flood hazard area are mitigated to achieve the no-net loss standard in floodplain habitat. The exception for the three industrial zones described above - Heavy Industrial (IH), General Industrial 2 (IG2), and General Employment 2 (EG2) – apply in this case, as well. Once the Economic Opportunities Analysis is complete, these requirements are expected to be applied to all zoning designations.

9. Alterations to existing houseboats or replacing houseboats in existing slips.~~;~~ Alterations and replacement are not exempt when the area of water covered by the houseboat floating structure is increased;

10. Development over existing paved surfaces that are not within the combined flood hazard area and are over 50 feet from any identified wetland or waterbody; and

11. [No change]

D. The following new development and improvements:

1-4. [No change]

5. Temporary site investigative work including soil tests, land surveys, groundwater and water quality monitoring stations when all of the following are met:

a.-c. [No change]

d. No native trees are removed and within the combined flood hazard area located outside of the IH, IG2 and EG2 zones, no non-native non-nuisance trees are removed.

6-8. [No change]

9. Additional disturbance for outdoor uses such as gardens and play areas where the added disturbance area meets all of the following:

a.-b. [No change]

c. Outside the combined flood hazard area, ~~N~~no native trees 6 or more inches in diameter are removed;

d. Within the combined flood hazard area, no native or non-native non-nuisance trees 6 or more inches in diameter are removed; and

~~d~~e. The disturbance area is located at least 30 feet from the top of bank of a stream or drainage and at least 50 feet from the edge of a wetland.

Commentary

33.430.080.D.5.d. (see previous page)
This amendment differentiates what tree removal is allowed outside and within the combined flood hazard area. In addition to not removing native trees, non-nuisance trees must not be removed in the combined flood hazard area to meet the exemption criterion. Just like native trees, non-native non-nuisance trees provide riparian corridor and wildlife habitat functions. Tree removal requirements outside of the combined flood hazard area remain the same.

The exception for three industrial zones, Heavy Industrial (IH), General Industrial 2 (IG2), and General Employment 2 (EG2), described in the commentary for changes to 33.430.080.C.7.b. (see page 54) apply in this case. Once the Economic Opportunities Analysis is complete, these requirements are expected to be applied to all zoning designations.

33.430.080.D.9 and 10
These amendments ensure that all native and non-native non nuisance trees over 6 inches in diameter removed in the combined flood hazard area for trail construction or outdoor use are replaced, consistent with FEMA guidance.

10. Trails meeting all of the following:

    a.-c. [No change]

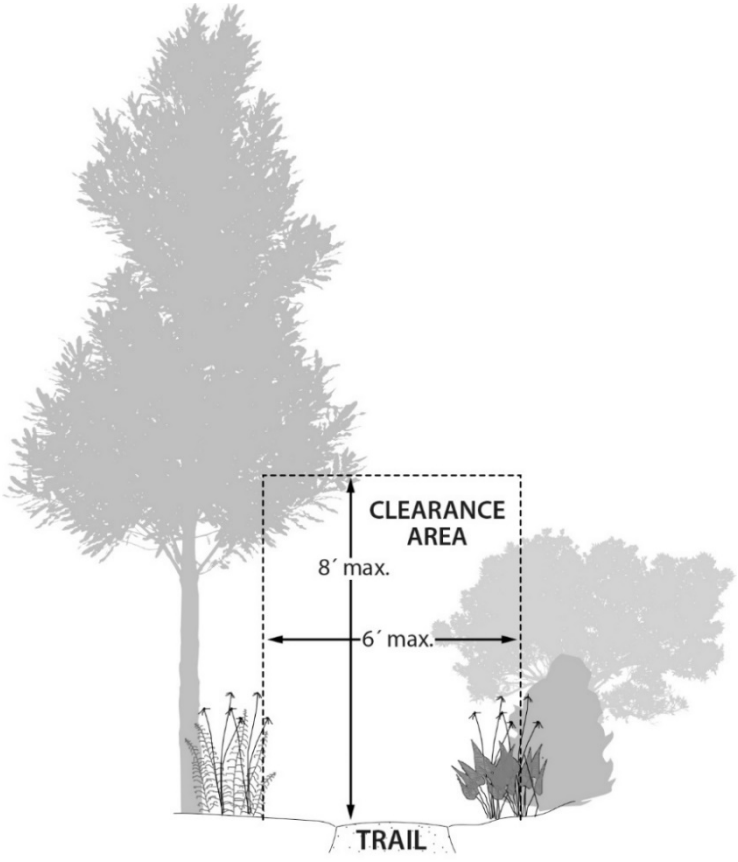
    d. Outside the combined flood hazard area, ~~N~~no native trees 6 or more inches in diameter and no native shrubs larger than 5 feet tall may be removed;

    e. Within the combined flood hazard area, no native or non-native non-nuisance trees 6 or more inches in diameter and no native shrubs larger than 5 feet tall may be removed;

    ~~e~~f. Trails must not be paved; and

    ~~f~~g. Trails must be at least 15 feet from the top of bank of all water bodies.

Figure 430-2
Trail Vegetation Pruning and Maintenance Area



11. [No change]

E. [No Change]

Commentary

33.430.130.A.6
This amendment ensures City staff can evaluate potential impacts of proposed development so that there is no net loss of floodplain habitat. In order to evaluate impacts, the combined flood hazard area must be shown on site plans.

33.430.130.B 7-8
Title 24.50 Flood Hazards regulates the placement of fill within the combined flood hazard area. However, in order for City staff to evaluate that all requirements can be met, including those of Title 24.50, the location and amount of both fill and proposed cut within the combined flood hazard area must be shown on the proposed site plan. In addition, the design of the proposed cut must also be shown.

33.430.130 Permit Application Requirements
A building permit or development permit application that is reviewed for compliance with the standards of this chapter requires more information than a permit not affected by these provisions. The information in Subsections A and B must be submitted with permit application plans. Submission of the information in Subsection C is optional.

A. An existing conditions site plan including:

1.-3. [No change]

4. Within the disturbance area, all trees that are 6 or more inches in diameter must be indicated by size and species. Trees outside of the disturbance area must be shown as crown cover with an indication of species composition; ~~and~~

5. Topography shown by contour lines at 2 foot vertical contours in areas of slopes less than 10 percent and at 5 foot vertical contours in areas of slopes 10 percent or greater~~.~~; and

6. Extent of the combined flood hazard area.

B. Proposed development plan including:

1.-4. [No change]

5. Trees proposed to be preserved and trees proposed to be removed. For trees to be preserved, tree protection, meeting the requirements of Chapter 11.60, Technical Specifications, must be shown. A tree plan may also be required to comply with Chapter 11.50, Trees in Development Situations; ~~and~~

6. Where applicable, the location and specifications of the site enhancement option with dimensions, a list of plants on the Nuisance Plants List to be removed, and a landscape plan indicating the size, species, and location of all vegetation to be planted~~.~~;

7. Location and volume (cubic yards) of fill to be placed within the combined flood hazard area; and

8. Location, volume (cubic yards), and design of proposed cut within the combined flood hazard area.

C. [No change]

33.430.140 General Development Standards
The standards below apply to all development in the environmental zones except as follows:

- Utilities subject to Section 33.430.150;
- Land divisions subject to Section 33.430.160;
- Property line adjustment subject to Section 33.430.165;
- Resource enhancement projects subject to Section 33.430.170;
- Rights-of-way improvements subject to Section 33.430.175;
- Stormwater outfalls subject to Section 33.430.180; and
- Public recreational trails subject to Section 33.430.190.

33.430.140.C.4 and D.1 and 2.b

In order to avoid further loss of floodplain habitat due to development without appropriate mitigation, these amendments limit the instances when alterations to existing development can expand existing disturbance areas, building coverage or exterior improvement areas to areas outside of the combined flood hazard area. Proposals for alterations to existing development within the combined flood hazard area will be subject to environmental review and all impacts will be mitigated to ensure no net loss of floodplain habitat.

The exception for three industrial zones, Heavy Industrial (IH), General Industrial 2 (IG2), and General Employment 2 (EG2), described in the commentary for changes to 33.430.080.C.7.b. (see page 54) apply in this case. Once the Economic Opportunities Analysis is complete, these requirements are expected to be applied to all zoning designations.

Table 430-3

Table 430-3 is updated to require a minimum of 3:1 tree replacement for all tree removal in the combined flood hazards area. To ensure this minimum replacement, a note is added to prevent the use of Option B for removal of trees less than 20 inches in diameter. The minimum tree replacement ratio does not apply to lots zoned IH, IG2, or EG2.

Standards A through C and G through S apply to new development. Standards D through S except L apply to alterations to existing development. Only standards E, J, K, N, Q, R, and S apply in Transition areas. All of the applicable standards must be met.

A.-B. [No change]

C. The disturbance area must be set back at least:

1.-3. [No change]

4. Five feet from the edge of the combined flood hazard area. This standard does not apply within the IH, IG2 and EG2 zones.

D. For alterations to existing development, one of the following must be met:

1. The disturbance area does not exceed the limitations of Table 430-1 and the disturbance area is not expanded into or within five feet of the resource area of an environmental protection zone or within five feet of the combined flood hazard area located outside of the IH, IG2 and EG2 zones; or

2. If the existing disturbance area now exceeds the limitations of Table 430-1, alterations are allowed within the existing disturbance area if the following are met:

   a. [No change]

   b. Increases in building coverage and exterior improvement area are allowed if:

      (1) The increase is located outside of the combined flood hazard area. This standard does not apply within the IH, IG2 and EG2 zones; and

      (2) A~~a~~ site enhancement option is completed on the site. Applicants must show that an area equivalent in size to at least 50 percent of the area proposed for development will be enhanced following one or more of the options described in Table 430-2. If the proposed development is less than 100 square feet, the minimum enhanced area will be 50 square feet.

E.-S. [No change]

Table 430 – 3
Tree Replacement in Environmental Overlay Zone

Size of tree to be removed (inches in diameter)	Option A (no. of native trees to be planted)	Option B (combination of native trees and shrubs)
At least 6 and up to 12	2[1]	Not applicable
More than 12 and up to 20	3	1 tree and 3 shrubs[2]
More than 20 and up to 25	5	3 trees and 6 shrubs
More than 25 and up to 30	7	5 trees and 9 shrubs
More than 30	10	7 trees and 12 shrubs

Note:
[1] Within the combined flood hazard area located outside of the IH, IG2 and EG2 zones, Option A requires at least 3 native trees to be planted.
[2] Option B is not applicable within the combined flood hazard area except on lots zoned IH, IG2 or EG2.

33.430.165.A.
This amendment ensures that existing property lines are not adjusted in such a way as to result in a parcel with no area remaining outside of the combined flood hazard area. If a parcel is created with no area outside of the combined flood hazard area, development could only be located in the combined flood hazard, which would not be consistent with FEMA guidance. Therefore, only property line adjustments that are able to accommodate an adequate area for future development will be approved through this standard.

33.430.170.A.8.d. and e.
These amendments differentiate what tree removal is allowed outside of and within the combined flood hazard area. Within the combined flood hazard area, non-nuisance trees greater than 10 inches in diameter must not be removed to meet the requirements of this standard. Any non-nuisance trees between 6 and 10 inches in diameter removed in the combined flood hazard area must be replaced at a three-to-one rate. Similar to native trees, non-native, non-nuisance trees provide the riparian corridor and wildlife habitat functions, including managing stormwater, reducing flood risk, holding soils in place and reducing landslide hazards, cooling the air, and providing resting, nesting and food sources for wildlife. These functions are critical components of floodplain habitat, as identified in the FEMA BiOp. Tree removal requirements outside of the combined flood hazard area remain the same.

33.430.165 Standards for Property Line Adjustments

The following standards apply to Property Line Adjustments (PLAs) in the environmental overlay zones that do not meet one of the exemptions in 33.430.080.C.11 or 33.430.080.D.11. For purposes of this section, the site of a Property Line Adjustment is the two properties affected by the relocation of the common property line. All of the standards must be met.

A. A Property Line Adjustment may not result in any property being entirely in the environmental protection zone or entirely in the combined flood hazard area unless that property ~~is~~was entirely in the environmental protection zone or combined flood hazard area before the PLA, or the property will be dedicated or limited by deed restriction to the uses allowed in the OS zone.

B. [No change]

33.430.170 Standards for Resource Enhancement Projects

The following standards apply to resource enhancement projects in the environmental zones. The applicant for projects that will take place within the area shown on Map 430-14 may choose to meet all of the standards of subsection A, all of the standards of subsection B, or all of the standards of subsection C. Applicants for projects that will take place outside the area shown on Map 430-14 must meet all of the standards in subsection C.

A. Bank reconfiguration. The following standards apply to bank reconfiguration projects that take place in the Bank Reconfiguration and Basking Features Area shown on Map 430-14. Slough and drainageway banks, which are the area between the ordinary high water mark and the top of bank, may be regraded when all of the following are met:

1-7. [No change]

8. No structures are proposed except for public viewing areas developed as part of the project. The public viewing areas must meet the following:

a.-c. [No change]

d. Outside the combined flood hazard area:

(1) Native trees more than 10 inches in diameter are not removed; and

(2) ~~e.~~ Each 6 to 10-inch diameter native tree removed is replaced at a rate of three trees for each one removed. The replacement trees must be a minimum one-half inch diameter or 3 to 5-gallon conifers and be native trees listed on the Portland Plant List. All trees must be planted on the site; ~~and~~

e. Within the combined flood hazard area:

(1) Native and non-native non-nuisance trees more than 10 inches in diameter are not removed; and

Commentary

33.430.170.B. Basking Features

These amendments differentiate what tree removal is allowed outside of and within the combined flood hazard area. Within the combined flood hazard area, removal of all native and non-native non-nuisance trees are either not allowed or require replacement, depending on the size of the tree. Similar to native trees, non-native, non-nuisance trees provide the riparian corridor and wildlife habitat functions, including managing stormwater, reducing flood risk, holding soils in place and reducing landslide hazards, cooling the air, and providing resting, nesting and food sources for wildlife. These functions are critical components of floodplain habitat, as identified in the FEMA BiOp. Tree removal requirements outside of the combined flood hazard area are unchanged.

(2) Each 6 to 10-inch diameter non-native non-nuisance tree removed is replaced at a rate of three trees for each one removed. The replacement trees must be a minimum one-half inch diameter or 3 to 5-gallon conifers and be native trees listed on the Portland Plant List. All trees must be planted on the site.

9. [No change]

B. Basking features. The following standards apply to the placement of large wood or large rocks as basking features for wildlife in the Bank Reconfiguration and Basking Features Area shown on Map 430-14. The placement of large wood or large rocks as basking features for wildlife within the Columbia Slough, Whitaker Slough, Buffalo Slough, Peninsula Canal, or other drainageways or identified wetlands is allowed when all of the following are met:

1. [No change]

2. No native trees are removed and no non-native non-nuisance trees are removed within the combined flood hazard area;

3.-4. [No change.]

5. No structures are proposed except for public viewing areas developed as part of the project. The public viewing areas must meet the following:

a.-c. [No change]

d. Outside the combined flood hazard area:

(1) Native trees more than 10 inches in diameter are not removed; and

(2) ~~e.~~ Each 6 to 10-inch diameter native tree removed is replaced at a rate of three trees for each one removed. The replacement trees must be a minimum one-half inch diameter or 3 to 5-gallon conifers and be native trees listed on the Portland Plant List. All trees must be planted on the site; ~~and~~

e. Within the combined flood hazard area:

(1) Native and non-native non-nuisance trees more than 10 inches in diameter are not removed; and

(2) Each 6 to 10-inch diameter non-native non-nuisance tree removed is replaced at a rate of three trees for each one removed. The replacement trees must be a minimum one-half inch diameter or 3 to 5-gallon conifers and be native trees listed on the Portland Plant List. All trees must be planted on the site; and

6. [No change]

Commentary

33.430.170.C. All other resource enhancement projects

These amendments differentiate what tree removal is allowed outside of and within the combined flood hazard area. Within the combined flood hazard area, removal of all native and non-native non-nuisance trees are either not allowed or require replacement, depending on the size of the tree. Similar to native trees, non-native, non-nuisance trees provide the riparian corridor and wildlife habitat functions, including managing stormwater, reducing flood risk, holding soils in place and reducing landslide hazards, cooling the air, and providing resting, nesting and food sources for wildlife. These functions are critical components of floodplain habitat, as identified in the FEMA BiOp. Tree removal requirements outside of the combined flood hazard area are unchanged.

C. All other resource enhancement projects. The following standards apply to all other resource enhancement projects not addressed by subsections 170.A or B. All of the following standards must be met:

1.-2. [No change]

3. Outside the combined flood hazard area, ~~N~~no native vegetation listed on the Portland Plant List is removed except as allowed by C.5. below. Non-native trees and vegetation may be removed;

4. Within the combined flood hazard area, no native trees or vegetation listed on the Portland Plant List or non-native non-nuisance trees are removed, except as allowed by C.5. below;

~~4.~~5. Disturbance areas related to structure removal must be replanted with native plants to achieve a 90 percent vegetative cover within one year. Disturbance area that is related to the removal of structures from the water is exempt from this standard;

~~5.~~6. No structures are proposed except for public viewing areas developed as part of the project. The public viewing areas must meet the following:

a.-c. [No change]

d. Outside the combined flood hazard area:

(1) Native trees more than 12 inches in diameter are not removed; and

(2) ~~e.~~ Each 6 to 12-inch diameter native tree removed is replaced as shown in Table 430-3. Replacement trees and shrubs must comply with the planting standards of Subsection 33.430.140.K; ~~and~~

e. Within the combined flood hazard area:

(1) Native and non-native non-nuisance trees more than 12 inches in diameter are not removed; and

(2) Each 6 to 12-inch diameter native and non-native non-nuisance tree removed is replaced as shown in Table 430-3. Replacement trees and shrubs must comply with the planting standards of Subsection 33.430.140.K; and

~~6.~~7. Temporary disturbance areas may be seeded with non-native see that is sterile and is certified as 100 percent weed-free for erosion control purposes until replanting occurs.

33.430.175 Standards for Right-of-Way Improvements

The following standards apply to unimproved and partially improved rights-of-way. All of the standards must be met. New rights-of-way that are part of a proposed land division or planned development must be reviewed under the Standards for Land Divisions and Planned Developments in Section 33.430.160.

A.-C. [No change]

Commentary

33.430.175.D.
This amendment ensures that all native and non-native non nuisance trees over six inches in diameter removed for right-of-way improvements within the combined flood hazard area are replaced, consistent with FEMA guidance. Retaining mature native and non-native non-nuisance trees within the combined flood hazard area is essential to maintaining and expanding existing floodplain habitat and functions. Tree removals must be adequately mitigated with appropriate replacements that account for the interim loss of functions as the replacement trees become established and mature.

33.430.180.D.
This amendment fixes a typo in reference to the Nuisance Plants List, which was previously referred to as the Nuisances Plants List.

33.430.240.A Supplemental site plans required
In order evaluate impacts of a proposed development, these application submittal requirements have been updated to include showing the combined flood hazard area, which includes the FEMA Special Flood Hazard Area (100-year floodplain) and the 1996 Flood Inundation Area. As described in the 33.430.080.C.1 commentary, the City expects work with Metro to replace the existing 1996 Flood Inundation area shown on the City's Metro Title 3 Map with the more accurate U.S. Army Corps-modeled February 1996 flood extent and elevations. The City will also consider using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a future provisional update to the FEMA Special Flood Hazard Area (100-year floodplain).

In addition, the boundaries of the environmental resource and transition area must be shown so that staff can confirm when standards are met by the proposed development. These changes codify information that is already requested from applicants during land use reviews.

D. Trees within the right-of-way may be removed within the improvement area and within 10 feet of the edge of the improvement except that native and non-native non-nuisance trees located in the combined flood hazard area may not be removed. In no case may the combined total diameter of all trees removed exceed 225 inches, counting only native trees that are at least 6 inches. Trees other than native trees ~~are exempt from this standard and may be removed without being counted as part of~~ do not count toward the 225 inches; and

E. [No change]

33.430.180 Standards for Stormwater Outfalls

The following standards apply to the installation of stormwater outfalls. All of the standards must be met.

A.-C. [No change]

D. Trees listed on the Nuisance~~s~~ Plant List may be removed. Each tree at least 6 inches in diameter must be replaced with one tree.

E.-I. [No change]

33.430.240 Supplemental Application Requirements

In addition to the application requirements of Section 33.730.060, the following information is required for an environmental review application:

A. Supplemental site plans required. One copy of each plan must be at a scale of at least one inch to 100 feet. The following supplemental site plans are required:

- Existing conditions;
- Conditions existing prior to a violation (if applicable);
- Proposed development;
- Construction management; and
- Mitigation or remediation.

A mitigation site plan is required whenever the proposed development will result in unavoidable significant detrimental impact on the identified resources and functional values. A remediation site plan is required whenever significant detrimental impacts occur in violation of the Code and no permit was applied for. The Director of BDS may waive items listed in this Subsection if they are not applicable to the specific review; otherwise they must be included. Additional information such as wetland characteristics or soil type may be requested through the review process.

1. The existing conditions site plan must show the following for the entire site:

   a. ~~Special~~ Combined flood hazard area and floodway boundaries;

   b.-e. [No change]

2. The proposed development site plan must show the following:

   a. Combined flood hazard area and boundaries of the resource area and the transition area;

Commentary

a.-f. [Renumber b. to g.]

3. A construction management site plan must show the following:

   a. Combined flood hazard area and boundaries of the resource area and the transition area;

   a.-f. [Renumber b. to g.]

4. [No change]

B. [No change]

Commentary

33.475 River Overlay Zones

Amendments throughout the chapter replace references to the 100-year floodplain and 1996 Flood Inundation Area with a single term, "combined flood hazard area," now defined in 33.910 Definitions. The combined flood hazard area is the area comprised of the farthest landward extent of the FEMA 100-year floodplain, which has a one percent chance of being flooded in any given year and is also known as the Special Flood Hazard Area, and the 1996 Flood Inundation Area.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

The City and USACE are working with FEMA to initiate a process to adopt updated federal flood insurance rate maps that FEMA will use to implement the National Flood Insurance Program going forward. Once FEMA completes its multi-year process to adopt a new 100-year floodplain map of the Lower Willamette River, the City will update the combined flood hazard area accordingly.

33.475.405 Items Exempt From These Regulations

This amendment adds maintenance of the area within five feet of signage to maintain visibility of the sign. This exemption will allow for pruning and removal, as necessary, of trees that may block the view of permanent signage.

33.475 River Overlay Zones

33.475.050 Supplemental Permit Application Requirements

The following information is required when a permit for development or exterior alteration in the River Overlay zones is reviewed for compliance with this chapter.

A. Supplemental site plans. The following supplemental site plans are required when a permit for development or exterior alteration within the River Overlay zones is reviewed for compliance with this chapter. Five copies of each required site plan must be submitted. The site plans must show the entire site, must be drawn accurately to a scale that is between 1 inch to 50 feet and 1 inch to 10 feet, and must show all property lines with dimensions, a north arrow and a date. Additional site plans that show only a portion of the site may be submitted. All copies of site plans must be suitable for reproduction on paper no smaller than 8.5 x 11 inches and no larger than 36 x 48 inches; and

1. An existing conditions site plan including:

   a.-c. [No change]

   d. Extent of the riparian buffer area~~, 100-year floodplain,~~ and ~~1996 Flood Inundation Area~~combined flood hazard area;

   e.-g. [No change]

2. A proposed development or exterior alterations plan including:

   a.-b. [No change]

   c. Extent of the riparian buffer area~~, 100-year floodplain,~~ and ~~1996 Flood Inundation Area~~combined flood hazard area;

   d. Location and ~~size~~volume (cubic yards) of fill to be placed within the combined flood hazard area~~100-year floodplain and 1996 Flood Inundation Area~~;

   e. Location, ~~size~~volume (cubic yards), and design of proposed cut within the combined flood hazard area~~100-year floodplain and 1996 Flood Inundation Area~~;

   f.-j. [No change]

B.-C. [No change]

33.475.405 Items Exempt From These Regulations

The following items are exempt from the River Environmental overlay zone regulations:

A.-S. [No change]

T. Installation of signage and maintenance within 5 feet to preserve the visibility of signage provided no trees over 1.5 inches in diameter are removed within or riverward of the river setback, and no trees over 3 inches are removed landward of the river setback; and

Commentary

U.-V. [No change]

33.475.440 Development Standards

Unless exempted by 33.475.405., the standards in this Section apply to development, exterior alterations, and land divisions in the River Environmental overlay zone. All of the applicable standards must be met. Proposals that do not meet all the standards within each relevant section require approval through River Review.

A.-J. [No change]

K. Standards for removal or pruning of vegetation. The following standards apply to the removal or pruning of vegetation:

1.-5. [No change]

6. Trees removed must be replaced as shown in Table 475-2 and must meet the following:

   a. Replacement vegetation must meet all of the following:

      (1) [No change]

      (2) The planting must occur within the River Overlay zones. Trees must not be planted within a Scenic overlay zone. If the vegetation is not planted on the applicant's site, then the applicant must own the property or possess a legal instrument, such as an easement or deed restriction, that is approved by the City as sufficient to ensure the right to carry out, monitor, and maintain the mitigation. If tree removal on the project site is located in ~~either~~ the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area, tree planting must also be within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area; and

      (3) [No change]

   b. [No change]

Table 475 – 2
Tree Replacement in River Environmental Overlay Zone

Size of tree to be removed (inches in diameter)	Option A (no. of native trees to be planted)	Option B (combination of native trees and shrubs)
At least 1.5 and up to 6	1	Not applicable
More than 6 and up to 20	3	Not applicable
More than 20 and up to 25	5	3 trees and 6 shrubs
More than 25 and up to 30	7	5 trees and 9 shrubs
More than 30	10	7 trees and 12 shrubs

Commentary

L. Standards for mitigation. The following standards apply to mitigation required by Subsections A., C., J., O., and P.

1. [No change]

2. Location of mitigation. The mitigation area must be located as follows:

   a. [No change]

   b. All other mitigation areas must be located in the River Environmental overlay zone and if the disturbance area is located within the ~~100-year floodplain or the 1996 Flood Inundation Area~~combined flood hazard area, the mitigation area must also be located within the ~~100-year floodplain or the 1996 Flood Inundation Area~~combined flood hazard area.

3.-9. [No change]

M.-P. [No change]

Q. Standards for land divisions and Planned Developments. The following standards apply to land divisions and Planned Developments.

1. [No change]

2. All development is outside the ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area;

3. Where there is a house on the site that is in the ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area, it may remain if a new lot is created that meets the following:

   a. The existing house will remain; and

   b. A new lot is created to contain the existing house as well as a future building site at least five feet from ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area. For the purpose of this subsection, "building site" means an area of any shape in which a square 40 feet by 40 feet will fit;

4. Areas of the ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area that are outside of lots being created under the provisions of Paragraph P.3. are located entirely within environmental resource tracts. The tracts must be owned in common by all of the owners of the land division site, by a Homeowner's Association, by a public agency, or by a non-profit organization;

5.-12. [No change]

R. [No change]

Commentary

Clean Up of Contaminated Sites

33.475.500 Removal or Remediation of Hazardous Substances

A.-E. [No change]

F. Regulations that apply to actions to remove or remediate hazardous substances that occur in specific areas. The following regulations apply to actions within the River Environmental overlay zone to remove or remediate hazardous substances based on specific locations:

1. The following regulations apply to areas landward of the top of bank (top of bank is shown on Map 475-2):

   a.-b. [No change]

   c. Tree replacement. Trees that are 1.5 inches or greater in diameter that are removed must be replaced based on Table 475-9:

Table 475-9
Tree Replacement in Hazardous Substance Cleanup Sites

Size of tree to be removed (inches in diameter)	Option A (no. of native trees to be planted)	Option B (combination of native trees and shrubs)
At least 1.5 and up to 6	2	Not applicable
More than 6 and up to 20	3	Not applicable
More than 20 and up to 25	5	3 trees and 6 shrubs
More than 25 and up to 30	7	5 trees and 9 shrubs
More than 30	10	7 trees and 12 shrubs

   (1)-(2) [No change]

   (3) Location. All replacement trees must be planted within the River Environmental overlay zone, within 50 feet of the River Environmental overlay zone, or within 50 feet of the top of bank of the Willamette River in the River Environmental overlay zone. See Map 475-2. If the project site is located in the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area, the plantings must also be within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area. The person conducting the cleanup must own the property where the trees are planted or possess a legal instrument, such as an easement or deed restriction, that is approved by the City as sufficient to ensure the right to carry out, monitor, and maintain the plantings; and

   (4) [No change]

   d. [No change]

2.-3. [No change]

G. [No change]

Commentary

Map 475-6 (1 of 2) Central Reach Riparian Buffer Area

In recognition of the unique contributions of floodplains directly adjacent to the riverbank to special status species habitat and flood capacity, a new "riparian buffer area" has been established and incorporated into the extent of the River Environmental overlay zone. The riparian buffer area includes the area 170 feet landward of Ordinary High Water (constrained by the 100-year floodplain and the U.S. Army Corps of Engineers 2022 Preliminary Modeled Willamette River floodplain extent), and is an area identified in the NMFS Biological Opinion on the FEMA National Flood Insurance Program as a place where additional steps to limit the impact of development is necessary. The riparian buffer area in the Central Reach is provided on Map 475-6.

In the riparian buffer area, "beneficial gain" must be demonstrated for development projects that are not river-dependent or river-related. Beneficial gain is defined as no net loss of natural resource area or any functional values and a significant improvement of at least one floodplain-related functional value.

The riparian buffer area and associated requirements were introduced in the River Plan/South Reach for the South Reach. This amendment applies those same requirements to the Central Reach.

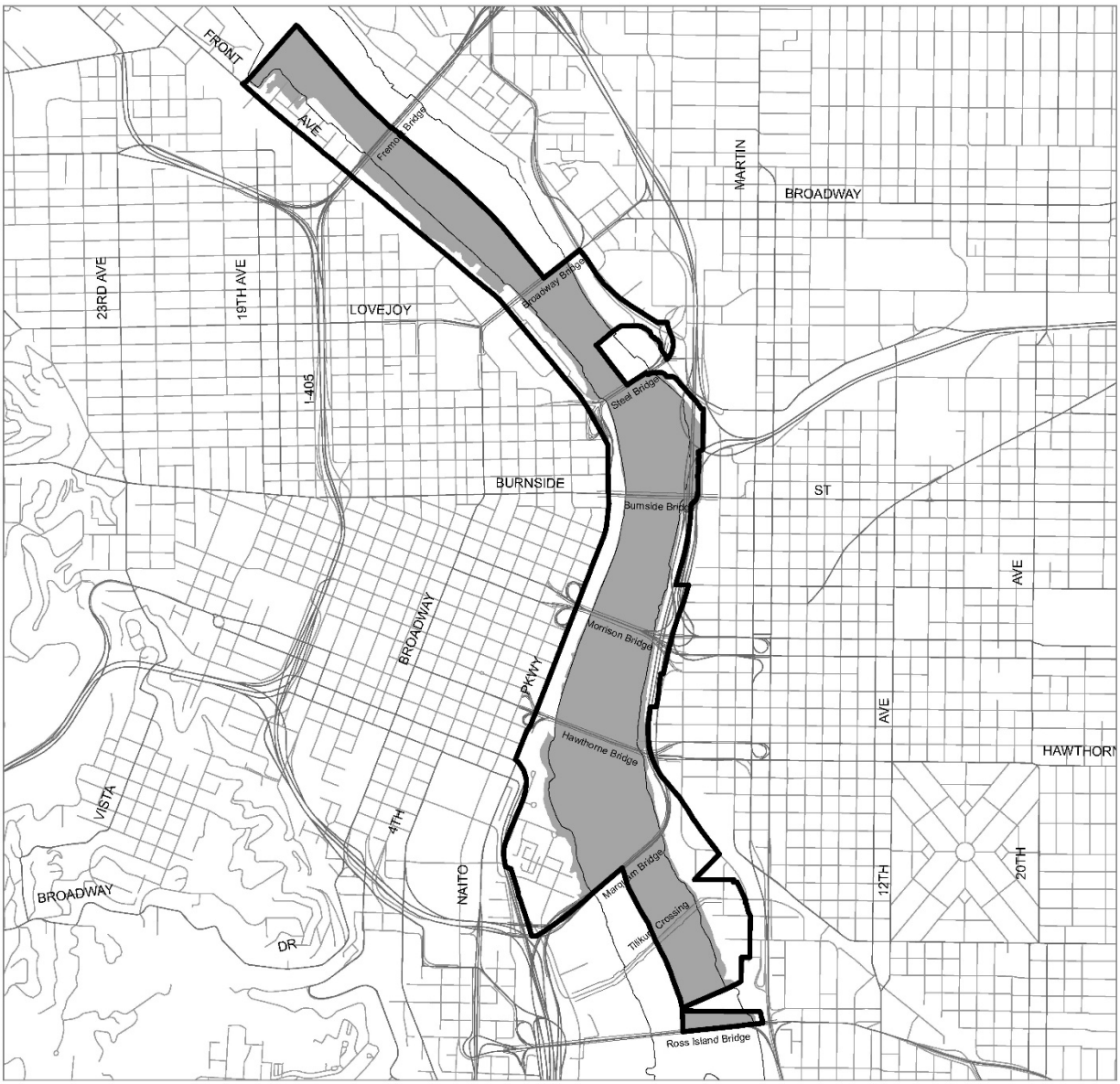
As a part of this project, the River Environmental Overlay Zone will be applied to the riparian buffer area and all of the combined flood hazard area. Application of the River Environmental to the combined flood hazard area will ensure development impacts are avoided, to the extent possible, in this important habitat area and that adequate mitigation is provided when impacts on floodplain habitat are unavoidable.

Central Reach Riparian Buffer Area

Map 475-6

Map 1 of 2

Map Revised Xxxxx X, 202X



Legend

- City Boundary
- Urban Service Boundary
- Willamette River
- River Overlay Boundary
- Riparian buffer area

NORTH

0 1,600 3,200

Scale in Feet

Bureau of Planning and Sustainability
Portland, Oregon

Commentary

Map 475-6 (2 of 2) South Reach Riparian Buffer Area

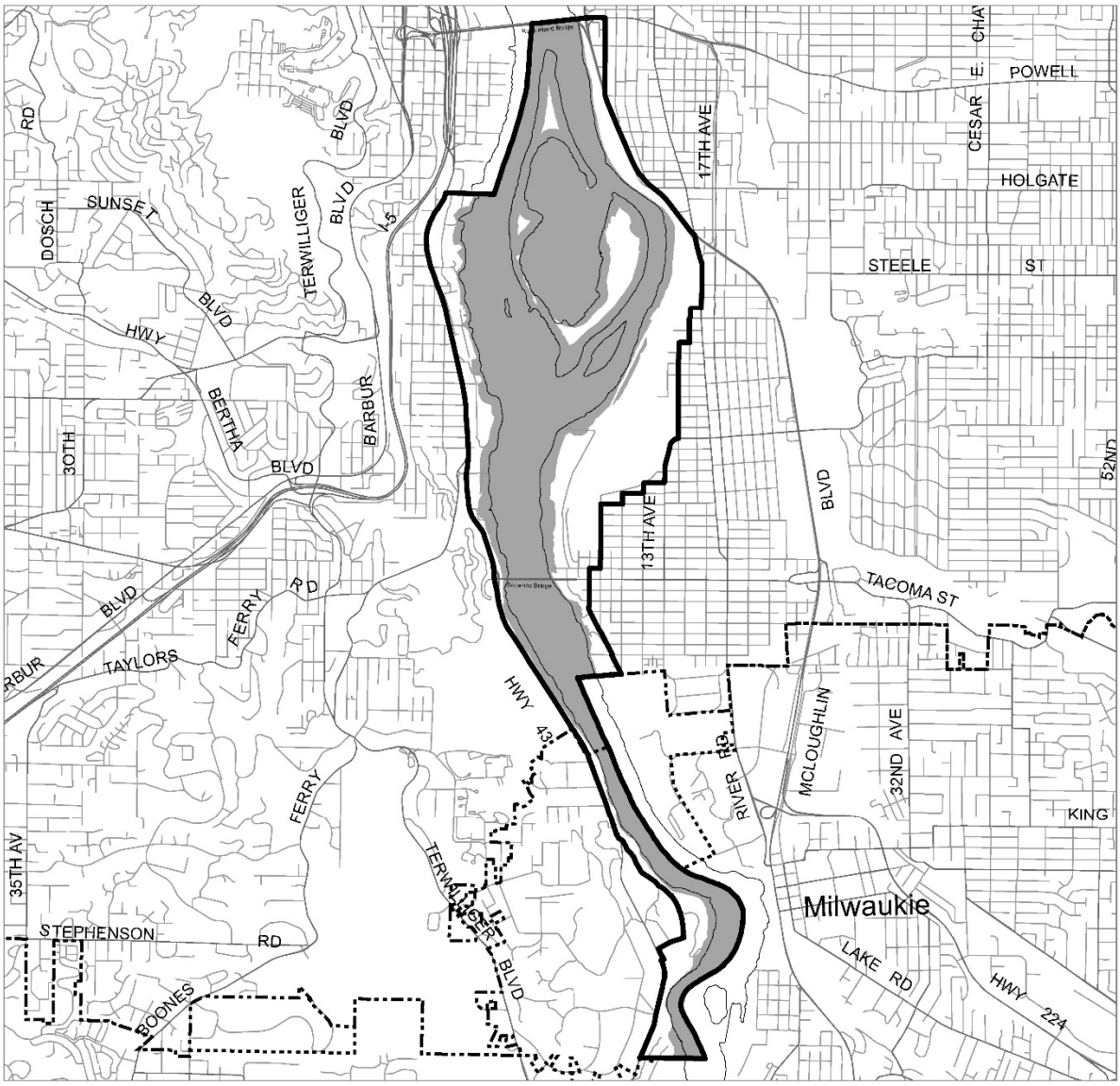
The existing Map 475-6 is replaced with a new one that identities the South Reach Riparian Buffer Area map as Map 2 of 2.

South Reach
Riparian Buffer Area

Map 475-6

Map 2 of 2

Map Revised Xxxxx X, 202X



Legend

- City Boundary
- Urban Service Boundary
- Willamette River
- River Overlay Boundary
- Riparian buffer area

NORTH

0 2,200 4,400

Scale in Feet

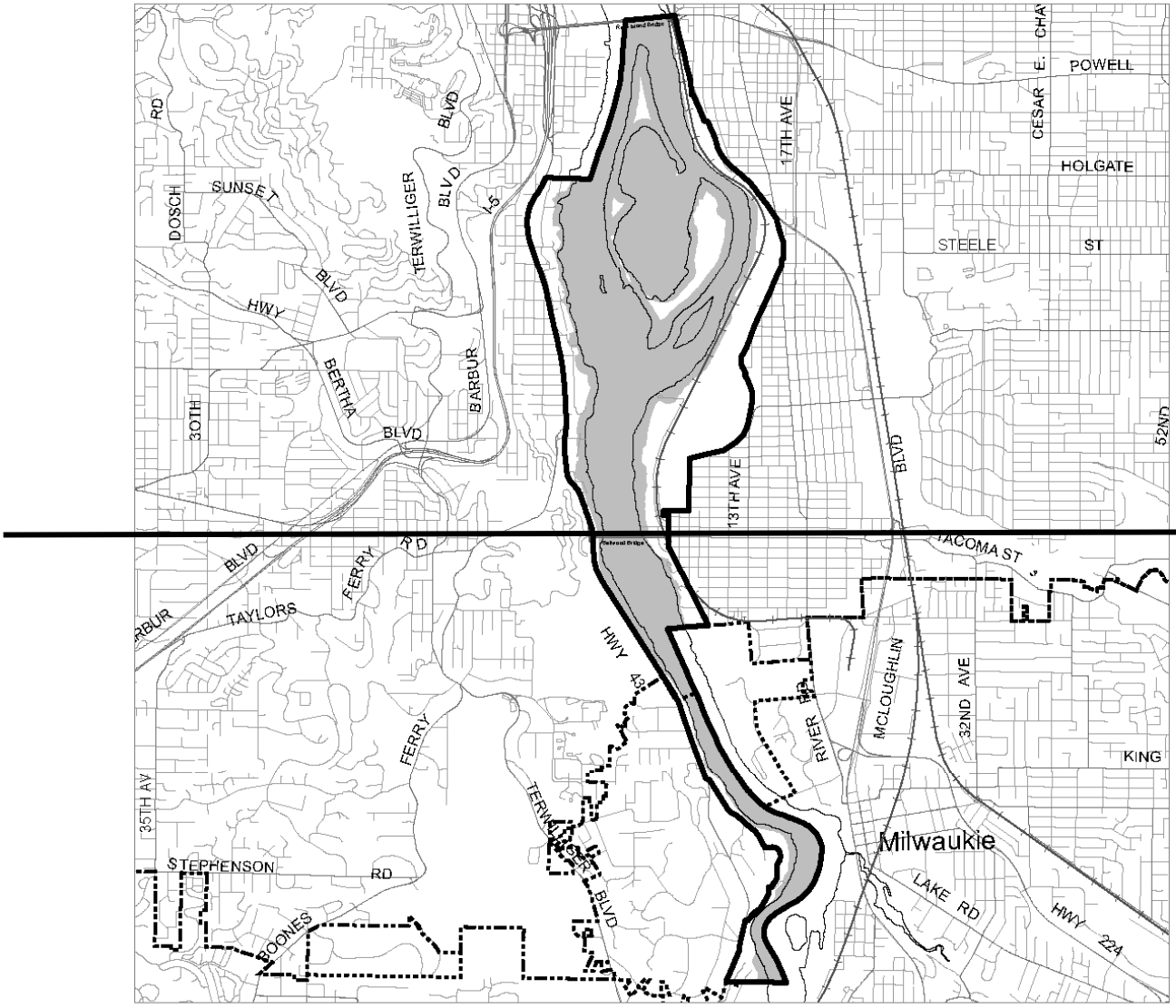
Bureau of Planning and Sustainability
Portland, Oregon

Commentary

South Reach
Riparian Buffer Area

Map 475-6

Map Revised March 1, 2021



Legend

- City Boundary
- Urban Service Boundary
- River Overlay Boundary
- Riparian buffer area

NORTH

0 2,200 4,400

Scale in Feet

Bureau of Planning and Sustainability
Portland, Oregon

Commentary

33.510 Central City Plan District

The Central City Plan District guides development throughout the Central City, including in the South Waterfront Subdistrict. Because of its development expectations and character, the South Waterfront Subdistrict has unique development requirements and review processes.

The changes proposed in this chapter update the requirements within the Greenway overlay zone in the South Waterfront Subdistrict to improve floodplain management and ensure the preservation and expansion of floodplain habitat.

Requirements are added for activities within the combined flood hazard area. This amendment and others throughout this chapter, reference the "combined flood hazard area," which is the area comprised of the farthest landward extent of the FEMA 100-year floodplain, which has a one percent chance of being flooded in any given year and is also known as the Special Flood Hazard Area, and the 1996 Flood Inundation Area.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

33.510.200.D.3.b.

This amendment adds "Setback" to the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2). The amendment also updates the incorrect reference to Figure 510-3. Figure 510-2 should be referenced. This change in the naming of the South Waterfront Greenway Setback Area provides clarity on the regulations in this specific area to avoid confusion related to new regulations for activities in the Greenway overlay, more generally.

This update is made throughout the chapter, wherever the "South Waterfront Greenway Area" is referenced.

33.510 Central City Plan District

510

33.510.200 Floor Area Ratios

A.-C. [No change]

D. Limits on increased floor area. Maximum FAR can be increased on a site if FAR is transferred or bonus FAR is earned as allowed by 33.510.205, Floor Area Bonus and Transfer Options. The following limits apply to increases in FAR:

1.-2. [No change]

3. South Waterfront subdistrict. In the South Waterfront subdistrict the following applies:

   a. [No change]

   b. The total floor area on a site, including bonus floor area and transferred floor area, may be more than 9 to 1 if all of the following are met:

      (1) The floor area above the 9 to 1 ratio is transferred from the South Waterfront Greenway Setback Area shown on Figure 510-~~3~~2; and

      (2) The portion of the South Waterfront Greenway Setback Area that floor area is being transferred from must have been dedicated to the City after September 1, 2002

E. [No change]

33.510.205 Floor Area Bonus and Transfer Options

A.-B. [No change]

C. Floor area bonus options. Additional development potential in the form of floor area is earned for a project when the project includes any of the specified features listed below. The bonus floor area amounts are additions to the maximum floor area ratios shown on Map 510-2.

1. [No change]

2. Bonus flood area options.

   a.-c. [No change]

Commentary

33.510.205.C.2.d.(1)
This amendment adds "Setback" to the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2). The amendment also updates the incorrect reference to Figure 510-3. Figure 510-2 should be referenced.

33.510.205.C.2.d.(6)
This amendment updates the references to the correct paragraphs in 33.510.253.F.2. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F.2.

33.510.215.B.3.b.(2)
This amendment updates the reference to the correct paragraph in 33.510.253.F.2. and adds "Setback" to the area previously called the "South Waterfront Greenway Area" (as shown on Figure 510-2). The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F.2.

d. South Waterfront Willamette River Greenway bonus option. To complement and enhance the existing public corridor, projects along the Willamette River Greenway in the South Waterfront subdistrict that provide open space for public activity will receive bonus floor area. For each square foot of open space dedicated, a bonus of 3 square feet of additional floor area is earned. Open space that will earn bonus floor area under Subparagraph C.2.e, Open Space bonus option, may not be used to earn additional floor area under this bonus. To qualify for this bonus, the following requirements must be met:

(1) Location. The open space must abut the South Waterfront Greenway Setback Area, as shown on Figure 510-~~3~~2;

(2)-(5) [No change]

(6) Landscaping. The open space must be landscaped to meet the requirements of Paragraphs ~~33.510.253.E.5.a.(2)~~33.510.253.F.2.a.(2) and ~~E.5.f.(5)~~ F.2.f.(5) that apply to South Waterfront Greenway subarea 3;

(7)-(8) [No change]

e.-f. [No change]

33.510.215 Required Building Lines

A. [No change]

B. Required building line standards.

1.-2 [No change]

3. Standards for the South Waterfront subdistrict. In the South Waterfront subdistrict, new development and major remodels must meet one of the following standards. Exterior walls of buildings designed to meet the requirements of this Paragraph must be at least 15 feet high measured from the finished sidewalk at the building's edge:

a. [No change]

b. The building must extend to within 12 feet of the street lot line for 75 percent of the lot line, and the space between the building and the street lot line must meet one of the following:

(1) [No change]

(2) Be landscaped in one of the following ways:

- The proposed landscaping meets the L2 standard;
- The proposed landscaping meets the landscaping regulations of ~~33.510.253 E.5.f(5)~~33.510.253.F.2.f.(5) for subarea 3 of the South Waterfront Greenway Setback Area except that trees are not required; or

Commentary

33.510.251.B.1.
This amendment adds "Setback" to the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2).

33.510.251.B.4.
This amendment updates the reference to the correct paragraph in 33.510.253.F.2. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F.2.

- The applicant submits with the application for a land use review a letter from the Bureau of Environmental Services stating that the landscaping meets the guidelines of the Stormwater Management Manual.

4.-5 [No change]

33.510.251 Additional Standards in the South Waterfront Subdistrict

A. [No change]

B. Accessways.

1. Purpose. Accessways provide physical access and connections to the Greenway for neighbors, visitors, and residents of South Waterfront who might otherwise be cut off from the Willamette River and the Greenway trail. Accessways are generally extensions of existing and planned east-west public rights-of-way, and may or may not provide vehicle access. Accessways provide safe and convenient bicycle and pedestrian connections to and from the Greenway trail. Accessways contribute to stormwater management in the subdistrict. They also provide a visual connection to the South Waterfront Greenway Setback Area and provide a transition from the natural emphasis of the South Waterfront Greenway Setback Area to the urban emphasis of the rest of the district.

2-3. [No change]

4. Landscaping. The area between the building and the accessway must meet the landscaping standards of ~~33.510.253 E.5.f(5)~~33.510.253.F.2.f.(5) that apply to subarea 3 of the South Waterfront Greenway Setback Area. However, along accessways that are designated as special building height corridors on Map 510-15, trees are not required.

33.510.253 Greenway Overlay Zone in the South Waterfront Subdistrict

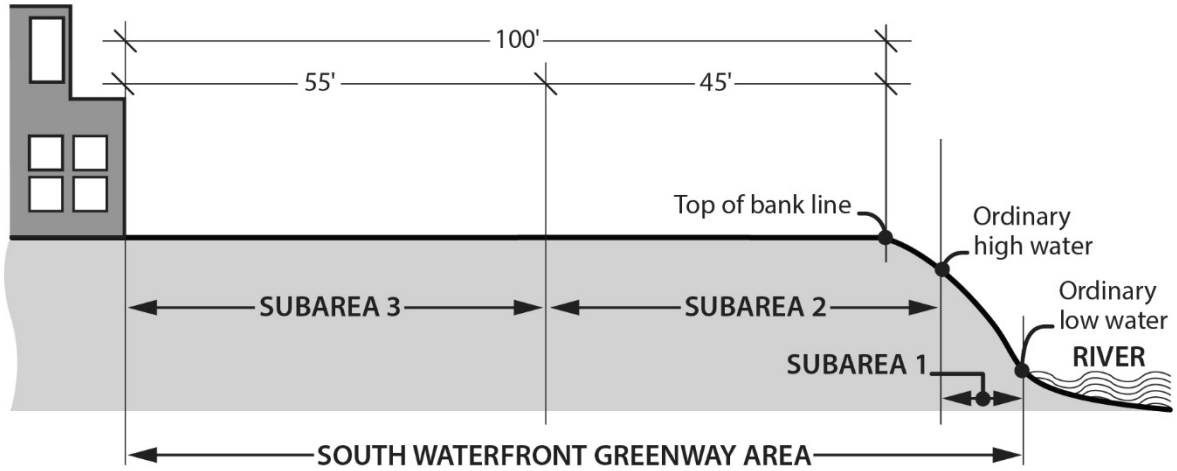
A.-C. [No change]

Commentary

Figure 510-2 South Waterfront Greenway Setback Area and Subareas
This amendment updates the name of Figure 510-2 to "South Waterfront Greenway Setback Area and Subareas." This change provides clarity on the regulations in this specific area to avoid confusion related to new regulations for activities in the Greenway overlay, more generally, contained in 33.510.253.F. The South Waterfront Greenway Setback Area and Subareas include land from ordinary low water to 100 feet landward of the top of bank line.

33.510.253.D. Required South Waterfront Greenway Setback Area improvements
These amendments add "Setback Area" to the title of the paragraph and "Setback" when the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2) is referenced. This change provides clarity on the regulations in this specific area to avoid confusion related to new regulations for activities in the Greenway overlay, more generally, contained in 33.510.253.F. Additionally, the reference to applicable landscape requirements is updated to the correct paragraph in 33.510.253.F.2. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F.2.

Figure 510-2
South Waterfront Greenway Setback Area and Subareas



Greenway Area = from ordinary low water to 100' from top of lank line
Subarea 1 = from ordinary low water to ordinary high water
Subarea 2 = from ordinary high water to 45' in from top of bank line
Subarea 3 = from 45' in from top of bank to 100' in from top of bank line

D. Required South Waterfront Greenway Setback Area improvements. Adjustments and modifications to this subsection are prohibited.

1. Required landscaping.

   a. When development on the site, or alterations to structures, the site, or rights-of-way are made, and BDS determines that the value of the proposed alterations on the site is more than $300,000, the site must be brought into conformance with the landscape requirements of Paragraph ~~E.5.f.~~F.2.f. that apply to subareas 2 and 3 of the South Waterfront Greenway Setback Area. The value of the alterations is based on the entire project, not individual building permits. It is the responsibility of the applicant to document the value of the required improvements.

      The following alterations and improvements do not count toward the dollar threshold of this subsection:

      (1)-(5) [No change]

   b. [No change]

   c. Supplemental application requirement. Where landscaping is required by this paragraph, the applicant must submit a landscape plan to BDS that shows that the landscaping will grow to meet the landscape standards of Subparagraph ~~E.5.f.~~F.2.f., below, within five years. The landscape plan must be certified by a licensed landscape architect, or by a qualified restoration specialist as part of a formal City revegetation project under authority of Portland Parks and Recreation or the Bureau of Environmental Services.

Commentary

33.510.253.E. Design and South Waterfront greenway review
This amendment updates the name of the paragraph to better describe its purpose. The paragraph is now focused on when Design Review and South Waterfront Greenway Review are required. South Waterfront greenway review is a land use review process specifically tailored to the South Waterfront area, and separate from Greenway Review under 33.440, Greenway Overlay Zones. The development standards for the South Waterfront Greenway overlay zone have been moved to 33.510.253.F.

33.510.253.E.1. Where these regulations apply
These amendments add "within and riverward" of the South Waterfront Greenway Setback Area and update the name of Figure 510-2 to "South Waterfront Greenway Setback Area and Subareas." These changes make clear that when in-river development is proposed it must meet the requirements of this section, while also avoiding confusion related to new regulations of activities in the Greenway overlay, more generally, contained in 33.510.253.F.

33.510.253.E.3.a.
This amendment updates the reference to the development standards in Paragraph F. The standards previously in Paragraph E.5 have been move to Paragraph F and additional standards have been added.

As noted in this subparagraph, South Waterfront greenway review will be triggered for non-exempt development proposals in the South Waterfront Greenway Setback Area that do not meet applicable development standards of Paragraph F below.

Non-exempt development within the Greenway overlay zone but outside the South Waterfront Greenway Setback Area is also required to meet applicable development standards, but in this case not meeting a standard does not trigger South Waterfront Greenway review but instead triggers an adjustment review or modification through design review.

2. Bank improvements. In subarea 1, when there is any regrading, bank stabilization, or other activities affecting the contours and composition of soil, the requirements of Paragraph ~~E.5.f.~~F.2.f. for subarea 1 must be met.

3. Major public trail and pedestrian connections and public viewpoints. When development on a site, or alterations to structures, the site, or rights-of-way are made that add more than 50,000 square feet of floor area to the site, the applicant must provide public access easements for, and construct, the major public trail, pedestrian connections to the major public trail, and public viewpoints in accordance with Subparagraph ~~E.5.d.~~F.2.d., and Subparagraph ~~E.5.e.~~F.2.e. The requirement to provide an access easement for, and construct, the major public trail, pedestrian connections, and public viewpoints applies only when the development described above will increase the use of the major public trail system or will contribute to the need for additional major public trail facilities, and application of the regulations is determined to be roughly proportional to the impacts of the proposed development. The square footage added to the site is calculated based on the total amount added, regardless of the amount demolished

4. [No change]

5. Landscaping monitoring and reporting. Monitoring required landscaping is the ongoing responsibility of the property owners. If landscaping is required by the subsection, the owner must submit a report to BDS documenting that the landscape standards of Subparagraph ~~E.5.f.~~F.2.f. below, have been met on the site. The report must be submitted within 1 year of the installation date, or within the timeline approved through a South Waterfront Greenway Review. See Chapter 33.851.

E. ~~**Development standards**~~**Design review and South Waterfront greenway review.** Generally, proposals are subject to design review. In most instances, applicants may choose between meeting development standards or going through South Waterfront greenway review. In some instances, South Waterfront greenway review is required.

1. Where these regulations apply. The regulations of this subsection apply within and riverward of the South Waterfront Greenway Setback Area. ~~as~~The South Waterfront Greenway Setback Area is shown on Figure 510-2. The regulations apply to development and alterations to structures, sites, and rights-of-way.

2. [No change]

3. South Waterfront greenway review. South Waterfront greenway review is required for the following:

   a. New development or exterior alterations that do not meet the standards of Paragraph ~~E.5~~F and are not exempted by Paragraph E.4;

   b. [No change]

Commentary

33.510.253.E.4.c.(deleted)
This amendment deletes the exemption for excavations and fills less than 50 cubic yards. Per FEMA guidance, all fill in the floodplain must be mitigated to maintain flood storage. Deletion of this exemption ensures that any excavations or fills are adequately mitigated for flood storage and floodplain habitat.

33.510.253.E.4.c.(renumbered)
This amendment further clarifies what dredging, channel maintenance and material removal is exempted. The detailed requirements provided in 33.510.253.E.3.c.1., and 2. are consistent with requirements already in place in the River Overlay Zones chapter, which is applied in the Central Reach (to the north) and South Reach (to the south).

33.510.253.E.4.f.(deleted)
This amendment deletes the exemption for placement of up to four single piles or two multiple pile dolphins along the shoreline. Per FEMA guidance, development that may impact the critical habitat of endangered and threatened salmon and steelhead must be avoided or mitigated to ensure no habitat loss. Deletion of this exemption ensures that the habitat and flood storage impacts of the placement of piles is appropriately mitigated through Greenway review.

33.510.253.E.4.f.
This amendment clarifies what vegetation removal or pruning is exempt from Design Review and South Waterfront Greenway Review. Non-tree vegetation removal and pruning is exempt in the South Waterfront Greenway Setback Area. Replanting per the subarea 3 standards is required when these plants are removed. These exemptions are similar to requirements already in place in the River Overlay Zones chapter but have been tailored to the needs of South Waterfront. See Figure 510-2 for the South Waterfront Greenway Setback Area.

33.510.253.E.4.g.
This amendment establishes that removal or pruning of vegetation per the development standards in 33.510.253.F.1.b. riverward of top of bank is not required to be approved through Design Review or South Waterfront Greenway Review.

33.510.253.E.4.h.
This amendment exempts the planting of native vegetation from Design Review and South Waterfront Greenway Review. This exemption is consistent with exemptions in the River Overlay Zones chapter, which is applied in the Willamette River Central Reach (to the north) and South Reach (to the south).

4. Exempt from Design review and South Waterfront greenway review. The following are exempt from Design review and South Waterfront greenway review:~~;~~

   a. Changes to the interior of a building ~~where there are not exterior alterations~~;

   b. Normal maintenance and repair;

   ~~c. Excavations and fills of less than 50 cubic yards;~~

   c~~d~~. Dredging, channel maintenance, and the removal of materials from the river~~;~~ and as follows:

      1. Dredging, channel maintenance, and the removal of materials outside the federal navigation channel as follows:
         - Dredging and the removal of materials in waters that are 35 feet deep or deeper, measured from the ordinary high water mark; or
         - Channel, slip and berth maintenance that has been approved by the U.S. Army Corps of Engineers.

      2. The placement of dredged materials within the River General overlay zone is not exempt.

   d~~e~~. Emergency procedures necessary for safety or the protection of property;

   ~~f. The placement of up to four single piles, or two multiple-pile dolphins for each 100 feet of shoreline for an existing river-dependent or river-related use.~~

   e~~g~~. Development of public streets identified in the adopted *South Waterfront District Street Plan, Criteria and Standards* are exempt from design review, but not greenway review.

   f. Removal or pruning of non-tree vegetation listed on the *Nuisance Plant List* and other non-tree, non-native vegetation located within or riverward of the South Waterfront Greenway Setback Area. Temporary disturbance area must be replanted to meet the subarea 3 standards in 33.510.253.F.2.f.(5). See Figure 510-2 for the South Waterfront Greenway Setback Area

   g. Riverward of the top of bank, removal and pruning of vegetation per the development standards in 33.510.253.F.1.b.

   h. Planting of native vegetation listed on the Portland Plant List when planted with hand-held equipment or equipment with a wheel surface-to-ground pressure of no more than 7.5 psi.

Commentary

33.510.253.F.1. General development standards

This amendment adds a new subparagraph to address exterior lighting and vegetation removal and pruning requirements within the Greenway overlay zone in South Waterfront. These requirements are separate from those in 33.510.253.F.2., which specifically address the South Waterfront Greenway Setback Area, as depicted in Figure 510-2.

33.510.253.F.1.a. Exterior lighting

This amendment moves the exterior lighting requirements from their original location, 33.510.253.E.5.h., to the Greenway overlay zone general development standards. Moving the requirements to this location will ensure that all development within the Greenway overlay zone meets the requirements. The previous location limited the application of them to only the South Waterfront Greenway Setback Area, though the intention was for them to apply to all of the Greenway overlay zone.

33.510.253.F.1.a.(2) General standards

This subparagraph is amended to add a requirement that lamps specified in this area must fall below 3000K or within an S/P ratio range of 1 to 1.2. This requirement is consistent with those in the River Overlay Zones chapter, which is applied in the Willamette River Central Reach (to the north) and South Reach (to the south).

F~~5~~. Development standards.

1. General development standards. The following standards apply within the greenway overlay zone.

a. Exterior lighting.

(1) Purpose. The standards for exterior lighting are intended to:

- Avoid or minimize light glare and light spill from artificial lighting and associated negative impacts on fish and wildlife and their habitats;
- Reduce light pollution and glare impacts on residential developments;
- Maintain public safety and security along the major public trail, pedestrian connections to the major public trail, in parks, along public streets, and on piers and gangways; and
- Provide flexibility for river dependent operations associated with docks.

(2) General standards. The following standards apply to all exterior lights.

- Exterior lights must not project light upward or to the side of the fixture;
- The top and sides of all exterior light fixtures must be shielded with 100 percent opaque materials; and
- Lamps must fall below 3000K or within an S/P ratio range of 1 to 1.2.

(3) Additional standards for areas near the Willamette River. The following standards apply to all permanent exterior lights located within and riverward of the South Waterfront Greenway Setback Area, and all permanent exterior lights. Exterior lights within public streets are exempt from this Subsubparagraph.

- Exterior lights are allowed only if the lights are for the following use or development:
  - Park and Open Area uses;
  - The major public trail or pedestrian connections to the major public trail;
  - Public viewing areas; or
  - River-dependent or river-related development.
- Structures that support exterior light fixtures must be setback at least 5 feet from the top of bank of the Willamette River except for docks and gangways, and must be setback at least 30 feet from any other stream, drainageway, wetland or water body;
- Structures that support exterior light fixtures must be spaced at least 25 feet apart;

33.510.253.F.1.b.
This amendment adds standards for removal or pruning of vegetation within Greenway overlay zone. These standards establish the removals and pruning that will be allowed without South Waterfront Greenway Review. These requirements are consistent with those in the River Overlay Zones chapter, which is applied in the Willamette River Central Reach (to the north) and South Reach (to the south).

As described in 33.510.253.E.3.a. commentary above (page 80), South Waterfront greenway review will be triggered for non-exempt development proposals in the South Waterfront Greenway Setback Area that do not meet the development standards of this subparagraph.

Non-exempt development within the Greenway overlay zone but outside the South Waterfront Greenway Setback Area is also required to meet applicable development standards, but in this case not meeting a standard does not trigger South Waterfront Greenway review but instead triggers an adjustment review or modification through design review.

33.510.253.F.1.b.(4)
This amendment adds the maintenance of the immediate area around signage to the list of activities that can be approved via these standards. This addition will allow for pruning and removal, as necessary, of trees and other vegetation that may block the view of permanent signage.

- Lamps must fall below 3000K or within an S/P ratio range of 1- 1.2; and
- Exterior lights must not project directly into the Willamette River.

b. Removal or pruning of vegetation must meet the following.

(1) All vegetation removal activities must be surrounded or protected to prevent erosion and sediment from leaving the site or negatively impacting resources on the site;

(2) The removal or pruning must be conducted with handheld equipment or equipment with a wheel surface-to-ground pressure of no more than 7.5 psi;

(3) Temporary disturbance area must be replanted to meet the subarea 3 standards in 33.510.253.F.2.f.(5);

(4) Vegetation that is removed or pruned is limited to the following:

- Vegetation listed on the *Nuisance Plant List*;
- Dead, dying or dangerous trees or portions of trees when they pose an immediate danger, as determined by the City Forester or certified arborist;
- Vegetation that exceeds the height restriction of a view corridor within special height restrictions designated in the *Central City Scenic Resources Protection Plan*;
- Non-native trees and trees on the *Nuisance Plants List* that are more than 3 inches in diameter.
- Vegetation that is within 5 feet of a permanent sign.

(5) Trees removed must be replaced as shown in Table 510-1 and must meet the following:

- Trees must be a minimum ½-inch caliper, bareroot or live stakes, unless they are oak or madrone, which may be one gallon size. No more than ten percent of the trees may be oak or madrone. Shrubs must be a minimum of one gallon size or bareroot. All other species must be a minimum of four-inch pots or equivalent;
- Planting must occur within the combined flood hazard area. Trees must not be planted within a view corridor. If the vegetation is not planted on the applicant's site, then the applicant must own the property or possess a legal instrument, such as an easement or deed restriction, that is approved by the City as sufficient to ensure the right to carry out, monitor, and maintain the mitigation; and
- The requirements of Section 33.248.090, Mitigation and Restoration Planting must be met.

Commentary

Table 510-1.
Table 510-1 is added to clearly identify the number of trees required to be planted when trees of different diameters are removed. The number of trees required to be replanted increases as the size of the tree increases. The minimum 3:1 tree replacement ratio for trees six inches and greater is consistent with the FEMA Biological Opinion and with similar requirements in the River Overlay Zones chapter, which is applied in the Willamette River Central Reach (to the north) and South Reach (to the south).

33.510.253.F.2. Greenway setback area development standards.
This amendment moves the development standards originally located in 33.510.253.E.5 to this location, where these setback area standards now follow the standards for development in all of the Greenway overlay zone.

Throughout this paragraph references to other sections are updated with the correct location in 33.510.253.F.2. Additionally, "Setback" is added to all references to the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2).

Table 510-1 **Tree Replacement in the South Waterfront Greenway Combined Flood Hazard Area**		
Size of tree to be removed (inches in diameter)	Option A (no. of native trees to be planted)	Option B (combination of native trees and shrubs)
More than 6 and up to 20	3	Not applicable
More than 20 and up to 25	5	3 trees and 6 shrubs
More than 25 and up to 30	7	5 trees and 9 shrubs
More than 30	10	7 trees and 12 shrubs

2. Greenway setback area development standards. The following standards apply in the South Waterfront Greenway Setback Area shown on Figure 510-2. The standards must be met unless the applicant chooses South Waterfront greenway review. Adjustments to these standards are prohibited.

   a. Non-landscaped area. Limiting the percentage of non-landscaped area allowed in the South Waterfront Greenway Setback Area ensures that the area will be configured to accommodate a minimum percentage of living plant cover. Non-landscaped area includes all aboveground structures and paving materials, including permeable paving materials.

      (1) Subareas 1 and 2. Up to 20 percent of the portion of the site in subareas 1 and 2 may be covered by non-landscaped area; however, paved surfaces that are required under the provisions of Paragraph ~~E.5.e.~~F.2.e., Public viewpoints, are exempt from this limitation. Non-landscaped area may be no closer than 10 feet of the top of bank line as shown on Map 510-21, South Waterfront 2002 Top of Bank Line;

      (2) Subarea 3. Up to 20 percent of the portion of the site in subarea 3 may be covered by non-landscaped area. However, required trail and pedestrian connection improvements are exempt from this limitation.

   b. Buildings. Buildings are allowed within the South Waterfront Greenway Setback Area if they meet ~~E.5~~F.2.b.(1) and (2) and either ~~E.5~~F.2.b.(3) or (4). Other buildings or portions of buildings are not allowed within the South Waterfront Greenway Setback Area.

      (1) The site meets the non-landscaped area requirements under ~~E.5~~F.2.a., above; and

      (2) The building does not obstruct required pedestrian connections and trails; and

      (3) The building is river-dependent or river related; or

Commentary

33.510.253.F.2.b.(4)

This amendment adds that any buildings proposed in subarea 3 must be located outside of the combined flood hazard area. This requirement will ensure that new buildings placed within the South Waterfront Greenway Setback Area will not impact floodplain habitat or reduce flood storage without being effectively mitigated.

(4) All of the floor area of the building is in Retail Sales And Service uses and the following are met:

- The building has less than 1,000 square feet of floor area;
- The building is entirely within subarea 3 and not located within the combined floor hazard area; and
- The building is located landward of the South Waterfront recreational trail.

c. Fences and walls. Fences and walls are allowed in subarea 3 of the South Waterfront Greenway Setback Area if they are no more than 3 feet in height and do not obstruct the required pedestrian connections and trails. Fences and walls are not allowed in subareas 1 and 2 of the South Waterfront Greenway Setback Area.

d. Major public trails and pedestrian connections.

(1) Purpose. Major public trails provide public access to and along both sides of the Willamette River. Major public trails are one of the tools used to comply with the public access requirements of the Comprehensive Plan and the Willamette Greenway Plan. Pedestrian connections ensure that there is adequate, safe, and direct pedestrian access from the adjacent development and from the district as a whole to the major public trails.

(2) Major public trails. Major public trails must meet the following standards. When required by Subsection D., sites with major public trail symbol shown on the Official Zoning Maps must provide easements that would accommodate construction, maintenance, and public use of a major public trail that meets the following standards. See Figure 510-3. Location. The major public trail must be located in the South Waterfront Greenway Setback Area shown on Figure 510-2. All portions of the major public trail must be at least 10 feet and no more than 75 feet from the top of bank line as shown on Map 510-21, South Waterfront 2002 Top of Bank Line; however, any portion of the major public trail that is within 45 feet of the top of bank line as shown on Map 510-21, South Waterfront 2002 Top of Bank Line, is subject to the maximum non-landscaped area limitations of Subparagraph ~~E.5~~F.2.a.;

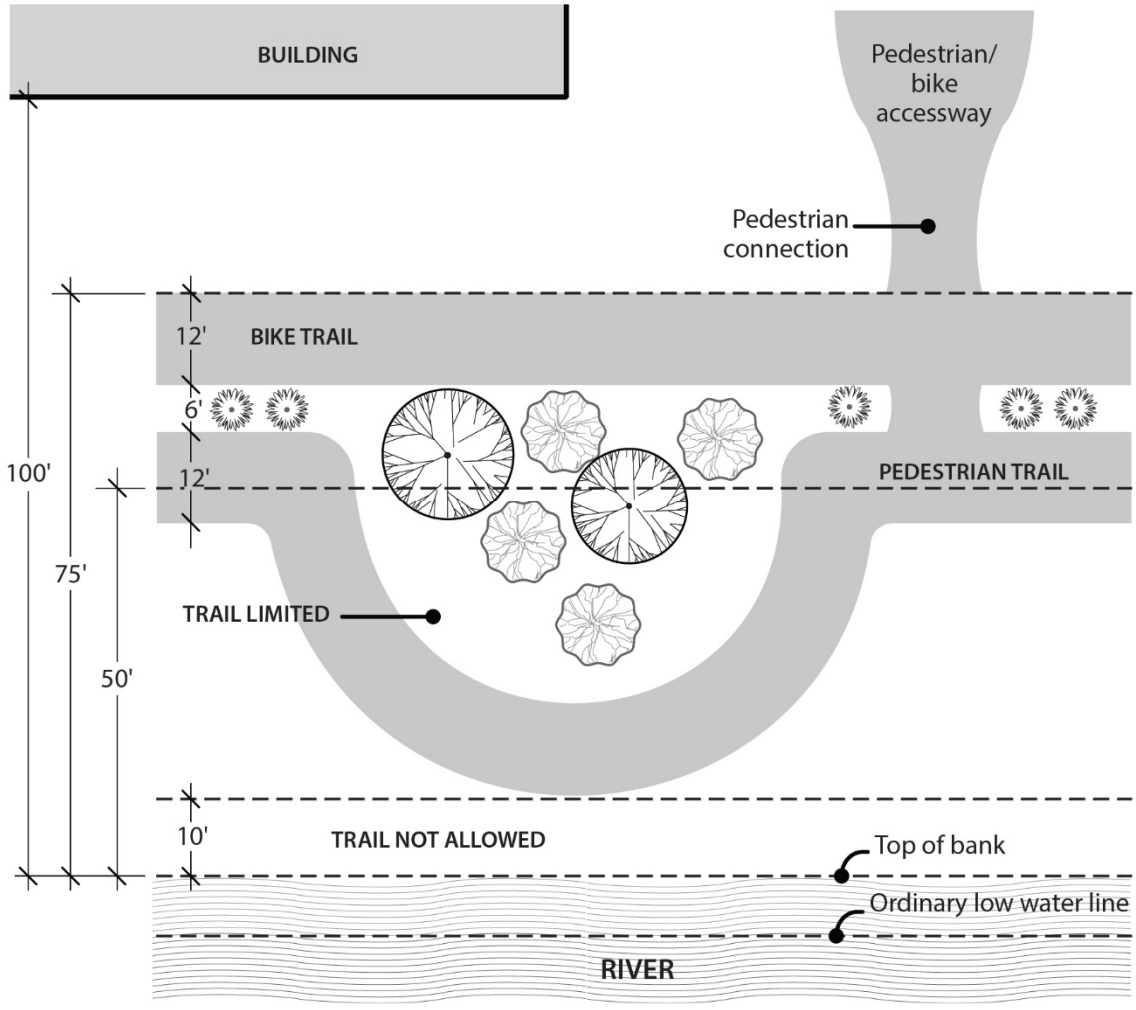
- Width. The major public trail must consist of two paths, each at least 12 feet in width;
- Landscaped median. The two paths must be separated by a landscaped median at least 6 feet wide. Landscaping within this median must meet the requirements of Paragraph ~~E.5~~F.2.f. The landscaping may be interrupted by public access connections between the two paths;
- Use. The path closest to the river must be designated for pedestrians only. The path farthest from the river must be designated for bicycles and other non-motorized transportation modes;

Commentary

- Connectivity.
  - The major public trail or major public trail easement must connect to the existing major public trails or trail easements on adjacent sites; and
  - The major public trail or major public trail easement must connect to the required pedestrian circulation system on the site.
- Additional standards. In addition to the standards of this subparagraph, the standards of Chapter 33.272, Major Public Trails, must also be met.

(3) Pedestrian connections. When a major public trail or major public trail easement is required, at least one pedestrian connection must be provided between the trail easement and any accessway that terminates on the site.

Figure 510-3
South Waterfront Greenway Trail



Commentary

e. Public viewpoints.

(1) Purpose. Public viewpoints provide stopping places and clearings along the South Waterfront Greenway trail and the Willamette River where the public can view and enjoy the natural and scenic qualities of the Greenway and the river. Public viewpoints are one of the tools used to comply with the public access requirements of the Comprehensive Plan and the Willamette Greenway Plan.

(2) Viewpoint requirements. A public viewpoint must be provided on sites designated in the Central City Scenic Resources Protection Plan.

- Sites with a viewpoint designation must provide a viewpoint area that meets the following standards:
  - The viewpoint area must be at least 500 square feet in area;
  - The viewpoint area must abut the Greenway trail or a public access connection must be provided from the Greenway trail to the viewpoint area;
  - The viewpoint area and any public access connection to the viewpoint area from the Greenway trail must comply with the Use of Trail, Hours of Use, Trespass, and Trail Maintenance and Liability sections of Chapter 33.272, Major Public Trails;
  - Materials, benches, and lighting used in the viewpoint area must meet the requirements of the Portland Bureau of Parks and Recreation; and
  - If an accessway or street that is mapped as a special building height corridor on Map 510-15 terminates on the site, the view corridor must continue the projected centerline of the accessway or street as shown in Figure 510-4.

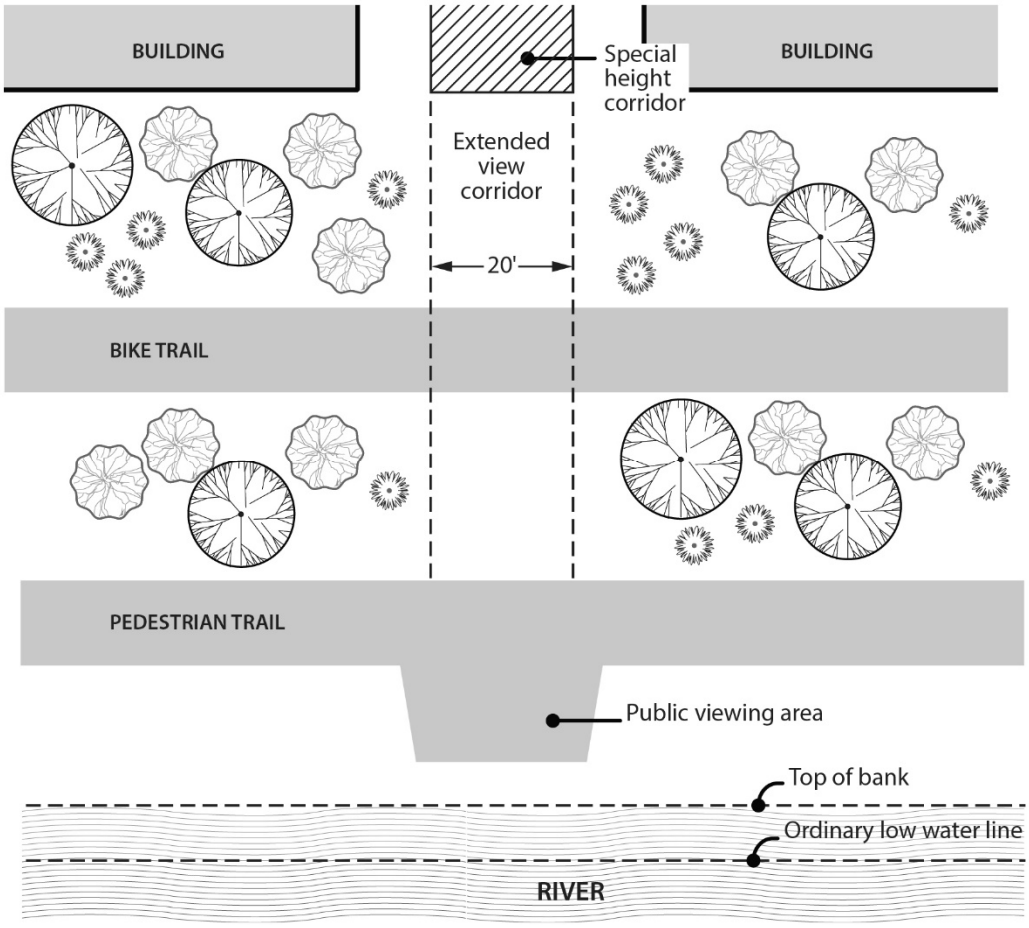
f. Landscaping.

(1) Coverage. Eighty (80) percent of the area that is not covered by buildings, trails, or other allowed non-landscaped area must be covered by shrubs or ground cover, and all trees required by this paragraph must be installed in the ground and healthy;

(2) Existing landscaping. Existing plants may be used to meet the standards of this paragraph, if protected and maintained during construction as specified in Section 33.248.065. However, plants identified in the South Waterfront Greenway Nuisance Plants List of the *Portland Plant List* must be removed.

Commentary

Figure 510-4
Public Viewpoint and View Corridor



(3) Required landscaping in subarea 1. In subarea 1, the area beginning 3 feet above the ordinary low water line must meet the following requirements:

- Shrubs. At least 80 percent of the required landscaped area must be planted in shrubs;
- Trees. Trees are not required, but are allowed;
- Ground cover. All of the required landscaped area that is not planted with shrubs or trees must be fully covered with ground cover plants;
- Plant list. Only plants listed in the South Waterfront Greenway Subarea 1 Plant list of the *Portland Plant List* may be planted; and
- Installation of landscaping. All planting must be of a sufficient size and number to meet the coverage standards within five years. Restoration size plant material, including bare-root, is allowed and recommended. Planting is not required to meet the size and spacing requirements of 33.248.030, Plant Materials. Planting is not allowed during the summer.

33.510.253.F.2.g. Other development

These amendments add "Setback" to the area previously called the "South Waterfront Greenway Area" (shown on Figure 510-2) and update the reference in 33.510.253.F.2.g.(1) to the correct location in 33.510.253.F.2,

(4) Required landscaping in subarea 2. In subarea 2, the required landscaping is:

- Shrubs. At least 80 percent of the landscaped area must be planted in shrubs;
- Trees. At least one tree must be planted for every 400 square feet of landscaped area. Trees may be clustered;
- Ground cover. All of the landscaped area that is not planted with shrubs or trees must be fully covered with ground cover plants;
- Plant list. Only plants listed in the South Waterfront Greenway Subarea 2 and 3 Plant List of the *Portland Plant List* may be planted. At least eight different species must be planted; and
- Installation of landscaping. All planting must be of a sufficient size and number to meet the coverage standards within 5 years. Planting is not required to meet the size and spacing requirements of 33.248.030, Plant Materials.

(5) Required landscaping in subarea 3. In subarea 3, the required landscaping is:

- Shrubs. At least 60 percent of the landscaped area must be planted in shrubs. At least 50 percent of the shrubs used to meet this requirement must be listed in the South Waterfront Greenway Subarea 2 and 3 Plant List of the *Portland Plant List*;
- Trees. At least 1 tree must be planted for every 1,000 square feet of landscaped area. At least 50 percent of the trees used to meet this requirement must be listed in the South Waterfront Greenway Subarea 2 and 3 Plant List of the *Portland Plant List*;
- Ground cover. All of the landscaped area that is not planted with shrubs or trees must be fully covered with ground cover plants. At least 50 percent of the ground cover plants must be listed in the South Waterfront Greenway Subarea 2 and 3 Plant List of the *Portland Plant List*;
- Plant list. Except as allowed by (1), (2) and (3), only plants listed in the South Waterfront Greenway Subarea 2 and 3 Plant List of the *Portland Plant List* may be planted. The following plants are prohibited:
  - Plants included on the Nuisance Plants List or Required Eradication List of the *Portland Plant List*;
  - Plants included in the South Waterfront Greenway Nuisance Plants List of the *Portland Plant List*.
- Installation of landscaping. All planting must be of a sufficient size and number to meet the coverage standards within five years. Planting is not required to meet the size and spacing requirements of 33.248.030, Plant Materials.

g. Other development. Other development is allowed within the South Waterfront Greenway Setback Area if it meets Subparagraphs g.(1) and (2) and either g.(3) or (4).

33.510.253.E.5.h. Exterior lighting (deleted)

These exterior lighting requirements, originally in 33.510.253.E.5.h. have been moved to 33.510.253.F.1.a.

(1) The site meets the non-landscaped area requirements under ~~E.5~~F.2.a., above;

(2) The development does not obstruct required pedestrian connections and trails; and

(3) The development is located in subarea 3; or

(4) The development is river-dependent or river-related.

~~h. Exterior lighting.~~

~~(1) Purpose. The standards for exterior lighting are intended to:~~

- ~~Avoid or minimize light glare and light spill from artificial lighting and associated negative impacts on fish and wildlife and their habitats;~~
- ~~Reduce light pollution and glare impacts on residential developments;~~
- ~~Maintain public safety and security along the major public trail, pedestrian connections to the major public trail, in parks, along public streets, and on piers and gangways; and~~
- ~~Provide flexibility for river dependent operations associated with docks.~~

~~(2) General standards. The following standards apply to all exterior lights located within the River General overlay zone.~~

- ~~Exterior lights must not project light upward or to the side of the fixture; and~~
- ~~The top and sides of all exterior light fixtures must be shielded with 100 percent opaque materials.~~

~~(3) Additional standards for areas near the Willamette River. The following standards apply to all permanent exterior lights located within and riverward of the greenway setback, and all permanent exterior lights located within 25 feet landward of the greenway setback. Exterior lights within public streets are exempt from this Subsubparagraph.~~

- ~~Exterior lights are allowed only if the lights are for the following use or development:~~
  - ~~Park and Open Area uses;~~
  - ~~The major public trail or pedestrian connections to the major public trail;~~
  - ~~Public viewing areas; or~~
  - ~~River-dependent or river-related development.~~
- ~~Structures that support exterior light fixtures must be setback at least 5 feet from the top of bank of the Willamette River except for docks and gangways, and must be setback at least 30 feet from any other stream, drainageway, wetland or water body;~~
- ~~Structures that support exterior light fixtures must be spaced at least 25 feet apart;~~
- ~~Lamps must fall below 3000K or within an S/P ratio range of 1- 1.2; and~~

Commentary

- ~~Exterior lights must not project directly into the Willamette River.~~

G~~F~~. Greenway goal exception. Approval of an exception to Statewide Planning Goal 15, Willamette Greenway, is required to locate development or a right-of-way that is not river-dependent or river-related within 25 feet of the top of bank. A greenway goal exception is not required to add revetments to a riverbank. The approval criteria are in Section 33.840.200, Greenway Goal Exception.

Commentary

Table 510-2

Table 510-1 has been renumbered to account for the new tree replacement table added in 33.510.253.F.1.b.

33.510.261 Parking Built After July 9, 2018

A.-F. [No change]

Table 510-~~1~~2
Maximum Parking Ratios [1]

Uses	Parking Sectors					
	1 North Pearl	2 North/ Northeast	3 Goose Hollow	4 Core	5 Central Eastside	6 South Waterfront
Residential Uses	1.2	1.2	1.2	1.2	1.2	1.2
Office, Retail Sales And Service, Schools, Colleges, Daycare	1.5	1.35	1.5	1.0	2.0	2.0
Grocery Store	2.0	2.0	2.0	2.0	2.0	2.0
Anchor Retail [2]	1.5	1.5	1.5	1.5	1.5	1.5
Hotel/motel and meeting or conference rooms	1/room, plus 1/1,000 square feet of meeting/conference rooms.					
Manufacturing and Production, Warehouse and Freight Movement, Wholesale Sales, Industrial Service	1.0	2.0	1.0	1.0	2.0	1.0
Medical Center	1.5	1.35	1.5	1.5	2.0	2.0
Major Event Entertainment, Commercial Outdoor Recreation, Parks And Open Areas	Parking requires Central City Parking Review and must meet the Visitor parking approval criteria in 33.808.100.					
Community Service, Religious Institutions, Theaters, and all other uses	.5	.5	.5	.5	.5	.5

[1] Maximum ratios are per 1,000 square feet of net building area for non-residential/hotel uses; per dwelling unit or hotel room for residential/hotel uses
[2] Anchor retail is a single structure with more than 50,000 square feet of net building area in Retail Sales and Service uses.

G.-I. [No change]

Commentary

33.631 Sites in the Combined Flood Hazard Area

This amendment updates the name of the title to refer to the "combined flood hazard area" to recognize that the requirements of this chapter apply to within the combined flood hazard area, which includes the FEMA 100-year floodplain and the 1996 Flood Inundation Area.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

33.631.020 Where the Approval Criteria Apply

33.631.100.A.1-2 RF through R2.5 zones.

These amendments clarify that these requirements apply to the combined flood hazard area, not just the Special Flood Hazard Area, as described above.

33.631.100.B. RMI through RMP,C,E,I,IR, and CI zones

33.631.100.B.1

To ensure that lots created by land divisions do not result in loss of floodplain habitat and functions, this amendment requires that all lots created must have sufficient area to accommodate development that is not river dependent outside of the combined flood hazard area. New parcels proposed to be fully within the combined flood hazard area or without adequate area for development are not allowed.

33.631.100.B.2

This amendment removes the allowances to create lots without adequate area outside of the combined flood hazard area for development and uses that are not river dependent. This amendment ensures that the creation of new lots through land divisions will not result in loss of floodplain habitat. Consistent with the intent of the FEMA BiOp, this amendment will ensure

33.631 Sites in the Combined Flood Hazard Area~~s~~ 631

Sections:

33.631.020 Where the Approval Criteria Apply

The approval criteria of this chapter apply to proposals for land divisions where any portion of the land division site is in the ~~special~~ combined flood hazard area.

33.631.100 Flood Hazard Area Approval Criteria

A. RF through R2.5 zones. The following criteria must be met in the RF through R2.5 zones:

1. Where possible, all lots must be outside of the ~~special~~ combined flood hazard area; and

2. Where it is not possible to have all lots outside of the ~~special~~ combined flood hazard area, all proposed building areas must be outside of the ~~special~~ combined flood hazard area.

B. RM1 through RMP, C, E, I, IR, and CI zones. The following criteria must be met in the RM1 through RMP, C, E, I, IR, and CI zones:

1. ~~Where possible, e~~ Each lot must have adequate area outside of the ~~special~~ combined flood hazard area to accommodate allowed or proposed uses. This criterion does not apply to river-dependent uses; and

2. ~~Where it is not possible to create lots that have adequate area outside of the special flood hazard area to accommodate allowed or proposed uses, the following must be met:~~

   ~~a. Lots must be configured so that development on them will reduce the impact of flooding and to provide the greatest protection for development from flooding;~~

   ~~b. Lots must be configured so that allowed or proposed uses that are not river-dependent will be able to locate on the highest ground and near the highest point of access, and so that development on the lots can be configured in a manner that will minimize obstruction of floodwaters; and~~

   ~~c.~~ Where the proposed uses and development are river-dependent, lots must be configured so that development on them will minimize obstruction of floodwaters.

that newly created lots reserve sufficient land outside of the combined flood hazard to accommodate all development and future construction.

33.631.100.C.1.
This amendment clarifies that these requirements apply to the combined flood hazard area, not just the Special Flood Hazard Area, as described above.

C. In all zones. The following criteria must be met in all zones:

1. Services proposed in the ~~special~~ combined flood hazard area must be located and built to minimize or eliminate flood damage to the services; and

2. [No change]

Commentary

33.851 South Waterfront Greenway Review

South Waterfront greenway review is a land use review process specifically tailored to the South Waterfront area, and separate from Greenway Review under 33.440. South Waterfront greenway review has been focused on development activities proposed in the "South Waterfront Greenway Area", as identified in 33.510, Central City Plan District, which includes the area from ordinary low water to 100 feet landward of top of bank. The South Waterfront Greenway Area will be renamed the "South Waterfront Greenway Setback Area" to better distinguish requirements within this area from the new requirements that apply to development in the Greenway overlay zone, more generally.

Proposed updates to this chapter modify the available review process for South Waterfront Greenway Review and aim to update references to relevant portions of and areas identified in 33.510.

33.851.010 Purpose

This amendment updates the reference to the South Waterfront Greenway Area to include "South Waterfront Greenway Setback Area" for consistency with the name change proposed in 33.510, Central City Plan District.

33.851.100.A Procedures

This amendment updates the review process for South Waterfront greenway review from a Type III procedure to a Type II procedure. Utilizing a Type II procedure for South Waterfront greenway review is consistent with the review procedure used in the River Overlay Zones chapter, which is applied in the Central Reach (north of South Waterfront) and the South Reach (south of South Waterfront). Type III review is still required for a Greenway goal exception or in cases where a Type III Design Review is required. More information on the different procedures and their processes can be found at: https://www.portland.gov/bds/zoning-land-use/land-use-review-fees-and-types#!/action=viewmore&type=latestPages

Additionally, the amendment updates the referenced Zoning Code chapter for a Greenway Goal Exception. The requirements for a Greenway goal exception are now located in 33.840.

33.851.100.B Concurrent Design Review required

This amendment deletes the statement that Design Review will be processed through a Type III procedure. The amendment recognizes that Design Review will not always require a Type III procedure.

33.851 South Waterfront Greenway Review

851

33.851.010 Purpose

South Waterfront greenway review provides flexibility within the South Waterfront ~~g~~Greenway Setback ~~a~~Area and ensures that:

- Development will not have a detrimental impact on the use and function of the river and abutting lands;
- Development will conserve, enhance and maintain the scenic qualities;
- Development will contribute to enhanced ecological functions to improve conditions for fish and wildlife;
- Development will conserve the water surface of the river by limiting structures and fills riverward of the greenway setback;
- Development that does not meet the standards of 33.510.253, South Waterfront Greenway Regulations, will be consistent with the Willamette Greenway Plan and the Central City Plan; and
- The timing of greenway improvements may be flexible to ensure successful implementation of the greenway in a more comprehensive manner.

33.851.100 Review Procedures

A. Procedures. South Waterfront greenway reviews are processed through a Type II~~III~~ procedure. Greenway goal exceptions are processed through a Type III procedure, and must be approved by City Council. See Section 33.840~~440.360~~, Greenway Goal Exception, and Chapter 33.850, Statewide Planning Goal Exceptions.

B. Concurrent Design Review required.

1. Procedure. Proposals subject to South Waterfront greenway review are also subject to Design Review~~, which will be processed through a Type III procedure~~ and reviewed concurrently with the South Waterfront greenway review.
2. [No change]

Commentary

33.851.200 Notice to State Parks and Recreation Division

This amendment removes the requirement for the Bureau of Development Services to send a copy of all South Waterfront greenway reviews applications to the Oregon Department of Transportation Parks and Recreation Division. This language was incorporated into this chapter when it was created for consistency with the Greenway overlay zone chapter (33.440). However, specifically requiring this notice is no longer needed and has not been incorporated into the River Overlay Zones chapter, which is applied in the Central Reach (to the north) and the South Reach (to the south).

33.851.300.C Proposals that do not meet the requirements of 33.510.253.F.2.

These amendments update the references to the correct paragraphs in 33.510.253. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F.2.

33.851.300.D Buildings within the South Waterfront greenway setback area.

These amendments add "Setback" to the area previously called the "Willamette Greenway Area" (shown on Figure 510-2) in all locations where it is referenced and update the references to the development standards in 33.510 from those in 33.510.253.E. to those in 33.510.253.F.2., where they have been relocated.

33.851.300.E Trails, viewpoints and pedestrian connections

These amendments update the references to the correct paragraphs in 33.510.253. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F. Additionally, the references to the appropriate approval criteria have been updated based on the updated numbering of this subsection.

~~**33.851.200 Notice to State Parks and Recreation Division**~~

~~BDS will send a copy of all applications for South Waterfront greenway review to the Parks and Recreation Division of the Oregon Department of Transportation. The applications will be sent certified mail, return receipt requested. The notice of decision on all South Waterfront greenway reviews will also be sent to the Parks and Recreation Division.~~

33.851.300 Approval Criteria

Requests for a South Waterfront greenway review will be approved if the review body finds that the applicant has shown that all of the following approval criteria are met:

A. [No change]

B. [No change]

C. Proposals that do not meet the requirements of 33.510.253.~~E~~F.2. If the proposal does not meet all of the applicable standards of Subsection 33.510.253.~~E~~F.2., the following approval criteria must be met:

1. [No change]

2. [No change]

D. Buildings within the South Waterfront greenway setback area. If the proposal includes buildings that do not meet the standards of ~~33.510.253.E.5.b~~33.1510.253.F.2.b., at least one of the following approval criteria must be met:

1. The proposal will increase the area available for riparian plant communities on the site by regrading within the greenway setback area to decrease the slope of the river bank (i.e., laying back the bank). Proposals meeting this approval criteria must show that the modified slope of the bank will be no steeper than 5:1, and that buildings will be set back at least 100 feet from ordinary high water and at least 30 feet from the modified top of bank;

2. [No change]

3. The proposal will set all buildings back an average of 100 feet from top of bank; proposals meeting this approval criteria must show that buildings will be set back at least 75 feet from top of bank, that at least 50 percent of the length of all building walls facing the South Waterfront greenway setback area will be set back at least 125 feet from top of bank, and that averaging will better enhance the recreational and ecological functions of the greenway setback area; or

4. [No change]

E. Trails, viewpoints, and pedestrian connections. If the proposal will include trails, viewpoints, or pedestrian connections that do not meet the standards of Subsection ~~33.510.253.E.5.d.~~33.1510.253.F.2.d. or e., the proposal must meet approval criteria E.1. and E.2., and either E.3. or E.4.:

1.-4. [No change]

Commentary

33.851.300.F Landscaping and non-landscaped area

These amendments update the references to the correct paragraphs in 33.510.253. The requirements previously located in 33.510.253.E. have been moved to 33.510.253.F. Additionally, the references to the appropriate approval criteria have been updated based on the updated numbering of this subsection.

F. Landscaping and non-landscaped area. If the proposal will include landscaping or non-landscaped area that does not meet the standards of Subsection ~~33.510.253.E.5.a.~~33.510.253.F.2.a. or ~~5~~2.f., the proposal must meet either approval criteria F.1. or F.2.:

1.-2. [No change]

Commentary

33.910.030 Definitions

Combined flood hazard area

This change adds a definition of "combined flood Hazard area" to the Zoning Code. This area is comprised of the farthest landward extent of the FEMA Special Flood Hazard Area (shown on FEMA maps as area having one percent or greater chance of being flooded in any given year, also known as the 100-year floodplain) and the 1996 Flood Inundation Area. The 1996 Flood Inundation Area is the land area shown to be flooded in aerial photographs taken during the February 1996 flood event and is included in the Metro Title 3 Water Quality and Flood Management Areas. The City is required to regulate the 1996 Flood Inundation Area to remain compliant with Title 3 requirements.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

The City and USACE are working with FEMA to initiate a process to adopt updated federal flood insurance rate maps, including a new 100-year floodplain for the Lower Willamette River, that FEMA will use to implement the National Flood Insurance Program going forward. Once FEMA completes this multi-year process, the City will update the combined flood hazard area accordingly.

As part of proposed amendments to Title 24, Chapter 24.50, Flood Hazards, this project proposes to adopt a City map, to be known as the Portland Flood Management Areas Map, identifying flood hazard areas within the City's jurisdiction. The Portland Flood Management Areas Map, which will include components of the combined flood hazard area, will be updated over time as new flood data become available, including a new FEMA 100-year floodplain map.

33.910 Definitions

910

33.910.030 Definitions

The definition of words with specific meaning in the zoning code are as follows:

Combined Flood Hazard Area. The farthest extent of the land area comprised of the Special Flood Hazard Area and the 1996 Flood Inundation Area.

Commentary

Housekeeping amendments: Replace floodplain references with "combined flood hazard area

The amendments in the remaining chapters represent housekeeping amendments, where no substantive changes are proposed but, instead, the proposed amendments simply replace references to flood hazard areas (including "Special Flood Hazard Area", "Flood Hazard Area", "1996 Flood Inundation Area" and others) with "combined flood hazard area."

The commentary below applies to all of the code changes proposed in the remaining chapters. The full list of the Zoning Code chapters where housekeeping amendment are proposed can be found on page 51.

33.258 Nonconforming Situations

The combined flood hazard area is the area comprised of the farthest landward extent of the FEMA 100-year floodplain, which has a one percent chance of being flooded in any given year and is also known as the Special Flood Hazard Area, and the 1996 Flood Inundation Area.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event. The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

Additionally, the City will evaluate the potential for using the USACE model outputs to define a more accurate estimate of the current 100-year floodplain and incorporate it into the City's regulated floodplains, potentially through a provisional update to the FEMA Special Flood Hazard Area (100-year floodplain). Incorporation of this additional flood management area would contribute to the protection of people, property and habitat in floodplain areas not in the FEMA 100-year floodplain or 1996 Flood Inundation Area maps.

33.258 Nonconforming Situations

33.258.060 Nonconforming Residential Densities

A. Changes to dwellings.

1. Generally. Existing dwelling units may continue, may be removed or enlarged, and amenities may be added to the site.

   a. [No change]

   b. Sites where the minimum residential density standard is not met. The following apply to sites where the minimum residential density standard is not met:

      (1) In multi-dwelling zones, there may not be a net decrease in the number of dwelling units, and the site may not move further out of compliance with base zone development standards. Generally, when dwelling units are being added to a site that is nonconforming in minimum density, the site must be brought into conformance with the minimum density requirement. However, units may be added to the site without coming all the way into conformance with the minimum residential density standard in the following situations:

      - An accessory dwelling unit is being added to an existing house, attached house, duplex, or manufactured home;
      - Dwelling units are being added within an existing structure and the footprint of the existing structure is not being enlarged;
      - Dwelling units are being added to a site in the RMP zone;
      - The site is within ~~a~~the combined flood hazard area or potential landslide hazard area.

      (2) [No change]

2. [No change]

B. Discontinuance and damage.

1.-3. [No change]

Commentary

33.258 Nonconforming Situations (cont.)

The City and USACE are working with FEMA to initiate a process to adopt updated federal flood insurance rate maps, including a new 100-year floodplain for the Lower Willamette River, that FEMA will use to implement the National Flood Insurance Program going forward. Once FEMA completes this multi-year process, the City will update the combined flood hazard area accordingly.

33.610 Lots in RF through R5 Zones

See commentary on page 132.

33.610 Lots in RF through R5 Zones

610

33.610.100 Density Standards

A.-B. [No change]

C. No street created. Where no street will be created as part of the land division, the following maximum and minimum density standards apply. Adjustments to this subsection are prohibited:

1. [No change]

2. Minimum density. Minimum density is based on the zone and size of the site, and whether there are physical constraints. The following formula is used to determine the minimum number of lots required on the site. Exceptions to minimum density are allowed under the provisions of Subsection 33.610.100.E:

   Square footage of site;

   - Square footage of site within an environmental or River Environmental overlay zone, potential landslide hazard area, or ~~special~~the combined flood hazard area;
     x 0.80;
     ÷ Maximum density from Table 610-1;
     = Minimum number of lots required.

D. Street created. Where a street will be created as part of the land division, the following maximum and minimum density standards apply. Pedestrian connections that are self-contained streets created solely for the use of pedestrians and bicyclists are not considered streets for the purposes of calculating density under this subsection. Adjustments to this subsection are prohibited:

1. [No change]

2. Minimum density. Minimum density is based on the zone, the size of the site, whether there are physical constraints, and whether a street is being created. The following formula is used to determine the minimum number of lots required on the site. Exceptions to minimum density are allowed under the provisions of Subsection 33.610.100.E:

   Square footage of site;

   - Square footage of site within an environmental or River Environmental overlay zone, potential landslide hazard area, or ~~special~~the combined flood hazard area;
     x 0.68;
     ÷ Maximum density from Table 610-1;
     = Minimum number of lots required.

E. [No change]

Commentary

33.611 Lots in the R2.5 Zone

See commentary on page 132.

33.611 Lots in the R2.5 Zone

611

33.611.100 Density Standards

A.-B. [No change]

C. No street created. Where no street will be created as part of the land division, the following maximum and minimum density standards apply. Adjustments to this subsection are prohibited:

1. [No change]

2. Minimum density. Minimum density is based on the zone and the size of the site and whether there are physical constraints. The following formula is used to determine the minimum number of lots required on the site. Exceptions to minimum density are allowed under the provisions of 33.611.100.E:

   Square footage of site;

   - Square footage of site within an environmental or River Environmental overlay zone, potential landslide hazard area, or ~~special~~the combined flood hazard area;
     x 0.80;
     ÷ 5;000;
     = Minimum number of lots required.

D. Street created. Where a street will be created as part of the land division, the following maximum and minimum density standards apply. Pedestrian connections that are self-contained streets created solely for the use of pedestrians and bicyclists are not considered streets for the purposes of calculating density under this subsection. Adjustments to this subsection are prohibited:

1. [No change]

2. Minimum density. Minimum density is based on the zone, the size of the site, whether there are physical constraints, and whether a street is being created. The following formula is used to determine the minimum number of lots required on the site. Exceptions to minimum density are allowed under the provisions of Subsection 33.610.100.E:

   Square footage of site;

   - Square footage of site within an environmental or River Environmental overlay zone, potential landslide hazard area, or ~~special~~the combined flood hazard area;
     x 0.68;
     ÷ 5,000;
     = Minimum number of lots required.

E. [No change]

Commentary

33.630 Tree Preservation

See commentary on page 132.

33.630 Tree Preservation

630

33.630.100 Minimum Tree Preservation Standards

A.-C. [No change]

D. Location of preserved trees. Trees may be preserved on lots, within tree preservation tracts, or within other privately managed tracts, such as combined flood hazard area, recreation area or stream, spring, seep, and wetlands tracts. Proposed tree preservation within tracts that are to be managed by the City of Portland or a service district, must be approved by the City or service district.

Commentary

33.634 Required Recreation Area

See commentary on page 132.

33.634 Required Recreation Area

634

33.630.200 Required Recreation Area Standards

A.-C. [No change]

D. Location of preserved trees. Recreation area tracts required by this chapter must meet the following standards:

1. [No change]

2. Location. No more than 50 percent of each recreation area tract may be in an Environmental Overlay Zone or in ~~a special~~the combined flood hazard area;

3.-5. [No change]

Commentary

33.654 Rights-of-Way

See commentary on page 132.

33.654 Rights-of-Way

654

33.654.110 Connectivity and Location of Rights-of-Way

A. [No change]

B. Approval criteria.

1. Through streets and pedestrian connections in OS, R, C, E, CI, and IR Zones. In OS, R, C, E, CI, and IR zones, through streets and pedestrian connections are required where appropriate and practicable, taking the following into consideration:

   a.-b. [No change]

   c. Characteristics of the site, adjacent sites, and vicinity, such as:

      (1)-(4) [No change]

      (5) Whether any of the following interrupt the expected path of a through street or pedestrian connection:

         - Environmental, Pleasant Valley Natural Resource, or Greenway overlay zones;
         - Tree groves;
         - Streams;
         - ~~Special~~Combined flood hazard area~~s~~; or
         - Wetlands; and

   d.-e. [No change]

2.-4. [No change]

33.654.130 Additional Approval Criteria for Rights-of-Way

A.-B. [No change]

C. Future extension of proposed dead-end streets and pedestrian connections. Where the land division site is adjacent to sites that may be divided under current zoning, dead-end streets and pedestrian connections must be extended to the boundary of the site as needed to provide future access to the adjacent sites. Options for access and street locations must consider the characteristics of adjacent sites, including terrain, the location of existing dwellings, environmental or Pleasant Valley Natural Resource overlay zoning, streams, wetlands, ~~special~~combined flood hazard area~~s~~, and tree groves. The following factors are considered when determining if there is a need to make provisions for future access to adjacent sites. A need may exist if:

1.-2. [No change]

D.-E. [No change]

Commentary

33.660 Review of Land Divisions in Open Space, Residential, and IR Zones

See commentary on page 132.

33.660 Review of Land Divisions in Open Space, Residential, and IR Zones

660

33.660.110 Review Procedures

A. [No change]

B. Type IIx. Except as provided in Subsection A, above, land division proposals that include any of the following elements are processed through a Type IIx procedure:

1.-2. [No change]

3. Lots, utilities, or services are proposed within ~~a special~~the combined flood hazard area; or

4. [No change]

C. [No change]

33.660.120 Approval Criteria

A.-B. [No change]

C. ~~Special~~Combined flood hazard area. If any portion of the site contains ~~special~~combined flood hazard area, the approval criteria of Chapter 33.631, Sites in ~~Special~~ Flood Hazard Areas, must be met;

D.-L. [No change]

33.660.310 Review Procedures

A. [No change]

B. Same procedure as was used for Preliminary Plan. The following proposals are processed through the same procedure type as was used for the Preliminary Plan approval:

1.-9. [No change]

10. Changing the purpose of, or deleting, the following tracts or easements:

a.-c. [No change]

d. ~~Special~~Combined flood hazard area easements or tracts;

e.-g. [No change]

11. Reducing the area or changing the location of the following tracts:

a. [No change]

b. ~~Special~~Combined flood hazard area tract; or

c. [No change]

12.-13. [No change]

Commentary

33.662 Review of Land Divisions in CI, Commercial/Mixed Use, Employment, and Industrial Zones

See commentary on page 132.

33.662 Review of Land Divisions in CI, Commercial/Mixed Use, Employment, and Industrial Zones

662

33.662.110 Review Procedures

A. [No change]

B. Type IIx. Except as provided in Subsection A, above, land division proposals that include any of the following elements are processed through a Type IIx procedure:

1.-2. [No change]

3. Lots, utilities, or services are proposed within ~~a special~~the combined flood hazard area; or

4. [No change]

C. [No change]

33.662.120 Approval Criteria

A.-B. [No change]

C. ~~Special~~Combined flood hazard area. If any portion of the site contains special flood hazard area, the approval criteria of Chapter 33.631, Sites in ~~Special~~ Flood Hazard Areas, must be met;

D.-L. [No change]

33.662.310 Review Procedures

A. [No change]

B. Same procedure as was used for Preliminary Plan. The following proposals are processed through the same procedure type as was used for the Preliminary Plan approval:

1.-6. [No change]

7. Deleting any of the following:

a.-c. [No change]

d. ~~Special~~Combined flood hazard area easements or tracts;

e.-f. [No change]

8. Reducing the area or changing the location of any of the following:

a. [No change]

b. ~~Special~~Combined flood hazard area tract; or

c. [No change]

9. [No change]

Commentary

33.664 Review of Land Divisions on Large Sites in Industrial Zones

See commentary on page 132.

33.664 Review of Land Divisions on Large Sites in Industrial Zones

664

33.664.120 Approval Criteria

A Preliminary Plan for a land division will be approved if the review body finds that the applicant has shown that all of the following approval criteria have been met. The approval criteria are:

A. The applicant must show that the proposal can meet the following standards and approval criteria at the time of Final Plat. These standards and criteria do not have to be met as part of the Preliminary Plan, but the proposal must show that the standards and criteria can be met using the proposed configuration of blocks and the approaches included in the proposal:

1.-2. [No change]

3. ~~Special~~Combined flood hazard area. If any portion of the site contains ~~special~~combined flood hazard area, the approval criteria of Chapter 33.631, Sites in ~~Special~~ Flood Hazard Areas, can be met by the proposal;

4.-5. [No change]

B. [No change]

33.664.220 Approval Criteria

These approval standards apply to land divisions where the Preliminary Plan was reviewed under the regulations of this chapter. The Final Plat for a land division will be approved if the review body finds that the applicant has shown that all of the following approval criteria have been met. The approval criteria are:

A. [No change]

B. **Conformance with requirements of this Title.** Where lot lines are proposed as part of the Final Plat process:

1. The following must be met for the portion of the site where lot lines are proposed:

a.-b [No change]

c. ~~Special~~Combined flood hazard area. If any portion of the site contains ~~special~~combined flood hazard area, the approval criteria of Chapter 33.631, Sites in ~~Special~~ Flood Hazard Areas, must be met;

d.-i [No change]

3. [No change]

4.-5. [No change]

C.-D [No change]

Commentary

E. Dedications, Tracts, and Easements.

1. [No change]

2. Tracts and easements.

   a. [No change]

   b. All environmental resource tracts, ~~special~~combined flood hazard area tracts, and landslide hazard tracts for the entire site must be met with the first Final Plat.

F.-G. [No change]

Commentary

33.677 Property Line Adjustments

See commentary on page 132.

33.677 Property Line Adjustments

33.677.300 Standards

The site of a Property Line Adjustment is the two properties affected by the relocation of the common property line. A request for a Property Line Adjustment will be approved if all of the following are met:

A. [No change]

B. **Regular lot lines.** In the R10 through RM4, and RMP zones, the adjusted property line must be a straight line or up to 20 percent shorter or 20 percent longer than the existing lot line. Lines that are adjusted to follow an established zoning line or the boundary of the ~~special~~combined flood hazard area or floodway are exempt from this requirement. In addition, if both properties are part of a site with an institutional use on it, this standard does not apply.

Commentary

33.730 Quasi-Judicial Procedures

See commentary on page 132.

33.730 Quasi-Judicial Procedures

730

33.730.060 Application Requirements

A.-C. [No change]

D. Required information for land divisions. Unless stated elsewhere in this Title, a complete application for a land division consists of the materials listed below. The Director of BDS may waive items listed if they are not applicable to the specific review. The applicant is responsible for the accuracy of all information submitted with the request. At least one copy of each plan/map submitted with the application must be 8 ½ by 11 inches in size, and be suitable for reproduction.

1. Preliminary Plan for all sites except those taking advantage of Chapter 33.664, Review of Large Sites in I Zones. An application for Preliminary Plan for all sites except those taking advantage of Chapter 33.644, Review of Large Sites in I Zones, must include all of the following:

   a.-b. [No change]

   c. Vicinity map. Three copies of a vicinity map. The map must cover an area extending at least 800 feet in each direction from the land division site, and show the following existing conditions for both the site and the vicinity:
      - Zoning and Comprehensive Plan designations;
      - Streets;
      - Transit, pedestrian, and bicycle facilities and connections; and
      - Water bodies, wetlands, ~~special~~combined flood hazard areas, floodways, and potential landslide hazard areas; and
      - Location of utilities and services;

   d. Copies of the proposed land division, drawn to scale and of a format, material, and number acceptable to the Director of BDS. The required information may be grouped on several maps. The location of items not required to be surveyed must be accurately shown on the maps. The proposed land division maps must include the following information:

      (1) [No change]

      (2) Existing conditions map. The following existing site conditions must be shown:

      Surveyed information:
      - Ground elevations shown by contour lines at 5-foot vertical intervals for slopes greater than 10 percent, and at 2-foot vertical intervals for ground slopes of 10 percent or less;
      - Existing development, including dimensions and distances to property lines. Structures and facilities to remain must be identified;

Commentary

- All trees completely or partially on the site that are 6 inches or more in diameter. Trees more than 25 feet inside a tract within which all trees will be preserved do not have to be surveyed. On sites where the proposal is to preserve tree canopy under Option 5 or 6 of the Tree Preservation Standards in 33.630.100.A.5 or 6, the trees do not have to be surveyed;
- Location and dimensions of existing driveways, curb cuts, and sidewalks on and abutting the site;
- Seeps and springs, wetlands, watercourses, and all water bodies including the ordinary high water line and top of bank; if there is a seep or spring on the site, a wetland delineation is required to determine the edge of the seep or spring. This delineation must be performed by an environmental scientist;
- The centerline of existing drainageways, including ditches, swales, and other areas subject to wet weather inundation; and
- Location of flood hazard areas, including elevations of the ~~special~~combined flood hazard area and floodway boundaries. Sites that contain a water body not shown on the ~~special~~combined flood hazard area maps must identify the location of the ~~special~~combined flood hazard areas;

Additional information:

- Zoning and Comprehensive Plan designations; and
- Location, dimensions, and purpose of existing easements on and abutting the site;

(3) Proposed improvements map. The following proposed improvements must be shown:

- Enough information to determine that minimum lot width requirements are met for each proposed lot including footprint of structures and locations of driveways if necessary;
- Distances of all known proposed development to proposed lot lines;
- Proposed pedestrian connections;
- If proposed lots are within a ~~special~~combined flood hazard area or landslide hazard area, proposed building locations, and
- If Preliminary Plan phasing is proposed; boundaries of sequence of the proposed phasing.
- Existing and proposed services and utilities; and

Commentary

- Preliminary Stormwater Plan that meets the requirements of the Stormwater Management Manual and the BES Sewer Design Manual. This plan must show the capacity, type, and location, as well as the land area required, of the stormwater management system and stormwater disposal facilities proposed. The plan must also provide information on the feasibility of the stormwater management system being proposed;

(4) [No change]

e.-k. [No change]

2.-4. [No change]

Commentary

33.854 Planned Development Review

See commentary on page 132.

33.854 Planned Development Review

33.854.340 Proposals Without a Land Division

A.-B. [No change]

C. Combined ~~F~~flood hazard area~~s~~.

1. RF through R2.5 zones. In the RF through R2.5 zones, all proposed building locations must be outside of the combined flood hazard area.

2. RM2 through RX, C, E, I, and IR zones. In the RM2 through RX, C, E, I, and IR zones, all proposed building locations must be outside of the combined flood hazard area where possible. Where it is not possible to have all building locations outside of the combined flood hazard area, all proposed building locations must be configured to reduce the impact of flooding and to provide the greatest protection for development from flooding. Proposed building locations must be clustered on the highest ground and near the highest point of access, and they must be configured in a manner that will minimize obstruction of floodwaters

D.-G. [No change]

33.854.500 Types of Changes

There are three types of changes; major, minor, and administrative

A. Major change. A major change is one that will have significant impacts on the development in the PD, or on the site surrounding the PD. Major changes include:

1.-5. [No change]

6. Deleting or changing the purpose of combined flood hazard or landslide hazard easements; or

7.-8. [No change]

D.-G. [No change]

Commentary

33.865 River Review

See commentary on page 132.

33.865 River Review

865

Sections:

33.865.040 Supplemental Application Requirements

In addition to the application requirements of Section 33.730.060, the following information is required when the River Review application is for development in the River Environmental overlay zone, or for modification of the River Environmental overlay zone boundary:

A. Supplemental site plan requirements. Two physical copies and one PDF of each required site plan must be submitted. The site plans must show the entire site, must be drawn accurately to a scale that is between 1 inch to 50 feet and 1 inch to 10 feet, and must show all property lines with dimensions, a north arrow and a date. Additional site plans that show only a portion of the site may be submitted. All copies of site plans must be suitable for reproduction on paper no smaller than 8.5 x 11 inches and no larger than 36 x 48 inches. The Director of BDS may waive items listed in this subsection if they are not applicable to the specific review; otherwise they must be included. Additional information such as wetland characteristics or soil type may be requested through the review process.

1. Existing conditions site plan. The existing conditions site plan must show the following:

   a. [No change]

   b. ~~100-year floodplain~~ Combined flood hazard area and floodway boundaries. In the case of a violation, also identify the location of the 100-year floodplain and floodway prior to alteration;

   ~~c. 1996 Flood Inundation Area boundary;~~

   d.-k. [Renamed as c.-j.]

2. Proposed development site plan. The proposed development site plan must show the following:

   a.-h. [No change]

   i. Location of excavation and fill and total quantities of each, including balanced cut and fill calculation for any grading in the ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area;

Commentary

j.-k. [No change]

3. Construction management site plan. The construction management site plan must show the following:

   a.-c. [No change]

   d. Location of excavation and fill and total quantities of each, including balanced cut and fill calculation for any grading in the ~~100-year floodplain and or 1996 Flood Inundation Area~~combined flood hazard area;

   e.-k. [No change]

4. Mitigation or remediation site plan. A mitigation site plan is required when the proposed development will result in unavoidable significant detrimental impact on the resources and functional values identified in the *Willamette River Central Reach Natural Resources Protection Plan* (2018), *River Plan / South Reach Natural Resources Protection Plan* (2020) or when mitigation is proposed in order to meet River Review approval criteria. A remediation site plan is required when significant detrimental impacts occur in violation of the Zoning Code and no permit was applied for. The on-site or off-site mitigation or remediation site plan must show the following:

   a.-k. [No change]

   l. Location of excavation and fill and total quantities of each including balanced cut and fill calculation for any grading in the ~~100-year floodplain and 1996 Flood Inundation Area~~combined flood hazard area; and

   m. [No change]

B. Supplemental narrative. The following is required:

1.-5. [No change]

33.865.100 Approval Criteria.

Requests for a River Review will be approved if the review body finds that the applicant has shown that all applicable approval criteria have been met.

A. Development within the River Environmental overlay zone. The applicant's supplemental narrative must demonstrate that all of the following are met:

1. Land divisions, Property Line Adjustments, and Planned Developments:

   a. Except for river-dependent and river-related uses and development, proposed uses and development must be outside the ~~100-year floodplain and 1996 Flood Inundation Areas~~combined flood hazard area except as provided under Subparagraph A.1.d. Other areas of the ~~100-year floodplain and 1996 Flood Inundation Areas~~combined flood hazard area must be in environmental resource tracts;

   b.-d. [No change]

Commentary

e. Mitigation:

(1)-(2) [No change]

(3) To the extent practicable, the natural and scenic resources and functional values restored or enhanced as mitigation must be the same kind of resource, performing the same functions as the lost resource. In addition, the mitigation plan must demonstrate that mitigation for tree removal in the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area must meet or exceed the replacement requirements of Table 475-2 and occur within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area;

(4) [No change]

(5) If on-site mitigation is not practicable or ecologically beneficial, then off-site mitigation is allowed as follows:

- Through the purchase of credits from a city approved mitigation bank located along the Lower Willamette River as close as possible to the disturbance area;
- Through offsite mitigation in the River Environmental overlay zone. If the offsite mitigation compensates for significant detrimental impacts located within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area, then the offsite mitigation area must also be located within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area. The applicant must own the area where the mitigation will occur or possess a legal instrument that is approved by the City as sufficient to carry out and ensure the success of the mitigation plan (such as an easement or deed restriction);

(6)-(7) [No change]

2. Resource enhancement and mitigation bank projects:

a.-d. [No change]

3. All other proposals in the River Environmental overlay zone:

a.-c. [No change]

d. Mitigation:

(1)-(2) [No change]

(3) To the extent practicable, the natural and scenic resources and functional values restored or enhanced as mitigation must be the same kind of resource, performing the same functions as the lost resource. In addition, the mitigation plan must demonstrate that mitigation for tree removal in the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area must meet or exceed the replacement requirements of Table 475-2 and occur within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area;

Commentary

(4) [No change]

(5) If on-site mitigation is not practicable or ecologically beneficial, then off-site mitigation is allowed as follows:

- Through the purchase of credits from a City approved mitigation bank located along the Lower Willamette River as close as possible to the disturbance area;
- Through off-site mitigation in the River Environmental overlay zone. If the offsite mitigation compensates for significant detrimental impacts located within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area, then the offsite mitigation area must also be located within the ~~100-year floodplain or 1996 Flood Inundation Area~~combined flood hazard area. The applicant must own the area where the mitigation will occur or possess a legal instrument that is approved by the City as sufficient to carry out and ensure the success of the mitigation plan (such as an easement or deed restriction); and

(6)-(7) [No change]

B. Modification of River Environmental overlay zone boundaries. Modifications of River Environmental overlay zone boundaries that reflect permitted changes in the location or quality of resource areas will be approved upon finding that the applicant's statement demonstrates that either Paragraph B.1 or B.2 are met. For modification of River Environmental zone boundaries based on a more detailed site specific environmental study that confirms the location of natural resource features identified in the adopted Natural Resources Inventory, the applicant's impact evaluation must demonstrate that Paragraph B.3 is met:

1.-2. [No change]

3. Modification of River Environmental overlay zone boundaries based on a more detailed site-specific environmental study. The River Environmental overlay zone line location may be modified to more accurately reflect the location of natural resources and functional values on the site. All of the following must be met:

a.-b. [No change]

c. The modified River Environmental overlay zone boundary must include all ~~mapped floodplain (100-year floodplain and 1996 Flood Inundation Area)~~ of the combined flood hazard area.

Building Code Amendments

Title 24, Chapter 24.50, Flood Hazard Areas

Commentary

Title 24, Chapter 24.50 – Flood Hazard Areas

This chapter of the city's Building Code contains the building and construction requirements to protect public health, safety, and welfare in the city's designated flood hazard areas.

The National Marine Fisheries Service (NMFS) determined that the Federal Emergency Management Agency's (FEMA) implementation of the National Flood Insurance Program (NFIP) in Oregon jeopardizes the continued existence of protected salmon and steelhead in a Biological Opinion released in April 2016 (referred to as the FEMA BiOp). The FEMA BiOp provides guidance to FEMA on amending minimum NFIP criteria to ensure that they adequately protect floodplain habitat and flood storage, consistent with the ESA. FEMA maintains that they do not have the authority to approve or deny floodplain development proposals and that changes to local development regulations must occur to effectively implement the FEMA BiOp guidance.

To that end, FEMA worked with Oregon jurisdictions to develop a Draft Implementation Plan for the FEMA BiOp that responds to local conditions, while protecting flood storage and floodplain habitat and improving conditions for salmon and steelhead. Per the Draft Implementation Plan, Portland must demonstrate that, collectively, development, mitigation and restoration efforts result in no net loss of floodplain habitat and flood storage capacity. ESA-compliant development regulations, in combination with habitat restoration projects, will help ensure Portlanders have on-going access to the Federally-backed flood insurance they rely upon to meet their mortgage requirements and to access to financial assistance for flood recovery.

To reduce flood risk and provide adequate flood storage during flood events, the FEMA BiOp identified ratios of compensatory excavation (cut) that are needed to offset placement of soil (fill) and structures in different parts of the floodplain, including the high hazard area, riparian buffer area, and others. Since Title 24, Chapter 24.50, regulates how and when fill and structures can be placed in the floodplain, as well as the necessary mitigation to offset the placement of fill (such as balanced cut/fill requirements), this chapter has been updated to be consistent with the FEMA BiOp.

24.50.020.D.

Reference the February 1996 Flood Inundation area is added to list of reference floods serving as the basis for flood protection elevations and floodway and floodway fringe areas. This subsection is also amended to recognize that climatic changes, in additional to longer flood frequency occurrences, may contribute to greater flood heights that exceed what is currently mapped.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event.

CHAPTER 24.50 - FLOOD HAZARD AREAS

(Chapter replaced by Ordinance No. 160413, effective January 14, 1988.)

24.50.010 Purpose.

The purpose of this Chapter is to protect ~~the~~ public health, safety, and welfare by restricting or prohibiting uses which are dangerous to health, safety, or property in times of flood or which cause increased flood heights or velocities, and by requiring that uses and structures vulnerable to floods be protected from flood danger at the time of initial construction.

24.50.020 General.

(Amended by Ordinance No. 182370, effective November 26, 2008.)

A. The provisions of this Chapter shall regulate development and construction in flood hazard areas identified in Section 24.50.030.

B. Land classified in a flood hazard area may restrict or affect uses and development permitted in one or more of the regular zones listed in Chapter 33.16. If an inconsistency exists between Chapter 24.50 and other titles of this Code, the more restrictive uses or requirements shall prevail.

C. A structure or the use of a structure or property which was lawful before the original date of this Chapter but which is not in conformity with the provisions of this Chapter may be continued subject to provisions of the State Building Code, regulations for existing structures.

D. The flood protection elevations and the floodway and floodway fringe areas specified by this Chapter, based on the 100-year flood elevations and the February 1996 Flood Inundation area, are considered reasonable. Greater flood heights and more extensive floodway fringe areas associated with climatic changes and longer flood frequency occurrences may occur or the flood height and extent of flooding may be increased by human or natural causes, such as log jams, bridge openings restricted by debris, or changes in basin conditions. Areas within designated drainage districts and those areas not covered by adequate topographic maps may contain unmapped watercourses subject to flooding. The identification of designated flood hazard areas does not imply that lands outside of such areas will be free from flooding or flood damage.

The City of Portland or any officer or employee thereof, or the Federal Insurance Administration shall not be liable for any flood damages that result from reliance on the provisions or designations of this Chapter or any administrative decision lawfully made thereunder.

Commentary

24.50.020.D.(cont.)

The new extent and elevations will then be regulated along with the existing 100-year floodplain, as a part of the combined flood hazard area.

24.50.030 Flood Related Definitions.

(Amended by Ordinance Nos. 178741, 182370 and 184235, effective November 26, 2010.) The definitions contained in this Section relate to flood hazard areas and considerations outlined in this Chapter.

A. "Appeal" means a request for a review of the City of Portland's interpretation of any provision of this ordinance or a request for a variance.

B. "Area of shallow flooding" means a designated AO or AH zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from 1 to 3 feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and, velocity flow may be evident. AO is characterized as sheet flow and AH indicates ponding.

C. "Areas of Special Flood Hazard" mean the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on maps always includes the letters A or V.

D. "Base Flood (100-year flood)" means the flood having 1 percent chance of being equaled or exceeded in any given year. Designation on maps always includes the letters A or V.

E. "Basement" means any area of the building having its floor subgrade (below ground level) on all sides.

F. "City Datum" means the reference datum for the City of Portland maps. The FIRM maps described in Section 24.50.050 are referenced to the North American Vertical Datum (NAVD) of 1988. To convert NAVD 1988 level to City datum, subtract 2.125 feet from the elevation referenced to NAVD 1988 level.

G. "Development" means any human-made change to improved or unimproved real estate, including but not limited to buildings, bridges, other structures, and mining, dredging, filling, grading, paving, excavation, fencing, landscaping, drainage facilities, drilling operations, or storage of equipment or material.

H. "Existing manufactured home park or manufactured home subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale for which the construction of facilities for servicing the lot on which the manufactured home is to be affixed (including as a minimum, the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of streets) is completed before the original date of this Chapter.

Commentary

24.50.030.J.

This amendment adds a definition of "exterior improvements" to clearly identify what types of development fall into this category. The addition of this definition is needed because new compensatory excavation requirements are included in 24.50.060.F.8 and the presence or absence of on-site exterior improvements, among other characteristics, determines the applicable compensatory excavation ratio.

The lettering of subsequent subsections has been updated to account for the addition of this and other new definitions.

24.50.030.L.

In the FEMA BiOp, NMFS recognized that structures – in addition to soil (fill) - result in the displacement of flood waters and negative impacts to available floodplain habitat. The amendment adds a definition for "flood displacement" to clarify that structures may result in displacement of floodwaters, similar to soil material used as fill.

24.50.030.R

This amendment updates the definition of floodplain to define it as areas that are subject to inundation during flood events. The update replaces the reference to the base flood, which is a FEMA-defined term (see 24.50.030.D) and focuses only on the Special Flood Hazard, or 100-year floodplain. The City of Portland is required to manage floodplain areas outside of the 100-year floodplain (specifically, the February 1996 Flood Inundation) and this change recognizes the need to consider all potential flood risks, including those outside of the 100-year floodplain.

I. "Expansion to an existing manufactured home park or manufactured home Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of streets).

J. "Exterior Improvements" means all improvements except buildings or other roofed structures. Exterior improvements include surface parking and loading areas, paved and graveled areas, and areas devoted to exterior display, storage, or activities. It includes improved open areas such as plazas and walkways, but does not include vegetative landscaping, synthetic turf, natural geologic forms, or unimproved land.

~~J~~K. "FIA" means Federal Insurance Administration.

L. "Flood displacement" means fill or structures added or built in the floodplain that reduce available flood storage capacity during flood events.

~~K~~M. "Flood Hazard Area" means any area which has been identified as subject to flooding.

~~L~~N. "Flood Insurance Study" means the official report provided by the Federal Insurance Administration that contains information regarding flooding, discusses the engineering methods used to develop the Flood Insurance Rate Maps (FIRMs), includes flood profiles, and the water surface elevation of the base flood.

~~M~~O. "Flood Insurance Rate Map (FIRM)" means the official map on which the Federal Insurance Administration has delineated the areas of special flood hazards.

~~N~~P. "Flood or flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters, and/or the unusual and rapid accumulation of runoff of surface waters from any source.

~~P~~R. "Floodplain" means the channel of watercourse and adjacent land areas which are subject to inundation ~~by the base~~during flood events.

~~Q~~S. "Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, sanitary, and water facilities, structures, and their contents.

Commentary

24.50.030.T

This amendment updates the description of how floodway boundaries are determined with a more accurate description of the use of computer modeling in floodway determination. The existing language uses outdated language to describe the process.

24.50.030.W

This amendment adds a definition of the high hazard area. The high hazard area is the area nearest to the waterbody and the area that most frequently floods. The high hazard area is the farthest landward extent of the floodway or the 10-year floodplain, or the area with a 10 percent chance of flooding every year. Additional requirements for development in the high hazard area will help to reduce the risk of flooding in and landward of this area.

~~R~~T. "Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. The ~~actual~~ floodway boundaries are developed from computer modeling~~activated~~ and are approximate. These boundaries are depicted on the FIRM. Boundaries for other watercourses may be subject to identification by the Sewage System Administrator. The width of the floodway for unidentified watercourses should not be less than 15 feet.

~~S~~U. "Flood fringe area" means any area lying outside the floodway which is subject to flooding by a base flood and for which water surface elevations and floodway and flood fringe boundaries have been determined by a Flood Insurance Study and are shown on the FIRMs. Boundaries for unidentified watercourses may be subject to identification by the Sewage System Administrator.

~~T~~V. "Freeboard" means an additional height above the base flood level to account for factors that may contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as filling in the floodway fringe, wave action, effect of urbanization of the watershed, map inaccuracies, irregular stream cross sections, irregular constructions at bridges, and the uncertainties of flood discharge computations.

~~U~~W. "High Hazard Area" means the area comprised of and measured to the farthest landward extent of the floodway or the area inundated by a flood event having a 10% chance of exceedance in a given year as mapped by FEMA. Boundaries for unidentified watercourses may be subject to identification by the Sewage System Administrator.

~~V~~X. "Lowest Floor" means the lowest floor of the lowest enclosed area (including 2`basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance found at Section 24.50.060 F.2.

~~W~~Y. "Manufactured home" means a structure transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For flood plain management purposes, the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term "manufactured home" does not include park trailers, travel trailers, and other similar vehicles.

~~X~~Z. "New construction" means structures for which the start of construction commenced on or after the effective date of this Chapter.

Commentary

24.50.030.BB.

This amendment adds the definition of riparian buffer area. The riparian buffer area includes the area 170 feet landward of ordinary high water mark (limited by the combined flood hazard area) and is identified as an important habitat area in the FEMA BiOp. The 170-foot distance is based on the "site-potential" tree height of species native to Oregon and is consistent with scientific findings showing buffer widths equal to a site-potential tree height are adequate and essential for ensuring the preservation of a majority of riparian functions (FEMAT, 1993; Pollock and Kennard, 1998). Site-potential tree height is defined by the US Forest Service as the average maximum height of the tallest dominant trees (200 years or older) for a given site class.

.

~~Y~~AA. "New manufactured home park or manufactured home subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale for which the construction of facilities for servicing the lots on which the manufactured home is to be affixed (including as a minimum, the installation of utilities, either final site grading or the pouring of concrete pads and the construction of streets) is completed on or after the original date of this Chapter.

BB. "Riparian buffer area" means the area 170 feet landward of the ordinary high water mark (as shown on the Portland Flood Management Areas Map), not to exceed the furthest extent of the 100-year floodplain and the February 1996 Flood Inundation area.

~~Y~~CC. "Start of construction" includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets, walkways, sanitary sewers, storm sewers, and/or drainage facilities; nor does it include excavation for a basement, footings, piers, or foundation or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

~~Z~~DD. "Structure or accessory structure" means, for the purposes of this Chapter, a walled and roofed building including a gas or liquid storage tank that is principally above ground.

~~AA~~EE. "Substantial Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

~~BB~~FF. "Substantial Improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure, either:

1. Before the improvement or repair is started, or

2. If the structure has been damaged, and is being restored, before the damage occurred. Substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

Commentary

24.50.040 Federal Insurance Administration (FIA) Study and Flood Hazard Maps
The title of this section has been updated to include the full name of the FIA that was previously referenced. This update clarifies what FIA specifically refers to.

24.50.040.C
This amendment removes the reference to the "Water Features Map" because this map is no longer used to identify watercourses that are subject to these requirements.

To replace the definition of Water Features Map, the subsection has been updated to identify flood insurance studies and flood insurance rate maps that are used to identify flood hazard areas in other jurisdictions where the City of Portland has oversight through interagency governmental agreements, such as the unincorporated urban pockets of Multnomah County,

The term does not, however, include either:

a. Any project for improvement of a structure to comply with existing State or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions, or

b. Any alteration of a structure listed on the National Register of Historic Places or the State Inventory of Historic Places.

~~CC~~GG. "Variance" means a grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.

~~DD~~HH. "Water surface elevation" means the height of the water surface of the base flood for any point along the longitudinal course of a stream.

~~EE~~II. "Watercourse" means a channel in which a flow of water occurs, either continuously or intermittently, and if the latter, with some degree of regularity. Watercourses may be either natural or artificial.

24.50.040 Federal Insurance Administration (FIA) Study and Flood Hazard Maps. (Amended by Ordinance Nos. 173979, 176955, 178741, 182671 and 184235, effective November 26, 2010.) The following stud~~y~~ies and maps in this Section are hereby adopted and declared to be a part of this Chapter.

A. Flood Insurance Study is the official scientific and engineering report entitled "Flood Insurance Study for City of Portland, Oregon: Multnomah, Clackamas and Washington Counties", dated November 26, 2010 prepared by the Federal Insurance Administration (FIA) under agency agreement with the Portland District Corps of Engineers. The latest edition of the report, along with accompanying FIRMs, are on file with the Bureau of Development Services.

B. Flood Insurance Rate Maps (FIRMs) are the official maps entitled "The Flood Insurance Rate Maps (FIRMs) for City of Portland, Oregon: Multnomah, Clackamas and Washington Counties", dated either October 19, 2004 or November 26, 2010, whichever is more current, on which the Federal Insurance Administration has delineated the areas of flood hazards along with the 100-year (base flood) and 500-year flood boundaries, the floodway zone boundaries and the 100-year flood elevations.

C. ~~Water Features Map is the official map, dated May, 1981, or latest edition, compiled by the Bureau of Planning and Sustainability delineating certain watercourses which are subject to special flood hazard and drain 30 acres or more~~. Other Flood Insurance Studies and Flood Insurance Rate Maps for areas within jurisdictions subject to 24.50 under separate Interagency Governmental Agreements.

Commentary

24.50.040.F

This amendment adds a description of the "Portland Flood Management Areas Map" as another flood hazard map. The Portland Flood Management Areas Map will serve as a key resource for identifying the locations of mapped floodplains and portions of floodplains where specific compensatory excavation ratios are applied. The map is provided at the end of this section and includes the FEMA 100-year floodplain Metro's "Title 3 Water Quality and Flood Management Area Map", known as the February 1996 Flood Inundation area. The map will not include Unidentified Watercourse Flood Zones. Those are delineated through a separate process.

The Portland Flood Management Areas Map also includes the high hazard area and riparian buffer area, where mapped, along our city's waterbodies. This addition allows greater specificity for compliance with the compensatory excavation requirements included in this chapter. The ordinary high water mark is also provided in the map to show the point from which the 170-foot Riparian Buffer Area is mapped.

Future updates to the Portland Flood Management Areas Map will be managed by the Bureau of Development Services in collaboration with Bureau of Planning and Sustainability and Bureau of Environmental Services staff.

D. When base flood elevation data has not been provided by the FIA study, the Sewage System Administrator may obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source. This data shall be utilized only after technical review and approval of the Sewage System Administrator.

E. The "Title 3 Water Quality and Flood Management Area Map," as adopted by Metro Council on June 18, 1998, is the official map which identifies areas as "February 1996 Flood Inundation." The identified areas are subject to the regulations of this Title.

F. The "Portland Flood Management Areas Map," dated XX, XX, identifies areas subject to the regulations of this Title, including the FEMA 100-year floodplain, the February 1996 Flood Inundation area shown on the "Title 3 Water Quality and Flood Management Area Map", the High Hazard Area, the Riparian Buffer Area, and the ordinary high water mark.

24.50.050 Flood Hazard Areas and Flood Protection Elevations.

(Amended by Ordinance Nos. 173979, 178741 and 182370, effective November 26, 2008.) Flood hazard areas shall contain all lands located within the Floodway boundary, Flood Zones within the Flood fringe areas, and other identified Flood Zones. Identified Flood Zones are depicted on the National Flood Insurance Rate Map (FIRM). Both identified and unidentified Flood Hazard areas along with flood protection elevations are described in the following. Figure 1 illustrates the basic flood hazard areas and elevations.

(See Figure 1 at the end of Title 24)

A. Columbia River FIRM Flood Zone AE. These flood zones represent areas for which base flood elevations are determined. The flood protection elevation shall be the base flood elevation plus one foot of freeboard. The nominal one-foot increase for freeboard reflects the relatively wide flood plain of the Columbia River. In the vicinity of the confluence of the Columbia and Willamette Rivers, the Columbia River floodplain shall be considered to be east of the westerly floodway fringe boundary of the Columbia Slough.

B. Multnomah Drainage District No. 1 and Peninsula Drainage District No. 2 FIRM Zone AH. This flood zone represents isolated areas of shallow flooding (1 to 3 feet in depth, resulting from upslope runoff) for which base flood elevations are determined. In the case of unidentified watercourses occurring within the boundaries of the Drainage Districts, the base flood elevation shall be estimated by procedures described in paragraph G. below. The flood protection elevation shall be the base flood elevations plus one foot of freeboard.

C. Columbia River FIRM Flood Zone A. These flood zones represent areas for which base flood elevations are not determined. The flood protection elevation shall be either the grade at the adjacent flood fringe boundary or the crown of the nearest street, whichever is higher, plus one foot of freeboard.

Commentary

24.050.I. Unidentified Watercourse Flood Zones

This subsection is amended to delete the reference to the Water Features Map, because this map is no longer used to identify watercourses, and replace it with a more general reference to other City of Portland maps. The City of Portland may use a variety of maps and tools to accurately determine the location of unidentified watercourse flood zones. A second amendment adds a more specific description of the basis for the base flood elevation.

D. Willamette River FIRM Flood Zone AE. These flood zones represent areas for which the base flood elevations are determined. The flood protection elevation shall be the base flood elevation plus two feet of freeboard.

E. Johnson Creek, Fanno Creek and Crystal Springs Creek FIRM Flood Zone AE. This flood zone represents area for which the base flood elevations are determined. The flood protection elevation shall be the base flood elevation plus two feet of freeboard.

F. Johnson Creek FIRM Flood Zone AH. This flood zone represents areas of shallow flooding depth (1 to 3 feet) for which base flood elevations are determined. The flood protection elevation shall be the base flood elevation plus two feet of freeboard.

G. Johnson Creek FIRM Flood Zone AO. This flood zone represents areas of shallow flooding depth (1 to 3 feet) for which the depths of flooding are determined. The flood protection elevation shall be the depth of flooding shown on the FIRM map plus two feet of freeboard above the highest adjacent grade.

H. Johnson Creek, Fanno Creek, Tryon Creek, and Crystal Springs Creek FIRM Flood Zone A. These flood zones represent areas for which base flood elevations are not determined. The flood protection elevation shall be the base flood elevation plus two feet of freeboard. Base flood elevations shall be calculated in accordance with paragraph I. below.

I. Unidentified Watercourse Flood Zones. These watercourses~~,~~ generally drain~~ing~~ one acre or more~~,~~ and are not identified in a Federal Insurance Study and may not be identified on ~~the Water Features~~other City of Portland maps. The flood protection elevation shall be the base flood elevation (based on a 1% chance exceedance in a given year) plus two feet of freeboard. The width of the floodway shall not be less than 15 feet. The floodway boundary, flood fringe boundary, and flood protection elevation data shall be based upon watercourse geometry, slope, channel roughness, effect of obstructions, backwater and other factors which affect flood flow. The requisite flood hazard data, maps, and sections shall be obtained and developed by procedures approved by the Sewage System Administrator. When appropriate and necessary data are available, the flood protection elevation and floodway and flooding fringe boundary data may be provided by the Sewage System Administrator. If pertinent hydrologic data and topographic data are not available, inaccurate, or outdated, and where substantial alterations or relocations of a watercourse are involved, the Sewage System Administrator may require the permit applicant to secure a registered engineer and surveyor to develop and supply the requisite flood hazard data, maps, and sections.

Commentary

24.050.J. Metro Flood Management Areas

This subsection is amended to update the reference to the February 1996 Flood Inundation. The reference to the February 1996 Flood Inundation is updated throughout the chapter for consistency.

The City and the U.S. Army Corps of Engineers (USACE) recognize the model used to delineate the FEMA 100-year floodplain is outdated and are working together to develop an updated hydraulic model of the Lower Willamette River in coordination with FEMA and other federal, state and local agencies. The USACE 2022 Lower Willamette River hydraulic model will estimate flood extent and elevations of the February 1996 flood event and the 100-year floodplain using updated Light Detection and Ranging (LiDAR) and recent river bathymetry surveys, upland topography and development patterns. A public review draft of the model and associated data and documentation is expected to be available by the end of 2021.

Once the USACE model is complete, its estimate of the 1996 flood extent and elevations will be used to update the City's Metro Title 3 map. The City will work with Metro to replace the existing 1996 Flood Inundation area shown on the map, which is based solely on aerial photos, with the USACE-modeled February 1996 flood extent and elevations. The USACE-modeled February 1996 flood extent and elevations are expected to provide a more accurate estimation of a future 1996 flood-like event.

J. Metro Flood Management Areas. February ~~Flood~~ 1996 Flood ~~i~~Inundation areas shown on Metro Title 3 Water Quality and Flood Management Area Maps shall have a flood protection elevation which provides two feet of freeboard above the ~~Flood~~ 1996 Flood level. February ~~Flood~~ 1996 Flood ~~i~~Inundation areas adjacent to Columbia River FIRM Flood Zone AE, Multnomah Drainage District No. 1, Peninsula Drainage District No. 2 Firm Zone AH and Columbia River FIRM Flood Zone A shall have freeboard of one foot.

24.50.060 Provisions for Flood Hazard Reduction.

(Amended by Ordinance Nos. 165678, 169905, 172209, 173979, 176955, 178741, 182370, 184235 and 189338, effective January 9, 2019.) In all flood hazard areas defined in Section 24.50.050, the following provisions are required:

A. Permits. All permit applications shall be reviewed to determine whether proposed building sites will be reasonably safe from flooding. A development or building permit shall be obtained before construction or development begins within any area of flood hazard. Such applications for permits shall include the following specific information

1. Elevation of lowest floor, including basement, for all structures and floodproofed elevations for nonresidential structures.

2. Elevation of lowest point of bridge structures.

3. Existing and proposed topography of the site taken at a contour interval (normally 1 foot) sufficiently detailed to define the topography over the entire site and adjacent watercourses subject to flooding. Ninety percent of the contours shall be plotted within 1 contour interval of the true location.

4. All necessary permits obtained from the federal and state governmental agencies from which prior approval is required.

5. Where elevation data is not available either through the Flood Insurance Study or from another authoritative source (Section 24.50.050 G.), applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of any available hydrological data, drainage basin hydrology, historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

Commentary

B. Elevation reference. The survey reference datum for finished lowest floor including basement, floodproofed elevations, and finished site grades shall be either the North American Vertical Datum of 1988 or City of Portland datum, whichever is appropriate. When approved by the City Engineer, a local onsite survey reference datum may be adopted for FIRM Zones A and Unidentified Watercourse Flood Zones. The survey reference datum shall be indicated on all relevant plan and Section drawings, and the certified Flood-Elevation Certificate.

C. Certification of elevations and floodproofing. All finished elevations as specified hereunder shall be certified on a FEMA (FIA) Elevation Certificate by a licensed surveyor secured by the permittee, and made part of the permit records.

1. As-built elevation of lowest floor including basement, of all new or substantially improved structures;

2. As-built floodproofed elevation of all new or substantially improved nonresidential structures;

3. As-graded elevation of lowest grade within 25 feet of structures;

4. As-graded elevation of lowest crawl space grade, as applicable.

All floodproofing materials and methods for nonresidential structures shall be certified by a licensed professional engineer or architect as meeting the criteria in Section 24.50.060 F7.

D. Floodway. Encroachments into the floodway by development and structures defined in Section 24.50.020 are prohibited unless it is demonstrated by technical analysis from a registered engineer that the development will result in no increase in the base flood elevation. In areas where a regulatory floodway has not been designated, no new construction, substantial improvement or other development (including fill) shall be permitted within Zone AE, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than 1 foot at any point within the community. Technical analysis shall be reviewed and approved by the Sewage System Administrator. However, the minimum width of the floodway shall not be less than 15 feet.

E. Alteration of watercourses. The Bureau of Development Services shall:

1. Notify adjacent communities and the Department of Land Conservation and Development prior to any alteration or relocation of a watercourse as identified in the Flood Insurance Study and Flood Insurance Rate Map, and submit evidence of such notification to the Federal Insurance Administration.

2. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

Commentary

F. Flood hazard areas

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

2. Residential construction

a. New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to or above flood protection elevation. Floodproofing of "lowest floor" space is not permitted.

b. Fully closed areas below the lowest floor that are subject to flooding are prohibited or shall be used solely for parking of vehicles, building access or limited storage and be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

(1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;

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

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

(a) Fills required to elevate the lowest floor to the flood protection level shall comply with Chapter 24.70. Fill selection and placement shall recognize the effects of inundation from floodwaters on slope stability, fill settlement, and scour. The minimum elevation at the top of the fill slope shall be at the base flood level. Minimum distance from any point of the building perimeter to the top of the fill slope shall be either 25 feet or twice the depth of fill at that point, whichever is the greater distance.

(b) Piling foundations required to elevate the lowest habitable floor to the flood protection level shall comply with Section 1809 and 1808 of the Structural Specialty Code. Pilings shall be spaced no more than 10 feet apart, and reinforcement shall be provided for piling more than 6 feet above the ground level.

Commentary

24.50.060.F.2.c.

This amendment adds a new requirement that a non-conversion agreement be recorded on the deed for new and substantially improved residential structures within the flood hazard area to ensure that space below the flood protection elevation is not converted to a use that is inconsistent with the requirements of this chapter, such as conversion to habitable space.

24.50.060.F.3.d.

This amendment removes "base" from the reference to the "base flood elevation data." The term "base flood elevation" is FEMA-defined (see 24.50.030.D) and focuses only on the Special Flood Hazard, or 100-year floodplain. This update recognizes that the City of Portland manages floodplain areas outside of the 100-year floodplain, including the February 1996 Flood Inundation area.

c. A non-conversion agreement must be recorded against the deed. The agreement must stipulate that work, including but not limited to converting spaces below the flood protection elevation into habitable spaces, will not be performed that could, in the reasonable judgment of the Director, convert or alter what has been constructed and approved such that it is no longer in conformance with the applicable requirements of this chapter.

3. Subdivision proposals.

a. All subdivision proposals shall be consistent with the need to minimize flood damage;

b. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

c. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and

d. Where ~~base~~ flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or 5 acres (whichever is less).

4. Nonresidential construction. New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall either have the lowest floor, including basement, elevated to the level of the flood protection elevation, or, together with attendant utility and sanitary facilities, shall:

a. Be floodproofed so that below the flood protection elevation the structure is watertight with walls substantially impermeable to the passage of water;

b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

c. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this Subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the Bureau of Development Services.

d. Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described for residential structures.

24.50.060.F.4.f.

This amendment adds a new requirement that a non-conversion agreement be recorded on the deed for new and substantially improved nonresidential structures within the flood hazard area to ensure that space below the flood protection elevation is not converted to a use that is inconsistent with the requirements of this chapter. It is noted that subsubsection 24.50.060.F.4.a requires nonresidential construction below the flood protection elevation to be floodproofed.

24.50.060.F.8.

This subsection is amended to clarify that this section outlines the requirements for compensatory excavation (cut), not just balanced cut and fill. "Flood Management Areas" refers to all areas shown on the Portland Flood Management Areas Map. The subsection is also amended to state that compensatory excavation is proposed to be required for placement of soil or structures in the floodplain.

The amount of compensatory excavation required will be based on the volume of estimated displacement resulting from the placement of fill and/or structures in the floodplain. The compensatory excavation must be located within the same flood area (e.g., base flood elevation or February 1996 Flood Inundation) and at a depth that compensates for the displaced flood storage within each flood area. For example, compensatory excavation below the base flood elevation compensates for displacement below the base flood elevation. Storage created below the 1996 flood level and above base flood elevation does not mitigate displacement below the base flood elevation.

Note: City staff are considering the addition of exemptions to the compensatory excavation requirements for certain development activities. Activities such as the placement of large woody debris as a part of habitat enhancement projects, placement of piles to support small docks or other structures not expected to result in significant flood displacement, and unique situations where excavation is impractical or ineffective.

e. Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g. a building constructed to the base flood level will be rated as one foot below that level).

f. A non-conversion agreement must be recorded against the deed. The agreement must require that work, including but not limited to converting spaces below the flood protection elevation into habitable spaces, will not be performed that could, in the reasonable judgment of the Director, convert or alter what has been constructed and approved such that it is no longer in conformance with the applicable requirements of this chapter.

5.. Manufactured homes. All manufactured homes to be placed or substantially improved within Zones AO, AH and AE shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is at or above the flood protection elevation and be securely anchored to prevent flotation, collapse or lateral movement and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Refer to FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).

6. Utilities. All new and replacement water supply and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the sanitary sewage systems into flood waters. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

7. Construction materials and methods. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage, using methods and practices that minimize flood damage. Electrical, heating, ventilation, plumbing and air-conditioning equipment and other service facilities shall be protected to or above the flood protection elevation.

8. ~~Balanced Cut and Fill~~ Compensatory Excavation Required. In all Flood Management Areas ~~of~~ regulated by the City shown on the Portland Flood Management Areas Map and not addressed by Sections 24.50.060 G, H and I, ~~balanced cut and fill~~ compensatory excavation (removal) ~~shall be~~is required for all fill and structures placed at or below the base flood elevation and or February 1996 Flood Inundation level as follows. ~~All fill placed at or below the base flood elevation shall be balanced with at least an equal amount of soil material removal.~~ Soil material and removal of permanent structures shall be within the same flood hazard area identified in Section 24.50.050 A. through ~~I~~J.

Commentary

24.50.060.F.8.a.

This amendment increases the compensatory excavation required within the high hazard area to at least two times the displaced volume created by new soil (fill) or structures. The compensatory excavation must occur in the high hazard area. This change is consistent with the high hazard area compensatory excavation ratios recommended in the FEMA BiOp.

24.50.060.F.8.b.

This amendment increases the compensatory excavation required within the riparian buffer area (landward of the high hazard area) to at least 1.5 times the displaced volume created by new soil (fill) or structures. The compensatory excavation must occur in the riparian buffer area. This change is consistent with the riparian buffer area compensatory excavation ratios in the FEMA BiOp.

24.50.060.F.8.c.

This amendment increases the compensatory excavation required on undeveloped portions of the combined flood hazard area to at least 1.5 times the displaced volume created by new soil (fill) or structures. This change is consistent with FEMA BiOp recommendations.

24.50.060.F.8.d.

The addition of this subsubsection clarifies that the existing balanced cut and fill requirement will remain for developed floodplains. These areas have low existing floodplain function and balanced cut and fill will maintain existing floodplain function.

24.50.060.F.8.e.

This amendment replaces "fill" with "displacement" to clarify that compensatory excavation must address the volume of displacement caused by fill or structures, rather than just fill. Additionally, "and spring" has been added to the non-storm situations when the excavation must not be filled because Portland's largest storms are often in the spring. As a result of climate change, peak spring rains are expected to be larger.

24.50.060.F.8.f.

This amendment requires that compensatory excavation be designed to freely drain to the source of flooding. If the compensatory excavation is not designed to drain after the storm or flood event passes, fish could be stranded, resulting in fish mortality. This requirement ensures that fish that took refuge off-channel during the storm are able to return to the waterway after it is over.

24.50.060.F.8.g.

This amendment allows for the use of mitigation bank credits in lieu of on-site compensatory excavation. The option to use mitigation bank credits will provide additional flexibility for applicants to meet the compensatory excavation mitigation ratios.

24.50.060.F.9.

This subsection is updated to specifically identify that tank anchoring is required in any flood hazard area shown on the Portland Flood Management Areas Map. This reference replaces the term "flood management areas," which is not defined in this chapter.

a. Within the mapped high hazard area, the compensating volume of removal must be at least twice the displaced volume (a ratio of 2:1) and must be located within the high hazard area.

b. Within the mapped riparian buffer area and landward of the high hazard area, the compensating volume of removal must be at least one and a half times the displaced volume (a ratio of 1.5:1). The compensatory excavation must be located within the riparian buffer area.

c. On portions of the site landward of the riparian buffer and high hazard area not occupied by buildings or exterior improvements, the compensating volume of removal must be at least one and a half times the displaced volume (a ratio of 1.5 to 1).

d. In all other areas, the compensating volume of removal must be at least equal to the displaced volume (a ratio of 1:1).

~~a~~e. Excavation shall not be counted as compensating for ~~fill~~displacement if such areas will be filled with water in non-storm winter and spring conditions.

f. Compensatory excavation areas must be designed to freely drain to the source of flooding following storm and flood events so as to avoid fish stranding.

g. Mitigation bank credits in lieu of on-site compensatory excavation. Applicant may elect to purchase City approved mitigation bank credits to meet the compensatory excavation ratios in a-d above. Mitigation bank credits must be for the same area identified in the Portland Flood Management Areas Map (e.g., high hazard area, 100-year floodplain, etc.).

~~b~~h. Temporary fills and structures permitted during construction shall be removed.

9. Tank anchoring. Tanks containing hazardous materials must be anchored to prevent flotation if they are located in flood hazard areas shown on the Portland Flood Management Areas Map.~~areas of special flood hazard or flood management areas~~.

10. Uncontained hazardous materials as referred to in Section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S. Section 9601 et seq.) (CERCLA), section 502 (13) of the Clean Water Act and any other substances so designated by the Director of the Bureau of Development Services are prohibited in flood management areas.

24.50.060.G.Johnson Creek Flood Zones and Metro Flood Management Areas of Johnson Creek

This amendment adds "Metro Flood Management Areas of Johnson Creek" to the areas identified in the title of this subsection. The other areas in the Metro Flood Management Areas (e.g., February 1996 Flood Inundation) are already subject to 24.50.060.G. requirements but the update more clearly communicate that these areas are subject to these regulations.

Similarly, "Metro Flood Management Areas of Johnson Creek" is added to 24.50.060.G.1.a. for clarity. No regulatory changes result from these updates.

11. AH/AO Zone Drainage. Adequate drainage paths shall be provided around structures on slopes to guide floodwaters around and away from proposed structures.

G. Johnson Creek Flood Zones and Metro Flood Management Areas of Johnson Creek – Special Provisions. In addition to other requirements of this chapter the following requirements shall apply within designated portions of the Johnson Creek Flood Zones:

1. All Johnson Creek Flood Zones

a. Balanced cut and fill. Within all areas of the Johnson Creek Flood Zones and Metro Flood Management Areas of Johnson Creek, all new fills below the base flood elevation shall be accompanied by an equal amount of excavation on the same site so that the storage capacity of the floodway and floodway fringe is retained.

b. Mitigation payment allowed in lieu of balanced cut and fill. After September 1, 1998 residential properties within the area of the 100 year floodplain, but outside of the floodway and Flood Risk Area, and bounded by I-205 on the west, SE 142nd Avenue on the east, and the Springwater Corridor Trail on the south, may elect to pay into the Johnson Creek Fill Mitigation Bank in lieu of creating a balanced cut and fill. The amount of the payment shall be determined by the Bureau of Environmental Services.

2. Johnson Creek Flood Risk Area. The following provisions shall apply within the Johnson Creek Flood Risk Area, as established in Chapter 33.535 of the City Code:

a. Balanced cut and fill. The requirements of subsection G.1. above, shall apply within the Johnson Creek Flood Risk Area.

b. Reduction in flooding capacity prohibited. Structures, fill or other development shall only be allowed in the Johnson Creek Flood Risk Area when they are designed so that there is no significant reduction in the storage capacity of the floodway and floodway fringe and there is no significant impediment to the passage of flood waters.

c. Exceptions to Section 24.50.060 G.2.:

(1) One story detached accessory buildings used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet.

(2) Parking garages accessory to one and two family structures, provided the floor area does not exceed 300 square feet.

Commentary

24.50.060.H. Willamette River North Reach Flood Zones and Flood Zones in the Heavy Industrial (IH), General Industrial 2 (IG2) and General Employment 2 (EG2) Zoning Designations – Special Provisions

This subsection is added to apply special provisions to the Willamette River North Reach and parcels zoned Heavy Industrial (IH), General Industrial 2 (IG2) and General Employment 2 (EG2).

The City of Portland Economic Opportunities Analysis (EOA), most recently adopted in 2016 as a supporting document for the *2035 Comprehensive Plan* (to comply with Statewide Planning Goal 9, Economic Development), identified a small amount of industrial land capacity in the combined Harbor Access Lands/Harbor-Airport geography. Much of this land capacity has been absorbed since EOA adoption and the Bureau of Planning and Sustainability is in the process of developing a new EOA. To ensure continued compliance with Statewide Planning Goal 9 while the new EOA is under development, the new compensatory excavation requirements will not apply to lots in the almost exclusively-industrial Willamette River North Reach and three industrial zones elsewhere in the city: the Heavy Industrial (IH), General Industrial 2 (IG2), and General Employment 2 (EG2) zoning designations. Once the EOA is complete, these requirements are expected to be applied in the Willamette River North Reach and the three industrial zones.

24.50.060.I. Drainage Districts

This subsection is added to apply special provisions to managed drainage districts. Because of the managed nature of these floodplain areas, requirements should focus on impacts to downstream water quality and sedimentation rather than additional flood storage capacity in a pumped system. Therefore, a balanced cut and fill standard is appropriate in these managed drainage districts.

(3) Fences which do not prevent the flow of water.

d. Buildings designed to meet all of the following criteria shall be presumed to comply with Section 24.50.060.G.2.:

(1) At least 50 percent of perimeter walls located at, or below, the base flood elevation shall remain open and unenclosed;

(2) At least 25 percent of each perimeter wall located at, or below, the base flood elevation shall remain open and unenclosed; and

(3) The footprint of all portions of the building located at, or below, the base flood elevation shall not exceed 15 percent of the footprint of the building located above the base flood elevation.

H. Willamette River North Reach Flood Zones and Flood Zones in the Heavy Industrial (IH), General Industrial 2 (IG2) and General Employment 2 (EG2) Zoning Designations – Special Provisions. In addition to other requirements of this chapter the following requirements shall apply within designated portions of these flood zones:

1. Balanced Cut and Fill Required. In all Flood Management Areas, balanced cut and fill shall be required. All fill placed at or below the base flood elevation shall be balanced with at least an equal amount of soil material removal. Soil material removal shall be within the same flood hazard area identified in Section 24.50.050 A. through I.

a. Excavation shall not be counted as compensating for fill if such areas will be filled with water in non-storm winter conditions.

b. Temporary fills permitted during construction shall be removed.

I. Drainage Districts – Special Provisions. In addition to other requirements of this chapter, the following requirements shall apply within the Drainage Districts:

1. Balanced cut and fill. Within all areas of the drainage districts, all new fills and structures at or below the base flood elevation and or February 1996 Flood Inundation level shall be accompanied by an equal amount of excavation within the same flood area.

a. Excavation shall not be counted as compensating if such areas will be filled with water in non-storm conditions.

b. Temporary fills and structures permitted during construction shall be removed.

Commentary

24.50.065.A.

This amendment replaces "Area of Special Flood Hazard" with "flood hazard area" to recognize that the City of Portland manages floodplain areas outside of the Special Flood Hazard Area (also known as the 100-year floodplain), including the February 1996 Flood Inundation area. The change clarifies that recreational vehicles place on a site in the February 1996 Inundation area must also meet the requirements of this subsection.

24.50.070.B. Variances

Note: City staff is considering the possibility of establishing a variance process – in addition to, or in place of the addition of activities exempted from compensatory excavation requirements – whereby lower compensatory excavation ratios would be allowed for resource enhancement projects or other developments that incorporated additional habitat restoration beyond the minimum Title 33, Zoning Code, requirements.

24.50.065 Recreational Vehicles located in Areas of Special Flood Hazard or Base Flood Zones.

(Added by Ordinance No. 180330, effective August 18, 2006.)

A. Any recreational vehicle placed on a site located in either an ~~Area of Special F~~Flood ~~H~~hazard area or in the base flood zone shall:

1. Meet the elevation and anchoring requirements for manufactured homes;

2. Be on the site for fewer than 180 consecutive days; or

3. Be fully licensed and ready for highway use. As used in this section, "ready for highway use" means that the vehicle is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and has no permanently attached additions.

B. For the purpose of this section, "recreational vehicle" means any vehicle which is:

1. Built on a single chassis;

2. 400 square feet or less when measured at the largest horizontal projection;

3. Designed to be self propelled or permanently towable by a light duty truck; and

4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use.

24.50.070 Appeals and Variances.

(Amended by Ordinance No. 178741, effective October 19, 2004.)

A. Appeals. Any person aggrieved by a requirement, decision, or determination made pursuant to the administration of this Chapter may appeal such action to the Building Board of Appeal in accord with Chapter 24.10.

B. Variances. If variances from requirements of this Chapter are requested, all relevant factors and standards specified in other sections of this Chapter shall be considered, as well as the following:

1. The danger that materials may be swept into other lands to the injury of others;

2. The danger to life and property due to flooding or erosion damage;

3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

4. The importance of the services provided by the proposed facility to the community;

Commentary

5. The necessity to the facility of a waterfront location, where applicable;

6. The availability of alternative locations, not subject to flooding or erosion damage;

7. The compatibility of the proposed use with existing anticipated development;

8. The relationship of the proposed use to the Comprehensive Plan and Floodplain Management Program for that area;

9. The safety of access to the property in times of flood for ordinary and emergency vehicles;

10. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;

11. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges; Upon consideration of the factors listed above and the purposes of this Chapter, such conditions may be attached to the granting of variances as deemed necessary.

C. Conditions for variances.

1. Generally the only condition under which variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a lot of 1/2 acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (1-11) have been fully considered. As the lot size increases, the technical justification required for issuing the variance increases.

2. Variances shall not be issued within designated floodway if any increase in flood levels during the base flood discharge would result.

3. Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in this Section.

4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

Commentary

5. Variances shall only be issued upon:

a. A showing of good and sufficient cause,

b. A determination that failure to grant the variance would result in exceptional hardship to the applicant, and

c. A determination that the granting of a variance would not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

6. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

7. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from the flood elevations should be quite rare.

8. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except 24.50.070 C.1. and otherwise complies with Section 24.50.060 F.1. and 24.50.060 F.7.

Commentary

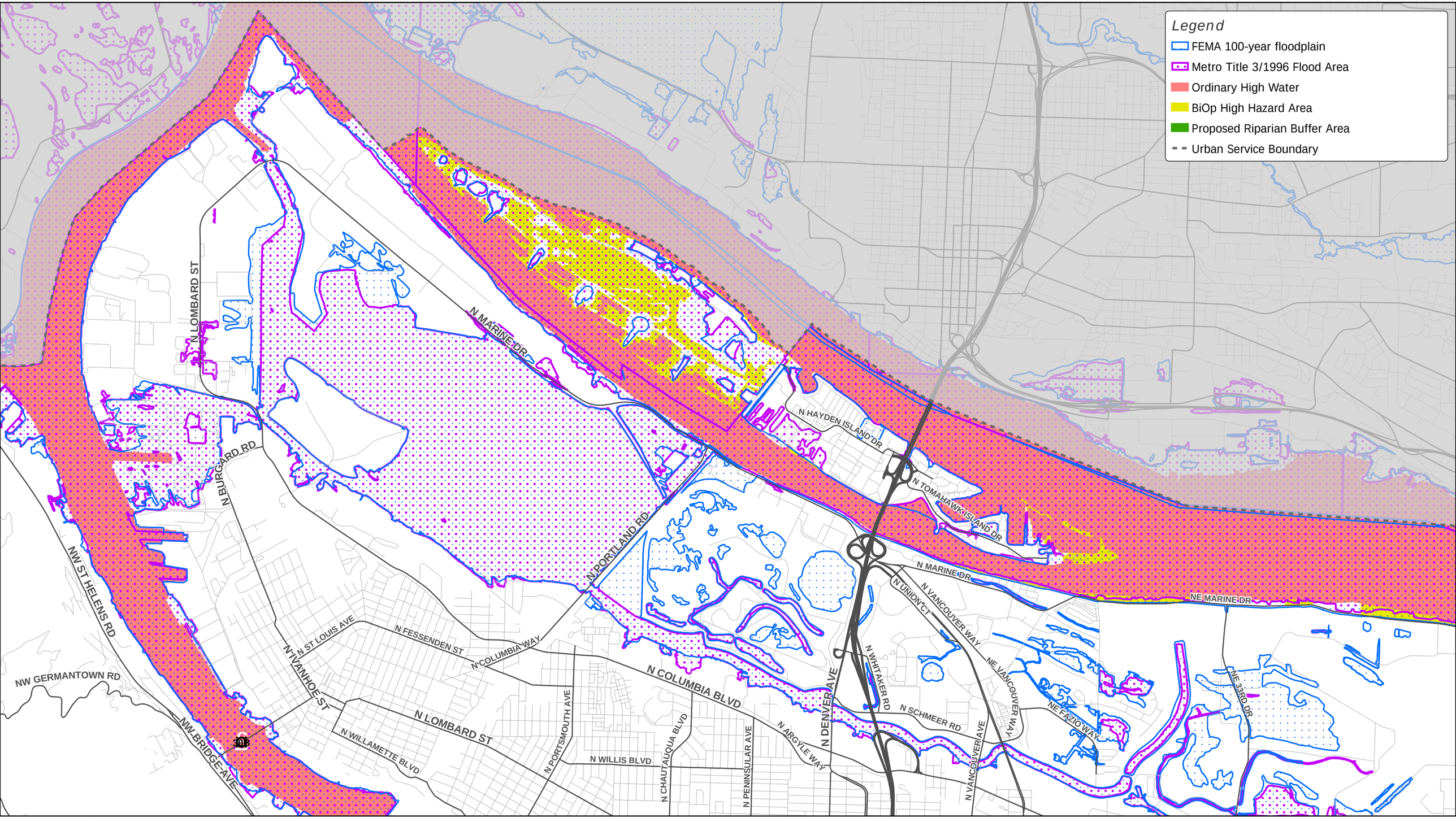
Portland Flood Management Areas Map

This series of maps is added to provide a single point of reference for the requirements in flood prone areas of the City. The map includes the following:

- FEMA 100-year floodplain (Special Flood Hazard Area)
- Metro Title 3/February 1996 Flood Inundation area
- Mapped Riparian Buffer Area (170 feet from OHW to the furthest extent of either the 100-year or February 1996 Flood Inundation area)
- Mapped High Hazard Area (the greater of the floodway or 10-year flood interval)

Title 24 Flood Management Areas

Flood Management Areas - Columbia River/Slough Watersheds - West



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

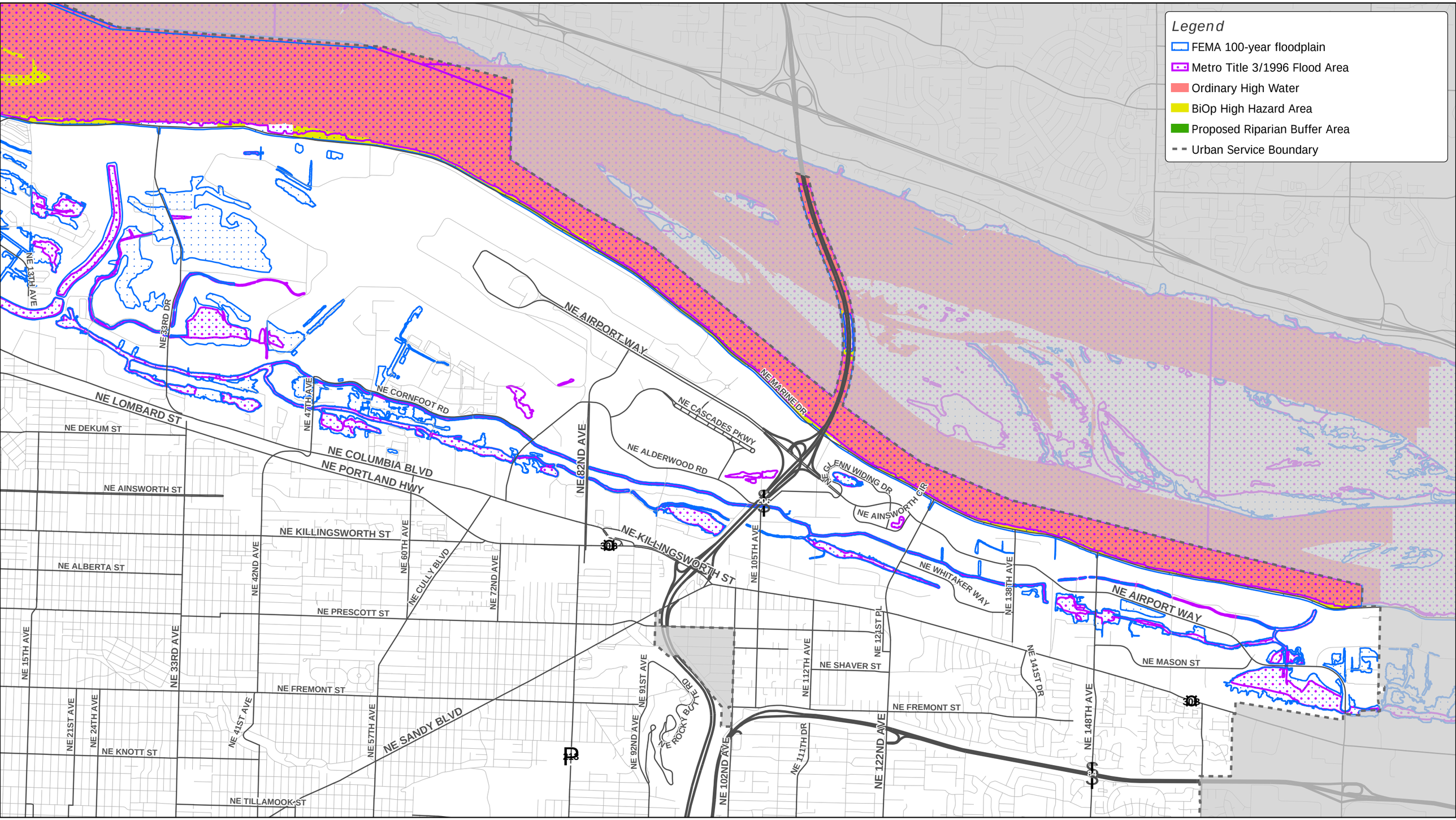
0 — Feet — 5,000

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

Title 24 Flood Management Areas

Flood Management Areas - Columbia River/Slough Watersheds - East



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

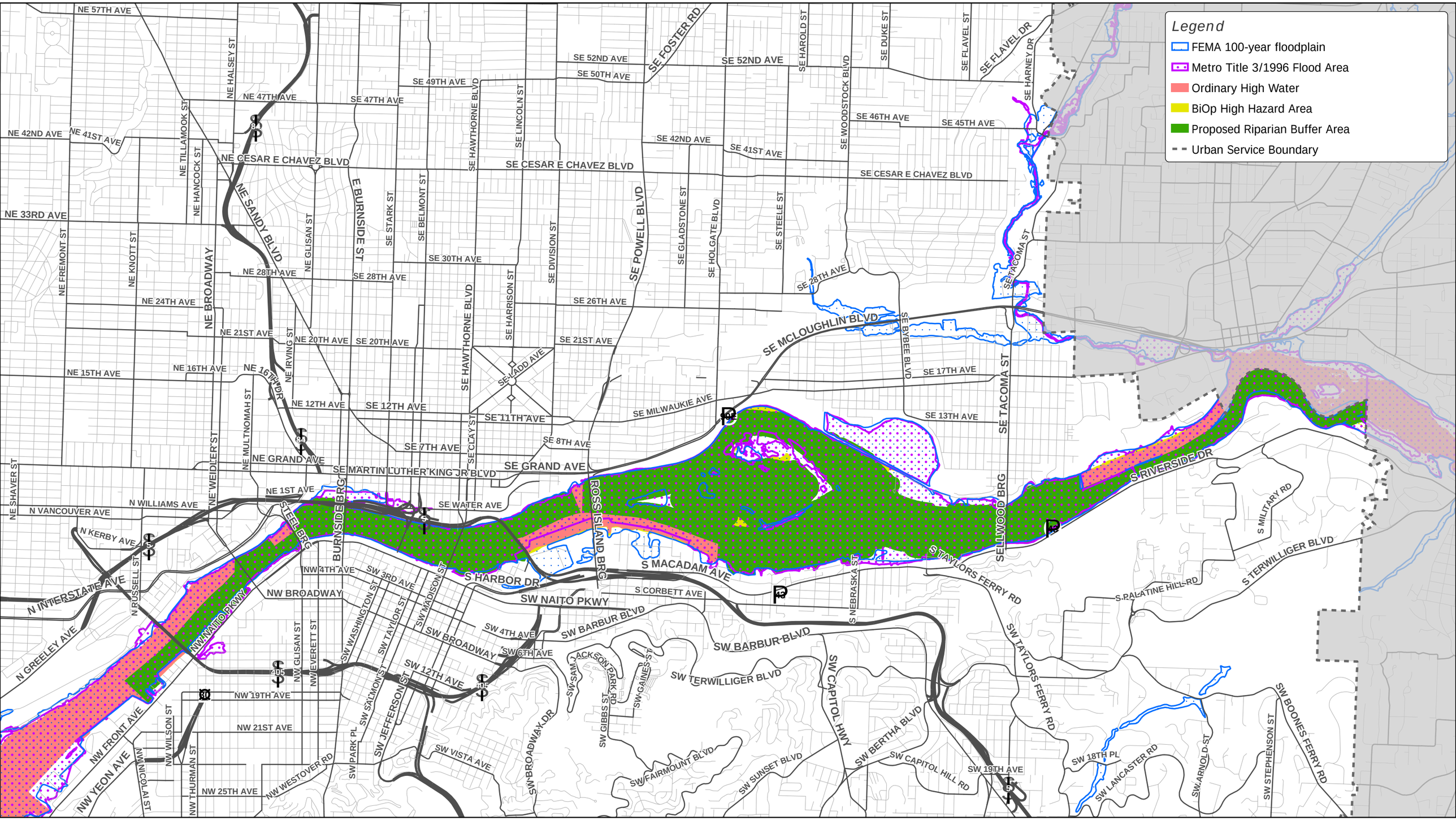
0 5,000 Feet

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

Title 24 Flood Management Areas

Flood Management Areas - Willamette River Watershed - South



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

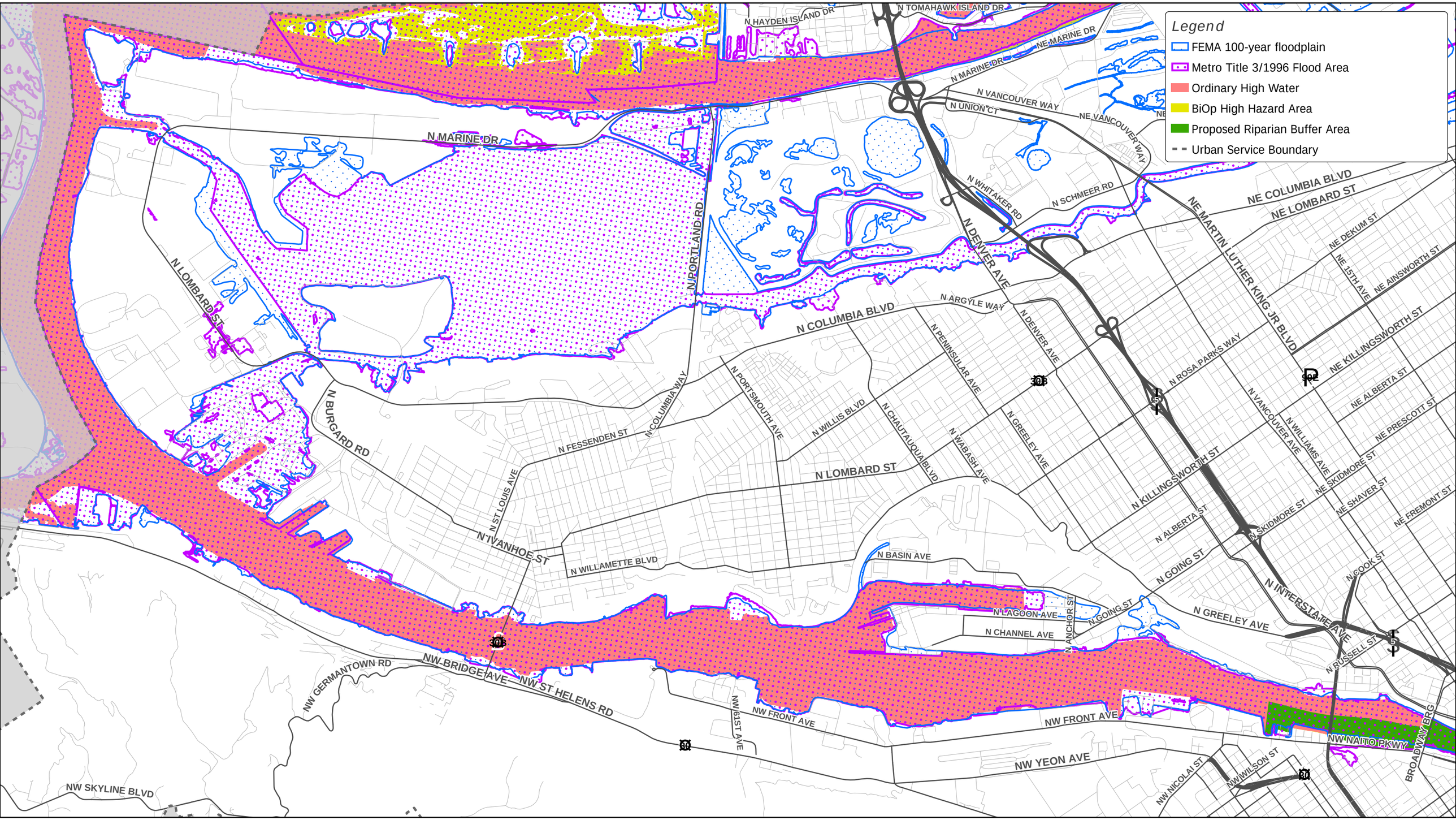
E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

0 — Feet — 5,000

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

Title 24 Flood Management Areas

Flood Management Areas - Willamette River Watershed - North



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

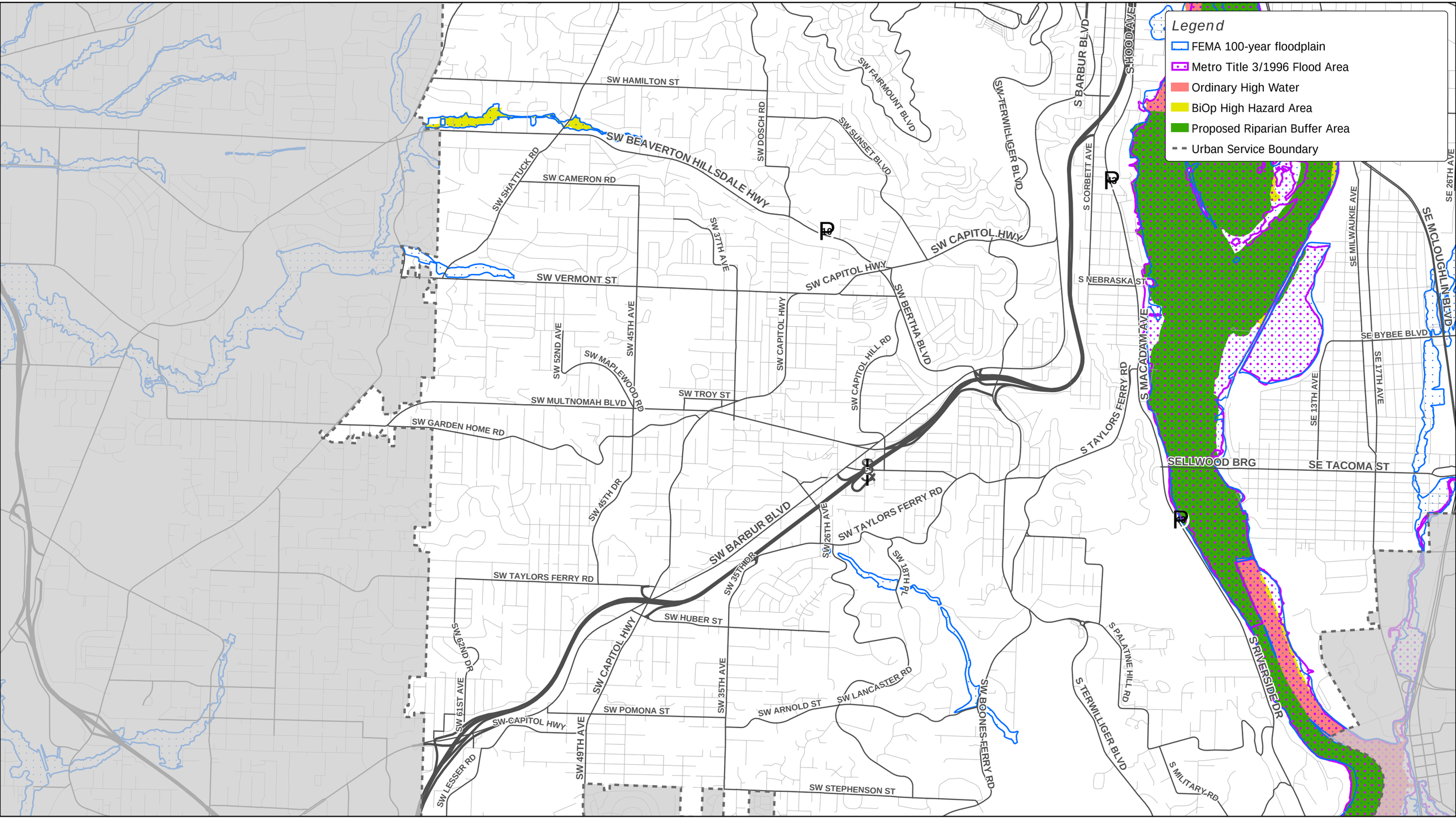
0 5,000 Feet

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

Title 24 Flood Management Areas

Flood Management Areas - Tryon & Fanno Creek Watersheds



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

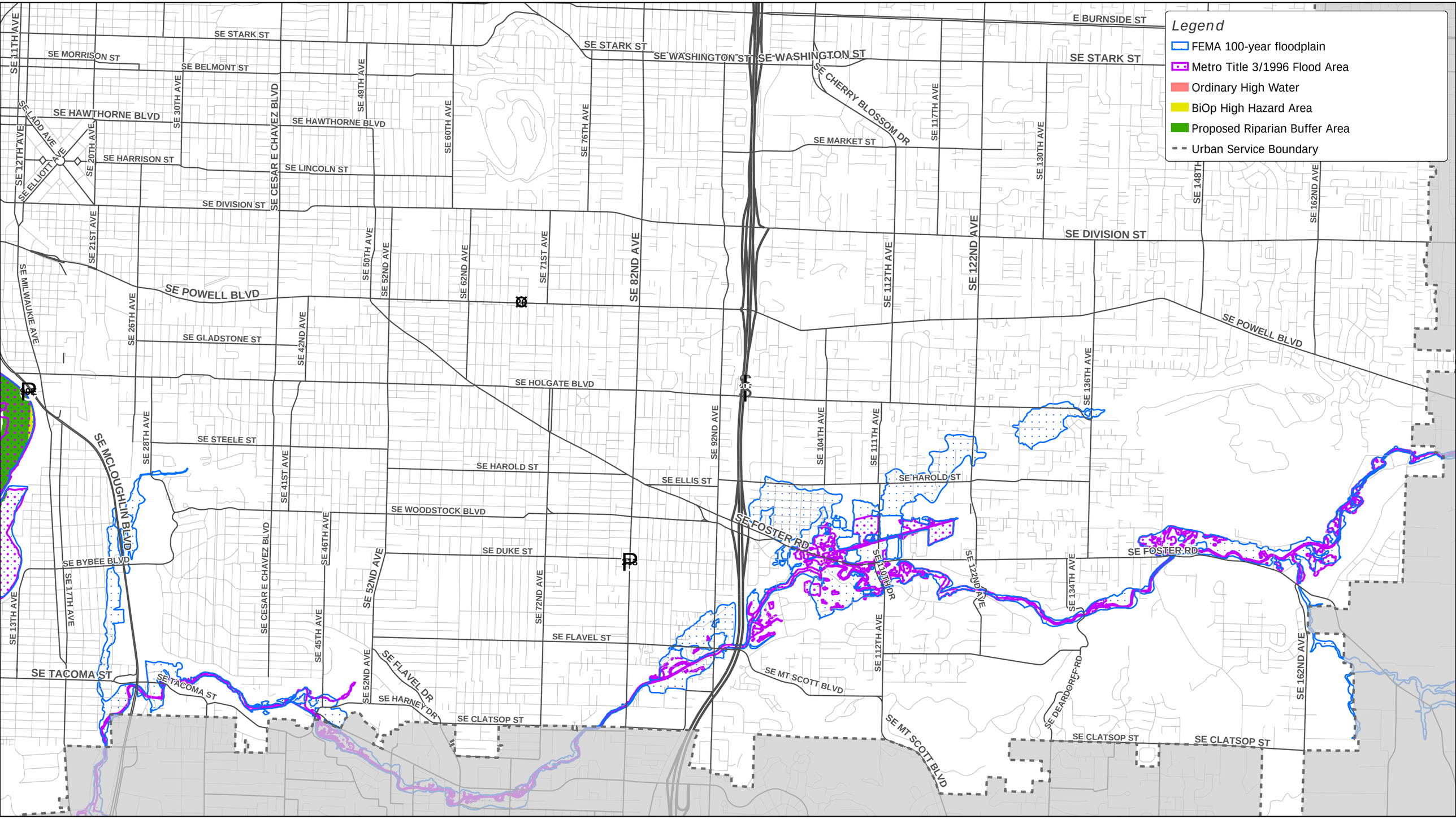
0 — Feet — 5,000

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

Title 24 Flood Management Areas

Flood Management Areas - Johnson Creek Watershed



August 19, 2021

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

0 — Feet — 5,000

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

E:\Dropbox (BPS Tech Services)\BPS Tech Services Team Folder\gis\projects\Natural_Resources\Hydro\Floodplain\BioP_Analysis\Maps\BiOp_watershed_analysis_maps\11x17_BiOp_watershed_analysis_adopted_zoning_190429.mxd

Contact

Jeff Caudill
City Planner, Environmental

Floodplain Resilience Plan
Email: floodplainproject@portlandoregon.gov
Floodplain Helpline: 503-823-7831

About City of Portland Bureau of Planning and Sustainability
The Bureau of Planning and Sustainability (BPS) develops creative and practical solutions to enhance Portland's livability, preserve distinctive places, and plan for a resilient future.

THE BUREAU OF PLANNING & SUSTAINABILITY

http://portland.gov/bps
503-823-7700
bps@portlandoregon.gov