



DRAFT  
Floodplain  
Management  
Plan  
October 2023

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## **Special Thanks and Acknowledgments**

The City of Salem developed this document through a community-wide planning process using plan templates provided by the Federal Emergency Management Agency (FEMA). This project was completed through the work of two dedicated committees—the Floodplain Management Advisory Committee made up of community members that provided input regarding floodplain management needs of Salem and surrounding areas, and the Staff Technical Advisory Committee that coordinated the technical elements of the planning process. The City of Salem gratefully acknowledges the help of the following:

Floodplain Management Advisory Committee: Chris Christiansen, Kathleen Dewoina, E.M. Easterly, Mike Erdmann, Nathan Good, Mark Grenz, Natalie Janney, Toni Kirk, Jeff Leach, Ethan Manela, Dynee Medlock, Anthony Nunn, Corey Poole, John Shepard, Steve Ward

Project Planning Team: Robin Dalke, City of Salem Public Works, Floodplain Administrator; Laurel Christian, City of Salem Public Works, Planner II, Shelby Guizar, City of Salem Public Works, Planner I

Staff Technical Advisory Committee: Justin Boyington, Public Works Department, Flow Monitoring Analyst; Olivia Dias, Community and Urban Development Department, Current Planning Manager; Joe Hutchinson, Fire Department, Emergency Manager; Nitin Joshi, Public Works Department, Environmental and Regulatory Affairs Manager; Jennifer Mongolo, Public Works Department, Senior Natural Resources Planner; Anita Panko, Public Works Department, Stormwater Quality Supervisor; Al Rossi, Building and Safety Division, Senior Building Official; Trevor Smith, Public Works Department, Public Information Officer.

## **Executive Summary**

### **Purpose**

The objective of the City of Salem *Floodplain Management Plan (FMP)* is to create an overall strategy of programs, projects and measures that will help reduce the adverse impact of flood hazards on the community. Production, updates and implementation of this plan is a primary mitigation action identified in the City of Salem *Natural Hazard Mitigation Plan (NHMP)*, which is a plan that prepares the City for the long-term effects resulting from a variety of natural hazards. A NHMP is required by the Federal Emergency Management Agency in order to receive federal funds for disaster projects. This *Floodplain Management Plan Update (2023 FMP Update)* identifies flood-related hazards and establishes an action plan for how to mitigate those hazards.

### **Development of the Plan**

The *Floodplain Management Plan* is the result of extensive collaboration by a citizen advisory committee, City staff, multiple public agencies, non-profit organizations, and

other community groups. The plan development was led by a 15-member citizen advisory committee, which included representatives of a wide range of community interests. The citizen committee was assisted by a technical committee of City staff representing various divisions within the Public Works, Community and Urban Development, and Fire Departments.

Salem's original Floodplain Management Plan (FMP) was adopted by City Council in 2013 and received its first mandatory five-year update in 2018. This 2023 FMP Update is the second five-year update of the plan. The original plan and its two updates were developed using a similarly collaborative process.

## **Plan Goals**

The goals of the 2022 Natural Hazard Mitigation Plan are also the goals that guided the overall direction of the 2023 FMP Update; these mitigation goals are as follows:

- Goal 1: Develop and implement mitigation activities to protect human life in the context of a climate-altered future.
- Goal 2: Strive to protect existing buildings and infrastructure from the impacts of natural hazards.
- Goal 3: Develop and implement strategies and policies to promote more resilient future development, infrastructure, and systems.
- Goal 4: Strengthen communication, plan, practice, and coordinate emergency services among local, county, and regional governments and the private sector.
- Goal 5: Enhance community resilience, including economic continuity and recovery, to reduce the impacts of natural hazards and promote efficient and effective recovery.
- Goal 6: Preserve and rehabilitate natural systems to serve natural hazard mitigation functions and protect natural resources.
- Goal 7: Develop programs to promote social resilience within the community recognizing that our most vulnerable communities are often those who have been historically underserved and marginalized, especially among those most vulnerable to natural hazards.

## **Action Items**

The Floodplain Management Plan establishes 42 action items in six floodplain management categories: preventive activities, property protection activities, natural resource protection activities, emergency services measures, structural projects, and public information activities. (See Appendix E). Through a wide variety of activities, these action items implement the plan's goals in order to mitigate flood-related hazards.

## **Plan Implementation**

The plan implementation section details the process for ongoing implementation, evaluation, and modification of the Floodplain Management Plan. The City's Public Works Department is responsible for overseeing the annual review process with

assistance from an advisory committee. The Floodplain Management Plan is scheduled for a complete update every five years.

## **Introduction**

### **Purpose**

Salem is home to an extensive system of natural waterways. As a result, Salem is susceptible to major flood events that pose threats to life and safety and can cause significant property damage. Although a number of government agencies and community groups attempt to mitigate flood hazards, a floodplain management plan integrates the community's efforts into one comprehensive program of activities. A floodplain management plan serves the following beneficial purposes for the Salem community:

- Identify existing and future flood related hazards and their causes.
- Ensure that a comprehensive review of all possible activities and mitigation measures are considered so that the most appropriate solutions will be implemented to address the hazard.
- Ensure that the recommended activities meet the goals and objectives of the community, are in coordination with land-use and comprehensive planning, do not create conflicts with other activities, and are coordinated to reduce the costs of implementing individual activities.
- Ensure criteria used in community land-use and development programs account for the hazards faced by existing and new development.
- Educate residents and property owners about hazards, loss reduction measures, and the natural and beneficial functions of floodplains.
- Build community support for activities and projects that prevent new problems, reduce losses, and protect the natural and beneficial functions of floodplains.

### **Regulatory Context**

#### **Natural Hazards Mitigation Plan**

The City of Salem Natural Hazard Mitigation Plan (NHMP) prepares the City for the long-term effects resulting from a variety of natural hazards. A NHMP plan is required by the Federal Emergency Management Agency (FEMA) in order for the City to receive federal funds for disaster projects.

The 2022 Salem NHMP identifies two action items related specifically to flood hazards:

- FL #1. Update, Maintain, and implement flood actions via a floodplain management plan with FEMA's Community Rating System (CRS) guidelines.
- FL #2. Improve the City of Salem's National Flood Insurance Program (NFIP) CRS rating class to reduce NFIP premiums.

The primary regulatory function of this *Floodplain Management Plan* is to implement Flood Action Item FL#1 of the NHMP. This *Floodplain Management Plan* also serves as a guide for implementation of Flood Action Item FL#2, and it will direct the City's floodplain management activities to better address flood-related hazards throughout many areas of Salem and the surrounding community. Further details about the CRS program are included below.

### Community Rating System

FEMA's Community Rating System program reduces flood insurance premiums for communities that implement floodplain management activities that exceed the minimum federal standards. Salem reached a CRS rating of Class 3 in 2023 resulting in a 35-percent discount on flood insurance premiums for properties in the Special Flood Hazard Area. The 2023 FMP Update remains a guide for maintaining and improving Salem's CRS rating.

## **Flood Terminology**

### Floodplain

A floodplain is land adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. These areas, if left undisturbed, act to store excess floodwater. The floodplain is made up of two areas: the flood fringe and the floodway.

### Floodway

The floodway is the portion of the floodplain that is closer to the river or stream. For the National Flood Insurance Program (NFIP) and regulatory purposes, floodways are defined as the channel of a river or stream, and the over-bank areas adjacent to the channel. Unlike floodplains, floodways do not reflect a recognizable geologic feature. The floodway carries the bulk of the floodwater downstream and is usually the area where water velocities and forces are the greatest. The NFIP regulations require that the floodway be kept open and free from development or other structures, so that flood flows are not obstructed or diverted onto other properties. The NFIP floodway definition is "the channel of a river or other watercourse and adjacent and areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot...." Floodways are not mapped for all rivers and streams but are typically mapped in developed areas.

### Flood Fringe

The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward. This is the area where development is most likely to occur, and where precautions to protect life and property need to be taken.

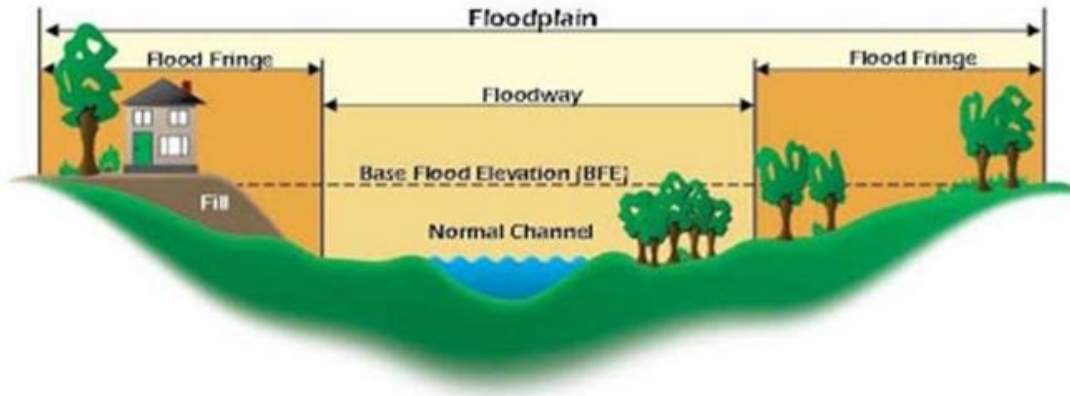
### Base Flood Elevation

Base Flood Elevation (BFE) means the water surface elevation during the base flood in relation to a specified datum or benchmark. The BFE is depicted on the FEMA Flood Insurance Rate Map to the nearest foot and in the Flood Insurance Study to the nearest 0.1 foot. The BFE is a baseline pulled together from historic weather data, local



topography, and the best science available at the time. It’s a reasonable standard to insure against, but it is not a guarantee that it will flood only one time every 100 years.

Figure 1. Special Flood Hazard Area Schematic



Source: Oregon Department of Geology and Mineral Industries

### Initial Planning Process

The *Floodplain Management Plan* was initially adopted on June 10, 2013. In order to remain eligible for CRS credit, FEMA requires the plan be updated at least every five years. Salem’s first mandatory update was adopted in 2018. The timing of this Plan Update follows the *Natural Hazards Mitigation Plan* update, which was submitted to FEMA for final review in August of 2023. This 2023 FMP Update is the second mandatory five-year update of the plan. The planning process follows the process described in Activity 510, “Floodplain Management Planning”, in the 2017 CRS Coordinator’s Manual.

### Organization of Plan

The organization of this Plan Update follows the 10-step planning process described in Activity 510, “Floodplain Management Planning,” in the 2017 CRS Coordinator’s Manual and shown in Table 1.

Table 1: FEMA’s 10-Step Planning Process

| Floodplain Management Plan Section | FEMA Planning Step |                                 |
|------------------------------------|--------------------|---------------------------------|
| Introduction                       | 1                  | Organize                        |
| Public Involvement                 | 2                  | Involve the Public              |
| Coordination                       | 3                  | Coordinate                      |
| Hazard Assessment                  | 4                  | Assess the Hazard               |
| Problem Evaluation                 | 5                  | Assess the Problem              |
| Setting Goals                      | 6                  | Set Goals                       |
| Review of Possible Activities      | 7                  | Review Possible Activities      |
| Action Plan                        | 8                  | Draft an Action Plan            |
|                                    | 9                  | Adopt the Plan                  |
|                                    | 10                 | Implement, Evaluate, and Revise |

The following features are unique to Salem’s 2023 FMP Update:

- Each section includes an initial statement regarding the requirements from Activity 510 of the Community Rating System Coordinator’s (CRS) Manual for a five-year update to a floodplain management plan.
- A portion of the original language from the 2018 FMP Update remains, but applicable sections and subsections of the plan have been updated in compliance with CRS requirements.
- The 2023 FMP Update uses same criteria found in Appendix D of the 2018 FMP Update for prioritizing possible activities.
- A status review is provided for all action items in the 2018 action plan, including action items added during annual updates to the plan.
- A revised action plan is established based on Appendix D scores, along with a new timeline and goal assessment as shown in a revised Table 17.
- A description of the responsibility for implementation and availability for funding for each action item as shown in Appendix E.

## **Public Involvement**

### **Community Rating System Requirements: *Step 2 Involve the Public***

The FMP update must be conducted by a committee that meets the applicable criteria in the CRS manual. Specifically, the planning process should be conducted through a committee composed of staff from those community departments that implement or have expertise in the activities that are scored in Appendix D. In addition, at least one-half of the committee members must be representatives of the public or stakeholders, there must be representatives from Salem’s floodplain management office, the public information office, and a representative from the insurance industry.

For a FMP update, the committee must meet a sufficient number of times to involve the members in the key steps of the planning process. All committee meetings must be open to the public and the meeting schedule must be publicly posted.

### **Floodplain Management Advisory Committee**

The members of the Floodplain Management Advisory Committee are listed in Table 2. The Committee included representatives from various City departments as shown in Table 2.

Table 2. Floodplain Management Advisory Committee Members

| <b>Committee Member</b> | <b>Affiliation</b>  |
|-------------------------|---|
| E.M. Easterly           | Director, Glenn-Gibson Watershed Council                      |
| Mike Erdmann            | C.E.O., Home Builders Association of Marion and Polk Counties |
| John Shepard            | Floodplain Property Owner; Salem Business Owner               |

| Committee Member         | Affiliation   |
|--------------------------|---|
| Jeff Leach, SESNA Member | Floodplain Property Owner; Southeast Salem Neighborhood Association Member          |
| Steve Ward, P.E.         | President, Westech Engineering  |
| Mark Grenz, P.E.         | President, MultiTech Engineering  |
| Natalie Janney, P.E.     | Vice President, MultiTech Engineering   |
| Nathan Good, A.I.A.      | Owner, Nathan Good Architects   |
| Kathleen Dewoina         | Real Estate Broker, Berkshire Hathaway  |
| Chris Christiansen       | Executive Officer, Mid-Valley Association of Realtors                               |
| Corey Poole              | Southeast Mill Creek Association Chair; Floodplain Property Owner                   |
| Anthony Nunn             | Agency Owner, Farmers Insurance   |
| Ethan Manela             | Mortgage Loan Officer, CMG Mortgage Inc.  |
| Dynee Medlock            | South Gateway Neighborhood Association Chair  |
| Toni Kirk                | Floodplain Property Owner   |
| Joe Hutchinson           | City of Salem: Emergency Manager, Fire Department                                   |
| Olivia Dias              | City of Salem: Current Planning Manager, Community and Urban Development Department |
| Justin Boyington         | City of Salem: Flow Monitoring Analyst, Public Works Department                     |
| Anita Panko              | City of Salem: Stormwater Quality Supervisor, Public Works Department               |
| Jennifer Mongolo         | City of Salem: Senior Natural Resource Planner, Public Works Department             |
| Trevor Smith             | City of Salem: Public Information Officer, Public Works Department                  |
| Laurel Christian         | City of Salem: Planner II, Public Works Department                                  |
| Al Rossi                 | City of Salem: Senior Building Official, Building and Safety Division               |
| Nitin Joshi              | City of Salem: Environmental and Regulatory Affairs Manager                         |
| Robin Dalke              | City of Salem: Floodplain Administrator, Public Works Department                    |
| Shelby Guizar            | City of Salem: Planner I, Public Works Department                                   |

### **Floodplain Management Advisory Committee Meetings**

Committee meetings followed the 10-step planning process recommended by FEMA for floodplain management planning, along with separate planning processes recommended each for the Program for Public Information (Appendix F) and Coverage Improvement Plan (Appendix G). Each meeting focused primarily on specific steps of

FEMA’s planning process. Agendas were provided to committee members before each meeting and were posted to the City’s floodplain management plan website. Notices of upcoming meetings were posted on the City’s calendar of events web page.

Appendix B includes all meeting agendas and minutes. Committee meeting dates and topics are summarized in Table 3.

Table 3. Committee Meeting Topics

| Date               | Main Topics                |
|--------------------|----------------------------|
| September 7, 2023  | Organization               |
|                    | Public Involvement         |
|                    | Coordination               |
|                    | Hazard Assessment          |
|                    | Problem Assessment         |
| September 21, 2023 | Setting Goals              |
|                    | Review Possible Activities |
| October 4, 2023    | Review Scored Activities   |
|                    | Draft Action Plan          |
|                    | Recommendation to Council  |

### Public Meetings and Outreach

At the beginning of the planning process, staff met with key stakeholders and committee members to discuss the planning process for the five-year update. A major flood event has not occurred since the 2018 plan update, so discussions were primarily based on anticipated regulatory changes. The City’s Floodplain Administrator held presentations at the Southwest Association of Neighbors and South Gateway Neighborhood Association in May and June of 2023 and solicited feedback from the associations regarding stormwater and floodplain management plan updates.

A web page update with information explaining the planning process, meeting times, agendas, and the 2023 FMP Update was posted to the City of Salem City Committees web page.

A 2023 FMP Update Open House was hosted on September 28, 2023. This event was free, open to the public, provided refreshments and included a Spanish interpreter. The Open House invitation was sent to all City Councilors, Neighborhood Association Chairs, and Committee Members. The invitation was also sent to the City sponsored Mailchimp email marketing platform, which sent the notice to approximately 4,000 community members. A Flash Alert news release was prepared by the Public Works Public Information Officer and a Facebook post was created and posted on the City of Salem Facebook page. An informal presentation of the 2023 FMP Update process was

shared, staff was available to answer questions and interactive stations for feedback were arranged. Feedback from the event was collected and incorporated into the 2023 FMP Update.

The draft 2023 FMP Update was completed in early October 2023, and was submitted as an information report at City Council's public meeting on October 28, 2023 (see Appendix A). Prior to the meeting, City staff mailed public notices to interested stakeholders listed in Appendix C and published the draft 2023 FMP Update on the City's FMP web page.

## **Coordination**

### **Community Rating System Requirements: Step 3 Coordinate**

The 2023 FMP Update must include a review of new studies, reports, and technical information related to the community's needs, goals, and plans for the area that have been published since the 2018 FMP Update was prepared.

### **Other Agencies and Organization**

The Project Planning Team generated a list of affected jurisdictions and organizations based on FEMA guidelines and local notification lists on file with City staff. An outreach letter was sent to affected jurisdictions in August 2023. The outreach letter and mailing list are included in Appendix C. City of Aumsville and City of Turner representatives provided responses that included interest in future involvement and updates to their planning efforts. The Floodplain Administrator corresponded directly with the Assistant Public Works Director and City Administrator of these cities.

### **Review of Existing Plans and Studies**

The 2023 Plan Update incorporates activities, goals, and recommendations from the following relevant plans, studies, and reports.

#### **City of Salem Natural Hazards Mitigation Plan**

FEMA approved the previously adopted City of Salem *Natural Hazard Mitigation Plan* (NHMP) under City Resolution 2017-48. The work was performed in cooperation with Oregon Partnership for Disaster Resilience at the University of Oregon's Community Service Center. The 2017 Salem NHMP, expired in 2023 and a draft version of the 2023 Salem NHMP was submitted to FEMA for review and approval in August 2023. The 2023 Salem NHMP was the result of a collaboration with the Oregon Department of Land Conservation and Development (DLCD) and a steering committee comprised of public and private agency representatives.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. With re-adoption of the plan, the City of Salem will maintain its eligibility to apply for federal funding for natural hazards mitigation projects. The steering committee involved in the

local planning process involved a wide range of representatives from city governments, fire departments, watershed councils, Salem Keizer School District, and Salem Hospital, among others.

The 2023 Salem NHMP identifies two action items related specifically to flood hazards:

- FL #1. Update, Maintain, and implement flood actions via a floodplain management plan with FEMA's Community Rating System (CRS) guidelines.
- FL #2. Improve the City of Salem's National Flood Insurance Program (NFIP) CRS rating class to reduce NFIP premiums.

The Salem NHMP meets many of the requirements for a floodplain management plan pursuant to the CRS Coordinator's Manual. This 2023 FMP Update augments specific elements of floodplain management planning in order to provide an outline for maintaining and improving Salem's CRS Rating.

The flood hazard section within the Risk Assessment chapter of the *Salem NHMP* was reformatted and expanded with additional information since Salem's previous NHMP. The revised NHMP's flood risk assessment makes reference to a number of details in the Hazard Assessment from the 2018 Floodplain Management Plan. New sections were included in the most recent Salem NHMP that are explained in more detail in the Hazard Assessment chapter below.

The recommended action items in the Salem Action Pool on Table 25 of the NHMP are unchanged from the 2017 Salem NHMP. Both emphasize Salem maintaining and/or improving Salem's involvement in FEMA's Community Rating System.

#### *Marion County Natural Hazards Mitigation Plan*

The Marion County Natural Hazards Mitigation Plan (Marion NHMP) assesses natural hazards in those portions of Salem located within Marion County and also includes a limited assessment of natural hazards in those portions of Salem (West Salem) within Polk County.

The Marion NHMP emphasizes that Salem is an area of significant risk because of high levels of urban development within the Mill Creek and Willamette River floodplains. Two of the conclusions in the Marion NHMP relate to flood hazards in Salem:

- "Some communities in the study area are at moderate risk from flooding;" and
- "Elevating structures in the flood zone reduces vulnerability."

The recommendations of the Marion NHMP include the following general categories:

- Awareness and Preparation
- Planning
- Emergency Response



- Mitigation Funding Opportunities
- Hazard-Specific Risk Reduction Actions

The flood-related recommendations in the Marion NHMP are as follows:

- Map areas of potential floodwater storage areas
- Identify structures that have repeated flooded in the past and would be eligible for FEMA’s “buyout” program
- Additional risk reduction strategies may be found on FEMA’s website at <https://www.ready.gov/floods>.

Polk County Natural Hazards Mitigation Plan

The Polk County Natural Hazards Mitigation Plan (Polk NHMP) more thoroughly assesses natural hazards in portions of Salem (West Salem) that lie within Polk County jurisdiction. Areas of significant development in West Salem along the Willamette River are identified as high flood hazard areas. The flood hazard related recommendations in the Polk NHMP applicable to the Salem FMP include coordination with FEMA to maintain and update Flood Insurance Rate Maps for Polk County and development of a monitoring and early warning program, Action Items FL#5 and FL#11.

Salem Area Comprehensive Plan

Salem City Council adopted a significant update to the Salem Area Comprehensive Plan, Comprehensive Plan Map, zoning map, and Zoning Code on July 25, 2022. These changes became effective on August 24, 2022. The Salem Area Comprehensive Plan is the long-range plan that reflects the community’s vision for future growth.

The Salem Area Comprehensive Plan update introduced a number of goals and policies that will influence the floodplain management program. The applicable policies are described in Table 4.

Table 4. Salem area Comprehensive Plan (SACP) Goals and Policies Relating to Floodplain Management

| SACP Item  | Description   |
|--|---|
| CC 2.1 Emergency preparedness, response, and recovery coordination | <i>Emergency preparedness, response, and recovery coordination: The City should coordinate land use plans and public facility investments between City departments, other public agencies, businesses, community partners, and other emergency response providers, to ensure coordinated and comprehensive emergency and disaster risk reduction, preparedness, response, and recovery.</i> |
| CC 2.2 Hazard awareness  | <i>The City should increase outreach and education for hazard awareness and natural disaster preparedness, especially for low-income, elderly, and other vulnerable populations.</i>  |
| CC 2.3 Flood prevention and mitigation                             | <i>The City shall pursue a variety of flood prevention and mitigation strategies, including incentivizing property owners to make improvements that incorporate green infrastructure.</i>   |
| CC 2.4 Development in floodplains                                  | <i>Development in floodplains shall be regulated to minimize negative impacts on natural resources and potential danger to life and property.</i>   |

| SACP Item                                    | Description   |
|--|---|
| N 3.1 Green infrastructure                   | <i>Green infrastructure should be used to the maximum extent feasible in developments and public infrastructure to reduce stormwater runoff, create and enhance natural habitat, improve environmental conditions, and mitigate the urban heat island effect.</i>     |
| PF 3.1 Stormwater planning                   | <i>The City shall support stormwater-related capital project and programmatic decision-making by providing information, establishing policies, and identifying and prioritizing action items.</i>   |
| PF 3.2 Capital improvement planning          | <i>The City shall efficiently deliver public stormwater conveyance, flow control, and treatment facilities through the stormwater capital improvement plan.</i>   |
| PF 3.3 Flood risk reduction                  | <i>The City shall identify flood-related hazards, establish actions to mitigate those hazards, and provide information related to flood risks to residents and businesses in Salem.</i>   |
| PF 3.4 Stormwater operations and maintenance | <i>The City shall properly care for Salem’s stormwater systems at the level of service needed to support the City’s programmatic, regulatory, and project requirements.</i>   |
| PF 3.5 Quality and quantity facilities       | <i>The City shall use facilities to reduce the adverse impacts of high stormwater flow rates and volumes, remove pollutants from stormwater runoff, and safely convey stormwater flows to receiving water bodies.</i>   |
| PF 3.6 Regulations and standards             | <i>The City shall develop, implement, and comply with regulatory requirements that protect life, property, receiving waters, and the environment from loss, injury, degradation, or damage by stormwater.</i>   |
| PF 3.7 Intergovernmental coordination        | <i>The City shall work in close collaboration with other agencies when addressing stormwater issues of mutual interest, such as programs in shared creek basins, municipal regulations, joint planning, and other activities that span jurisdictional boundaries.</i> |
| PF 3.8 Financing                             | <i>The City shall execute a sustainable financial strategy that provides for the timely construction of stormwater facilities and effective implementation of a comprehensive suite of stormwater programs.</i>   |

Stormwater Master Plan

On October 12, 2020, the first phase of amendments to the Stormwater Master Plan was adopted by City Council. The 2020 update is the first phase of a multi- phase plan update, establishing the plan’s framework as follows:

- Updated information on the citywide planning area
- Set comprehensive goals and policies
- Identified the information needs for individual stormwater drainage basins.
- Determined hydraulic and hydrologic modeling methods
- Set the foundation for individual stormwater drainage basin plans that will be developed over time for all of Salem’s twelve watershed basins and contained detailed results of three new basin plans: Battle Creek; Pringle Creek; and Mill Creek.

The Stormwater Master Plan update introduced a number of goals and policies that will influence the floodplain management program. The applicable policies are described in Table 5.



Table 5. Salem Stormwater Master Plan (SMP) Goals and Policies Relating to Floodplain Management

| SMP Item  | Description  |
|---|--|
| Policy 3.5 Interim Flood Hazard Areas                     | <i>The Director of Public Works shall designate Interim Flood Hazard Areas whenever one of the following indicates a property should be located within the Floodplain Overlay Zone: (1) A draft Flood Insurance Study; (2) An engineering report, approved by the Director, that includes hydrologic and hydraulic modeling that establishes a floodway and base flood elevations; or (3) Flood levels documented during a major flood event with sufficient detail to establish a floodway and base flood elevations.</i>   |
| Policy 3.7 Flood Risks Outside of Floodplain Overlay Zone | <i>The City shall make flood risk maps (see Policy 3.6), readily accessible to the general public, but will not mandate compliance with City floodplain regulations for properties identified as at risk of flooding (as indicated by flood inundation maps) or shown as areas subject to flooding (based on past flooding events) unless those properties are October 2020 City of Salem Stormwater Master Plan 2-5 Comprehensive Goals &amp; Policies also within the floodplain as shown on a Floodplain Insurance Rate Map or are within a designated Interim Flood Hazard Area.</i>   |
| Policy 3.9 Promoting Flood Insurance                      | <i>The City shall promote flood insurance for property owners identified on Flood Insurance Rate Maps or located within an Interim Flood Hazard Area. Furthermore, the City shall promote flood insurance for property owners whose properties may be at risk of flooding, even if not specifically identified on Flood Insurance Rate Maps or located within an Interim Flood Hazard Area.</i>  |
| Policy 3.10 Hazard Disclosure                             | <i>The City shall make information pertaining to flooding-related hazards readily accessible to the general public.</i>  |
| Policy 3.11 Flood Warning System                          | <i>The City shall establish, maintain, and enhance a network designed to provide early warning of flood events.</i>  |
| Policy 3.12 Flood Risks and Capital Project Criteria      | <i>When considering capital projects to reduce risks of flooding, the following shall be considered in addition to increasing conveyance capacity and constructing detention facilities: (1) Opportunity to retrofit structures, including elevating or relocating buildings, and applying of floodproofing techniques such as shields, membranes, waterproofing, venting, and other practices; (2) Evaluation of cost impacts based on damage assessment data contained in the Natural Hazard Mitigation Plan (City of Salem 2017); (3) Ability to implement green stormwater infrastructure to reduce runoff volumes and peak flows; (4) Ability to conduct floodplain and stream enhancement projects to increase flow attenuation and stream capacity; and (5) Suitability of purchasing flood-prone properties.</i> |
| Policy 3.13 Purchasing Property or Easement               | <i>When property cannot be reasonably protected from damage during a one percent annual chance flood event, the City shall consider the following criteria when determining whether to purchase the property or obtain an easement: (1) The land can be used to enhance a creek system or riparian habitat; (2) The land can be used to reduce risks of downstream flooding; and (3) The land can be used for other public</i>   |

| SMP Item   | Description   |
|--|---|
|  | <i>benefits, such as access to parks or recreation activities.</i>  |
| Policy 3.14 Changes in Historic Weather Patterns:            | <i>The City shall continue to use historical data when conducting hydrologic and hydraulic analysis but will also collect data and conduct analysis to detect variations in trends and changes in historic weather patterns.</i>  |
| Policy 3.15 Updating Floodplain Maps                         | <i>The data and modeling methods developed for the Stormwater Master Plan will be used to update the floodplain maps in Salem. Specifically: (1) The Federal Emergency Management Agency (FEMA) will be notified of the Interim Flood Hazard Areas that will be locally promulgated by the City. Further, the data/modeling used to determine the areas will be made available to the agency. However, because the City will not be using the FEMA-approved methodology for delineating floodplains, the City will not be able to submit the new floodplain maps for official adoption by FEMA. (2) The floodplains should be delineated using a methodology that applies best professional judgement regarding whether non-accredited levee systems should be credited for reducing risks of flooding. (3) The new floodplain maps will be promulgated locally as Interim Flood Hazard Areas and will be regulated as such by the City. (4) The City will evaluate how the Interim Flood Hazard Areas would change if no credit was given for embankments not specifically designed or constructed as flood control structures. The resulting information will be used to apprise the public of potential flood risks.</i> |
| Policy 5 Quality and Quantity Facilities                     | <i>The goal of stormwater quality and quantity facilities is to reduce the adverse impacts of high stormwater flow rates and volumes, remove pollutants from stormwater runoff, and safely convey stormwater flows to receiving water bodies.</i>   |
| Policy 6.4 Balancing Urban Development and Stormwater Risks: | <i>(1) Stormwater regulations and standards will be adopted and administered in a manner that reasonably balances the need to encourage efficient use and development of buildable lands within the Salem-Keizer Urban Growth Boundary with the need to avoid significantly increasing risks to existing properties and the environment from damage caused by runoff.</i>   |

Salem Transportation System Plan

The Salem Transportation System Plan (Salem TSP) is the City's master plan to guide its actions and investments relating to transportation infrastructure within the City of Salem. The Salem TSP is a comprehensive document containing goals, objectives, policies, projects, and programs needed to provide mobility for the next 25 years. The Salem TSP creates mobility options for all modes of travel: automobile, transit, bicycle, pedestrian, and freight movement. The most recent amendment to the Salem TSP was adopted by City Council on January 13, 2020.

Action item PA9 from the original 2014 Floodplain Management Plan, “Adopt critical routes plan in Transportation System Plan,” is depicted in the TSP as follows:

*Critical Routes: The City’s arterial street system connects people to critical facilities as well as providing emergency response and evacuation routes in the event of natural hazards. Planning for and maintaining a robust network of critical routes supports the health and safety of the community. Identification of transportation improvement projects for both existing and new facilities should take into consideration the function of the street as a critical route for emergency management purposes. Data available to support this analysis includes identification of street segments that are prone to flooding and information gained through bridge inspection reports. Future transportation projects should consider opportunities to reduce the potential for critical routes to be blocked during major floods or other hazards.*

Stormwater Management Program Plan (SWMP)

The current SWMP dated November 1, 2022, describes activities implemented to comply with the City’s National Pollutant Discharge Elimination (NPDES) Municipal Separate Storm Sewer System (MS4) permit. The SWMP control measures are organized into the following categories: education and outreach; public involvement and participation; illicit discharge detection and elimination; construction site runoff control; post-construction stormwater management; municipal operations and maintenance; industrial and commercial facilities; and stormwater program implementation.

Salem’s SWMP includes the following goals related to floodplain management, listed in Table 6.

Table 6. Stormwater Management Program Plan (SWMP) Goals Relating to Floodplain Management.

| <b>SWMP Item</b>                                     | <b>Description</b>   |
|--|--|
| PI-5 Storm Drain Marking Program                     | <i>Provide storm drain marking program each summer. Volunteers work with City staff to mark storm drains. The messaging helps to spread the word that the trash and dirty water that enters a storm drain ends up in local streams where it creates water pollution and can harm wildlife.</i>   |
| PI-6 Volunteer Green Infrastructure Cleaning Program | <i>As cities develop, Green Stormwater Infrastructure (GSI) facilities are constructed to help reduce the stormwater pollutant load that reaches local streams. These facilities require trash removal and landscape maintenance on a regular basis to function properly. With more stormwater facilities being built with GSI techniques, community members can help make a difference in their neighborhood by volunteering to assist in maintaining GSI facilities.</i> |
| IL-3 Stream Crew Program                             | <i>Dry weather screening is a field test method for inspecting storm water drainage areas to help locate and identify harmful and illegal discharges and improper connections to a municipal storm water system.</i>   |
| PC-1 Post Construction Design Standards              | <i>Review and update stormwater facility maintenance criteria, maintenance standards, easement and access requirements for private facilities, and submittal information for each type of stormwater management facility.</i>  |

| SWMP Item                                    | Description   |
|--|---|
| PC-2 LID/GSI Strategy                        | <i>Conduct an evaluation of the City’s current Stormwater Management Design Standards to document the City’s existing strategy to prioritize LID strategies in new development and redevelopment and GSI approaches to stormwater management. Identify recommended modifications to the SRC or Stormwater Design Management Standards to improve the City’s strategy.</i> |
| OM-1 Asset Management and Systemwide Mapping | <i>Continue to update the official “waterways” geodatabase for use by all City staff in applying various regulations and standards. This includes updates to the delineation of wetlands, perennial streams, waterways, and floodplain/floodway designations. Incorporate field verified information that warrants the revision of the designated waterways.</i>          |
| OM-8 Pollution Prevention for Operations     | <i>The City’s OPPP provides strategies to reduce the impact of stormwater runoff from the City’s municipal properties that store and manage vehicles, materials, and waste. The plan needs to be expanded to include additional properties to incorporate SOPs for stormwater pollution prevention during municipal field operations.</i>                                 |

Flood Insurance Study

The primary source for flooding patterns and flood elevation data in Salem is FEMA’s Flood Insurance Study: Marion County, Oregon, and Incorporated Areas (FIS), dated January 2003. The FIS includes detailed flood profiles for all major waterways in Salem, including Mill Creek, Shelton Ditch, Pringle Creek and its forks, Battle Creek, Powell Creek, Claggett Creek, Croisan Creek, Gibson Creek, and Glen Creek.

The FIS includes a description of each community within Marion County and their respective flood history, risks, and protection measures. The study identifies Salem’s primary flood risks to be in December and January, caused by large storms moving inland from the Pacific Ocean. Salem is affected by two diversion structures: one diverting Mill Creek flows into Shelton Ditch, and a second diverting flows from West Fork Pringle Creek to Middle Fork Pringle Creek. The FIS is comprehensive of all major waterways in Salem; significant additional study is not warranted.

TMDL Implementation Plan

Salem is a Designated Management Agency (DMA) under the 2006 Willamette Basin Total Maximum Daily Load (TMDL) and the 2008 Molalla-Pudding TMDL and is responsible for development and implementation of strategies to minimize and address the discharge of TMDL pollutants. Salem produces annual reports demonstrating compliance with TMDL requirements and strategies to minimize and address the discharge of TMDL pollutants. Salem’s Temperature TMDL Plan (2022 - 2026) includes the following goals related to floodplain management, described in Table 7. The management strategies for point and nonpoint sources were reviewed and incorporated into the Review of Possible Activities as appropriate.

Table 7. Salem’s Temperature TMDL Plan Goals Relating to Floodplain Management

| <b>TMDL Item</b> | <b>Description</b>  |
|------------------|---|
| Goal 4B          | <i>Provide information and resource assistance to streamside owners regarding stream stabilization and riparian enhancement projects.</i> |
| Goal 5A          | <i>Increase riparian buffer protection through local assessment</i>   |
| Goal 6A          | <i>Update and implement Riparian Outreach Plan</i>  |
| Goal 6B          | <i>Use a variety of tools to convey riparian values to the general public.</i>  |
| Goal 6C          | <i>Pilot an outreach program to help residents increase shade along their streams.</i>  |

Salem Emergency Management Plan

The Salem Emergency Management Plan (SEMP) was most recently updated in 2020 and is in the process of being updated by the end of 2023. The SEMP is an all-hazard plan that describes how the City of Salem will organize and respond to emergencies and disasters in the community. It is based on, and is compatible with, Federal, State of Oregon, and other applicable laws, regulations, plans, and policies, including Presidential Policy Directive 8, the National Response Framework, Oregon Office of Emergency Management Plan, and both Marion and Polk County Emergency Operations Plans.

Annex HA-A is a hazard-specific annex of the SEMP devoted specifically to flood emergencies. This annex identifies flood response planning efforts related to shelter, sanitation, transportation, and other issues related to health and safety during flood emergencies. The plan includes flood information and emergency instructions to the public, which are incorporated in the outreach projects of the Program for Public Information (Appendix F).

Willamette River Greenway Plan

This plan, dated September 10, 1979, establishes policies, ordinances, and measures associated with state mandated Greenway legislation. The purpose of the Greenway Plan is to protect natural, scenic, recreational, historical, and economic resources of the Willamette River corridor while allowing for use and development along the Greenway consistent with established policies. The plan includes a land inventory that acknowledges the existence of floodplain boundaries within the Greenway.

Climate Action Plan

The Climate Action Plan (CAP) was adopted in response to a City Council initiated action to response to climate change. The CAP was adopted in November of 2021 and introduced a number of goals and policies that will increase climate resiliency in our community and in turn influence the floodplain management program. The applicable policies are included in Table 8.

Table 8. Climate Action Plan (CAP) Policies Relating to Floodplain Management

| <b>(CAP) Item</b> | <b>Description</b>  |
|-------------------|---|
| NR01              | <i>Continue to require open space in multifamily developments. Incentivize the inclusion of smaller, walkable parks/open space in new, large, subdivision developments.</i> |



| (CAP) Item | Description   |
|------------|---|
| NR02       | <i>Add and maintain quality parks in NE Salem.</i>  |
| NR05       | <i>Amend City code to require minimum 25-foot no-build zone within riparian corridor and require developers to plant trees/shrubs and native or ecologically well adapted vegetation to create a vegetated buffer (minimum 25 feet) within the existing riparian corridor on all new development.</i>                 |
| NR10       | <i>Continue to increase community-wide tree canopy cover, with priority emphasis on increasing coverage in underserved areas and neighborhoods. Provide assistance to local institutions to increase their own tree coverage and create spaces such as urban forests, community gardens, and pollinator habitats.</i> |
| NR21       | <i>Compile and improve outreach materials to guide property owners in planting and habitat restoration of flood- prone properties and riparian areas with goal of increasing quality and quantity of native vegetative cover.</i>   |
| NR15       | <i>Offer incentives/rebates to homeowners, businesses, and developers to install pervious surfaces with the goal of decreasing runoff and flooding.</i>   |
| NR16       | <i>Identify areas (e.g., underutilized parking lots, empty malls/ commercial space) that can be “depaved” and converted to green space to increase biodiversity, access to green spaces, and reduce the urban heat island effect.</i>   |
| NR17       | <i>Update and implement a comprehensive flood management plan that incorporates reduction in extent and impacts of increased impervious surfaces due to development.</i>  |
| NR18       | <i>Assess feasibility and impacts of best practices for structural and non-structural flood management. Non-structural flood management could include a buyout for flood-prone properties.</i>  |
| NR19       | <i>Identify land in the floodplain that can be acquired publicly or privately for restoration and flood mitigation. Develop a program for restoring these floodplains to prevent future damage from flooding.</i>   |
| NR22       | <i>Investigate adoption of a new floodplain/natural area zone in the Salem Revised Code. This new zone would provide protection for floodplains and natural areas from development.</i>   |
| NR24       | <i>Reduce flood risk and enhance carbon sequestration by enhancing natural floodplain functions such as slowing runoff, storing floodwater, recharging groundwater and providing fish and wildlife habitat on City-owned properties in the floodplain.</i>  |
| ECO5       | <i>Explore the creation of a philanthropic fund to assist small businesses in recovering from and preparing for natural disasters.</i>  |

## **Hazard Assessment**

### **Community Rating System Requirements: Step 4: Assess the Hazard**

At this step in the planning process, the City reviews, analyzes, and summarizes data collected about the natural hazard(s) that the community faces in the form of a Hazard Assessment. When the plan is updated, the hazard assessment must be reviewed and brought up to date and must account for the following:

- New floodplain or hazard mapping,
- Annexation of flood-prone areas.

- Additional repetitive loss properties.
- Completed mitigation projects,
- Increased development in the floodplain or watershed,
- New flood control projects,
- Lack of maintenance of flood control projects,
- Major floods or other disasters that occurred since the plan was adopted, and
- Any other change in flooding conditions and/or development exposed to flooding or the other hazards covered in the plan.

## Overview

The City of Salem features the Willamette River, smaller tributaries, and streams that are susceptible to annual flooding events that pose threats to life and safety and cause significant property damage. The streams include Battle Creek, Cinnamon Creek, Claggett Creek, Clark Creek, Croisan Creek, Davidson Creek, Gibson Creek, Glenn Creek, Golf Creek, Jory Creek, Laurel Creek, Little Pudding, Mill Creek, Mill Race, Pettijohn Creek, Powell Creek, Pringle Creek, Scotch Creek, Shelton Ditch, Waln Creek, and Winslow Creek. Salem's flood events often occur when warm weather and heavy rains melt snow at higher elevations which flood local streams.

An assessment of all natural hazards is included in the Salem Natural Hazards Mitigation Plan (Salem NHMP). The Flood Hazard Vulnerability Assessment on pages 67-100 of the 2023 Salem NHMP provides an extensive hazard assessment and problem evaluation pursuant to CRS requirements.

## Historic Flood Events

The largest flood of the Willamette River on record occurred in 1861; the next significant flood occurred in 1890. In more recent times, many residents may remember the Christmas flood of 1964, which was rated "approximately a 100-year flood" by FEMA and may be the most damaging in Oregon's history. The Christmas flood of 1964 caused \$157 million in damage, and 20 Oregonians lost their lives.

The Christmas flood occurred as a result of two storms, one on December 19, 1964, and the other on January 31, 1965. These storms brought record-breaking rainfall, and the resultant flooding was exacerbated by near-record early season snow depths. The Willamette River crested nearly ten feet above flood stage, and many other streams in Salem overflowed their banks. The floodwaters rendered the sewage treatment plant inoperable, causing raw sewage to be channeled directly into the Willamette River. One hundred and twenty-one patients were evacuated from Salem Memorial Hospital, and 15 families in the Turner and Salem areas were evacuated from their homes.

Since 1964, major storm events occurred in January 1974, February 1986, February 1996, November 1996, and January 2012. In February 1996, the Salem area saw nearly 100-year flood levels, causing flooding in both rural and urban areas. Damages to city businesses, residences, and infrastructure were tremendous, and most of the city's residents were affected by the substantial impact on the transportation system, the loss of potable water, and the damage to personal property. Claims filed under

FEMA's National Flood Insurance Program from Salem residences and businesses accounted for almost one-third of the claims filed for Marion County in 1996.

During the most recent major flood event in January 2012, some areas of south Salem received over 9 inches of rain within a 5-day period. Heavy rainfall combined with melting snow caused substantial flooding in the Battle Creek, Mill Creek, Pringle Creek, and Croisan Creek basins. Approximately 300 people were evacuated from their homes, and 64 city streets were closed due to high water.

No new major flood events have taken place since the adoption of the 2018 FMP Update. However, Salem has experienced smaller storm events that have caused nuisance flooding in some areas and more significant flooding in others. In December of 2019, the City received forecasts showing Salem in the middle of a heavy rain band anticipated to hit the Willamette Valley with as much as six inches of rain. The Public Works Dispatch Operations Center was activated and the event was monitored closely. The band of rain shifted paths and stayed to the north and west of Salem, avoiding a more significant event that was predicted to be similar to the January 2012 flood event. Nuisance flooding occurred at choke points and there were reports of debris blockages and minor building flooding caused by an overwhelmed storm drainage system.

### **Causes of Flooding in Salem**

Flooding results when climate or weather patterns (e.g., rain and snowmelt) combined with geology and hydrology creating water flows that exceed the carrying capacity of rivers, streams, channels, ditches, and other watercourses. These factors, combined with ongoing development and an aging stormwater drainage system can create seasonal flooding conditions. In Oregon, flooding is most common from October through April when storms from the Pacific Ocean bring intense rainfall. Most of Oregon's destructive natural disasters have been floods (Taylor & Hannan, 1999). According to the 2018 FMP, Salem receives approximately 38 inches of rain on average each year.

Flooding can be aggravated when rain is accompanied by snowmelt and frozen ground; the spring cycle of melting snow is the most common source of flood in the region. Statewide, the most damaging floods have occurred during the winter months, when warm rains from tropical latitudes melt mountain snowpacks. Lesser flooding has been associated with ice jams, normal spring run-off, and summer thunderstorms. Heavily vegetated stream banks, low stream gradients, choke points such as bridges and culverts and breached dikes have contributed to past flooding at considerable economic cost.

### Type and Characteristics of Floods

The principal types of floods that occur in Salem include riverine, shallow area, and urban floods.

- **Riverine Flooding:** Riverine flooding is the most common type of flooding in Salem. It typically occurs when large rivers and streams overflow their banks and



usually results from large storms or prolonged wet periods. Portions of Salem that are located along water bodies have the potential to experience riverine flooding after spring rains, heavy thunderstorms, or rapid runoff from snow melt. Riverine floods can be slow- or fast-rising, but usually develop over a period of days. The danger of riverine flooding occurs mainly during the winter months, with the onset of persistent, heavy rainfall, and during spring, with melting of snow in the Coast Range.

- **Shallow Area Flooding:** Shallow area floods are a special type of riverine flooding. FEMA defines a shallow area flood hazard as an area that is inundated by a 100-year flood with a flood depth of 1 to 3 feet. Such areas are generally flooded by low-velocity sheet flows of water that create a ponding effect.
- **Urban Flooding:** Urban flooding occurs where land has been converted from natural open space to areas consisting of homes, parking lots, and commercial, industrial, and public buildings. In such areas the previous ability of water to filter into the ground is often prevented by the extensive impervious surfaces associated with the urban built environment. During periods of urban flooding, streets can rapidly become swift moving rivers, and basements and backyards can quickly fill with water. Storm drains and smaller creeks can back up due to yard waste and debris. Clogged storm drainage systems often lead to further localized flooding. In areas of Salem with aging sanitary sewer systems, an excess of infiltration and inflow of ground water can overwhelm the sewer system and cause sewer overflows into basements, streets, yards and creeks. Sewage overflow during a flood event can cause costly and extensive property damage.

According to the Center for Neighborhood Technology's The Prevalence and Cost of Urban Flooding (2014), although sometimes triggered by events such as flash flooding or snowmelt, urban flooding is a condition, characterized by its repetitive and systemic impacts on communities, which can happen regardless of whether the affected community is located within designated floodplains or near any body of water.

#### Location and Extent of Flooding

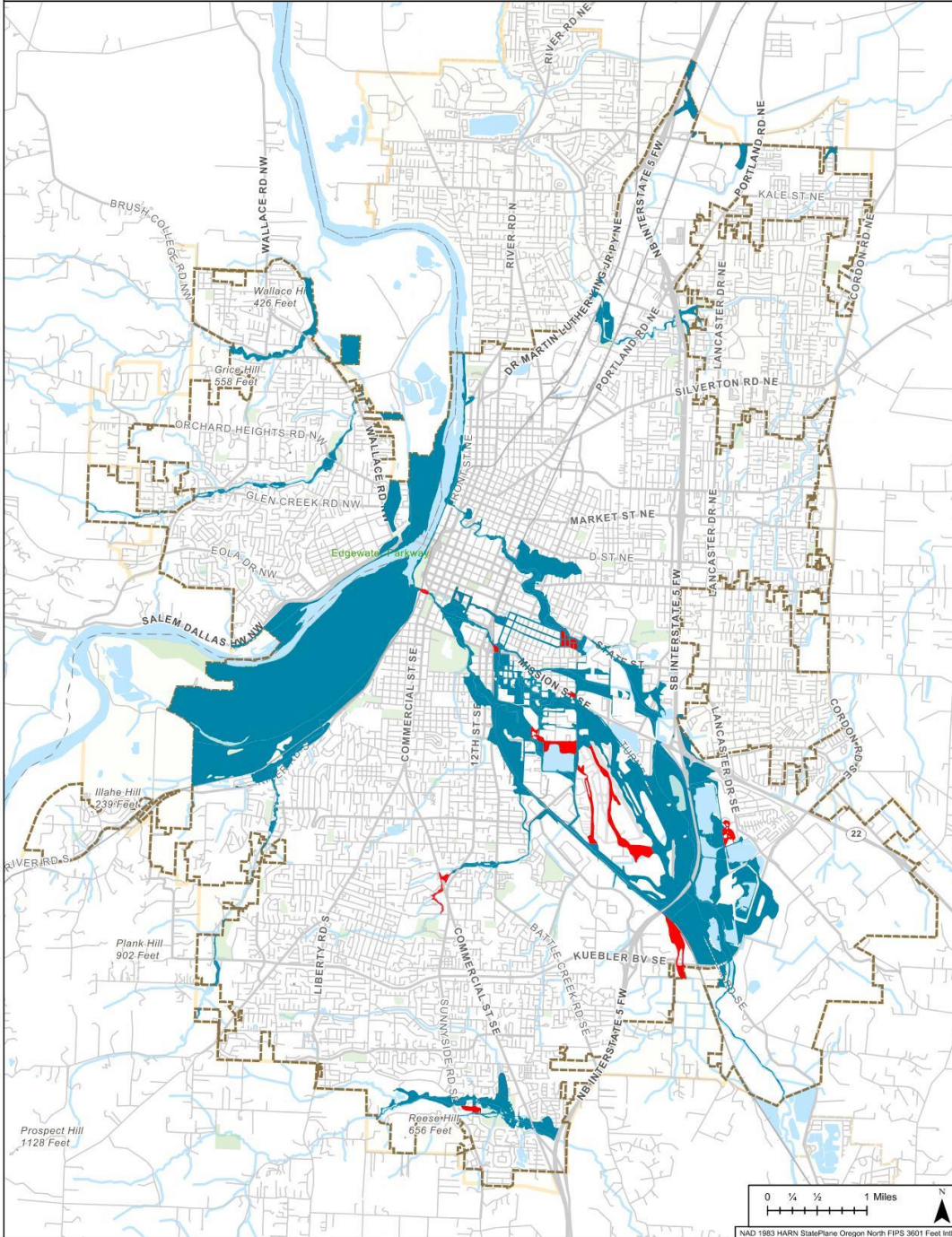
Salem has nearly 4,000 acres of floodplain and approximately 3,000 individual parcels that are partially or entirely located within the floodplain. The most significant of the FEMA-determined floodplains and floodways either surround the southern side of the Willamette River west of Salem or are within the greater Mill Creek/ Pringle Creek watershed.

Properties in and near the floodplains in Salem are subject to frequent flooding events. Since flooding is such a pervasive problem throughout the City, many residents have purchased flood insurance to help recover from losses incurred from flooding events. Map 1 shows Special Flood Hazard Areas (SFHA) and Interim Flood Hazard Areas (IFHA) within the City of Salem.

Map 1. Special Floodplain Hazard Area (next page)

# Special Floodplain Hazard Area

City of Salem, NFIP#410167



|  |  |  |
|--|--|--|
|  | <p>Total Area of Special Floodplain Hazard Area: <b>3,978 Acres</b></p> <p>Total Area of Interim Floodplain Hazard Area: <b>244 Acres</b></p> <p>Date: 5/23/2023<br/>Source: All layers from City of Salem SDE database unless otherwise noted</p> | <ul style="list-style-type: none"> <li><span style="color: red;">■</span> IFHA</li> <li><span style="color: blue;">■</span> SFHA</li> <li><span style="border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span> City Limits</li> </ul> |
|--|--|--|

## Other Areas of Flooding

### Repetitive Loss Areas

Salem has five repetitive loss properties in four distinct geographic areas (see Maps 2 and 3). Repetitive loss properties are those properties for which two or more claims of more than \$1,000 have been paid by the National Flood Insurance Program within any 10-year period.

#### **Area 1**

The first repetitive loss area is along Shelton Ditch near the downtown core (see map 2). This area experienced repetitive losses because of two bridges within Shelton Ditch; (1) a footbridge that experienced damage during the 1996 flood, which has been replaced at a higher elevation that does not obstruct flood flows; and (2), the Winter Street Bridge, which was replaced in 2015.

Repetitive Loss Area 1 includes one repetitive loss structure, but City staff identified five neighboring buildings that were potentially subject to the same flood as the single repetitive loss structure. Area 1 was determined by reviewing a topographic map of the area and identifying neighboring structures with grade elevations less than or equal to the elevation of the repetitive loss structure. In addition to topographic constraints, the area is bordered by Church Street SE, Pringle Parkway SE, and Shelton Ditch, which act as barriers to flood flows related to the repetitive loss event.

#### **Area 2**

The second repetitive loss area is along Salem Industrial Drive NE (see maps 2). The cause of flooding in the past has been a lack of capacity along Claggett Creek, which increased water surface levels in Area 2. The City's Stormwater Master Plan identified three improvement projects, titled CLB3, CLB4, and CLB5, that were needed to improve capacity and stream health in the vicinity of Area 2. Those Master Plan deficiencies were mitigated through construction of a City-funded Capital Improvement Project that was completed in 2007. No additional flooding incidents have occurred since completion of the improvements to Claggett Creek. City staff believes that Area 2 has been mitigated and is no longer at further risk of repetitive loss; however, these properties have not been formally removed by FEMA from the repetitive loss list.

There were two repetitive loss structures in Area 2. City staff identified eight neighboring buildings that were subject to similar flood events as the two repetitive loss structures. Repetitive Loss Area 2 was determined by reviewing a topographic map of the area and identifying neighboring structures with grade elevations less than or equal to the elevation of the repetitive loss structures. In addition to topographic constraints, the area is bordered by Salem Industrial Drive NE, Anunsen Street NE, and a hillside slope, which act as barriers to flood flows related to the repetitive loss event.

#### **Area 3**

The third repetitive loss area is located along Mill Creek on State Street (see map 3).

This area was added in 2016 based on two damage claims resulting from flood events in 2012 and 2015. This area has several older structures located in or near the floodway boundary that were building prior to the adoption of floodplain development regulations. Based on discussions with operations staff, it appears the damage to the building that filed claims has been limited to crawlspace flooding.

Repetitive Loss Area 3 includes one repetitive loss structure, but City staff identified 14 neighboring buildings that were potentially subject to the same flood as the single repetitive loss structure. Area 3 was determined by reviewing a topographic map of the area and identifying neighboring structures with grade elevations less than or equal to the elevation of the repetitive loss structure. In addition to topographic constraints, the area is bordered by State Street, the 21<sup>st</sup> Street Bridge, the 23<sup>rd</sup> Street Bridge, and Ferry Street SE, which act as barriers to flood flows related to the repetitive loss event.

#### **Area 4**

The fourth repetitive loss area is located along Waln Creek on Marstone Court SE (see map 2). This area was added in 2016 based on two damage claims resulting from flood events in 2012 and 2015. Flooding concerns have been attributed to an undersized culvert on the portion of Waln Creek that flows under Woodside Drive SE and capacity limitations from an above-ground detention system that was designed in the cul-de-sac of Marstone Court SE. A culvert upgrade project was completed in 2015 by the City. There have not been any major storms since the culvert was upgraded, so the mitigation impact is unknown at this time.

Repetitive Loss Area 4 includes one repetitive loss structure, but City staff identified 14 neighboring buildings that were potentially subject to the same flood as the single repetitive loss structure. Area 4 was determined by reviewing a topographic map of the area and identifying neighboring structures along the cul-de-sac street and Waln Creek that may be subject to the same flooding concerns.

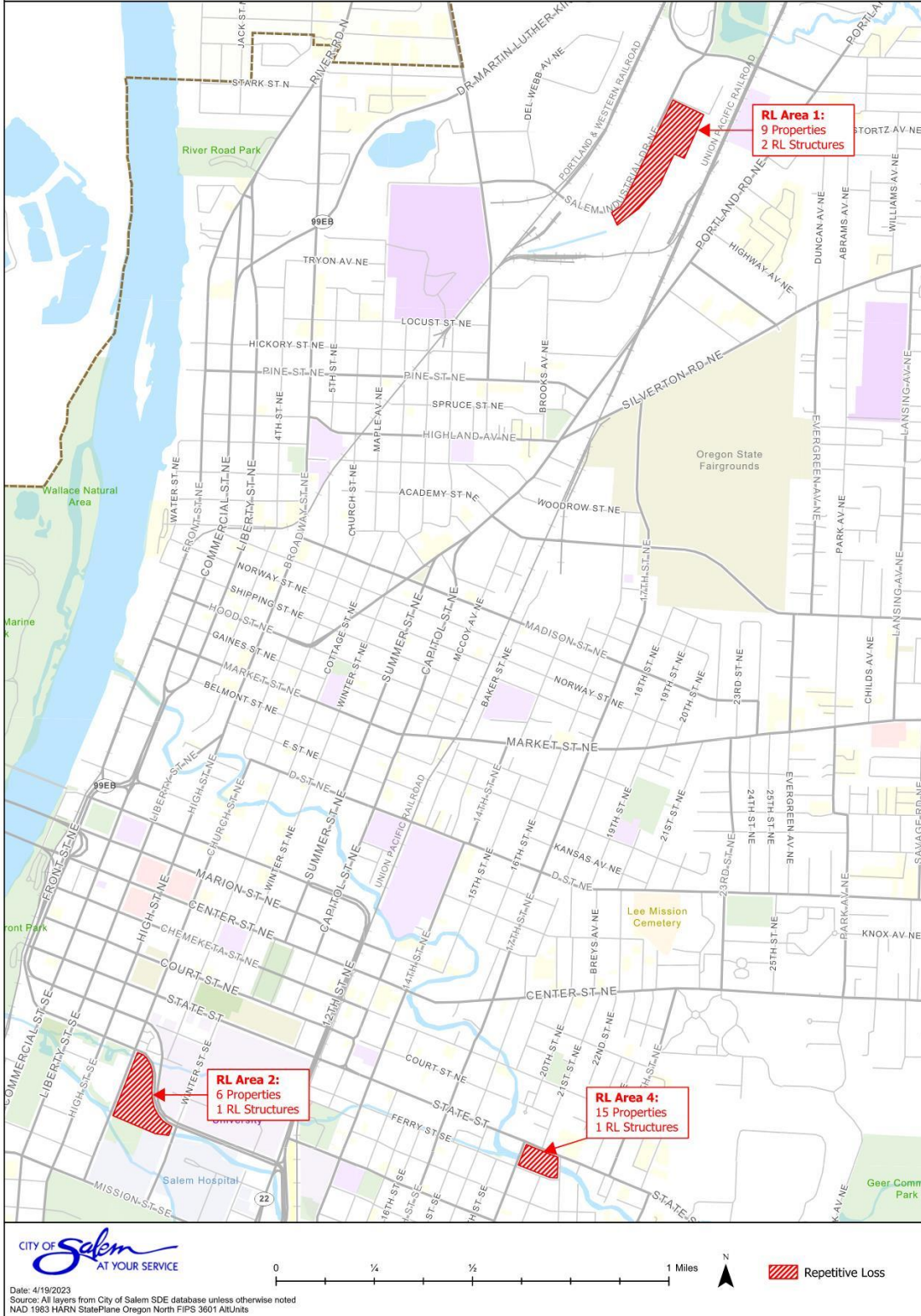
Map 2: Repetitive Loss Areas (Map 1 of 2) (next pages)

Map 3: Repetitive Loss Areas (Map 2 of 2) (next pages)



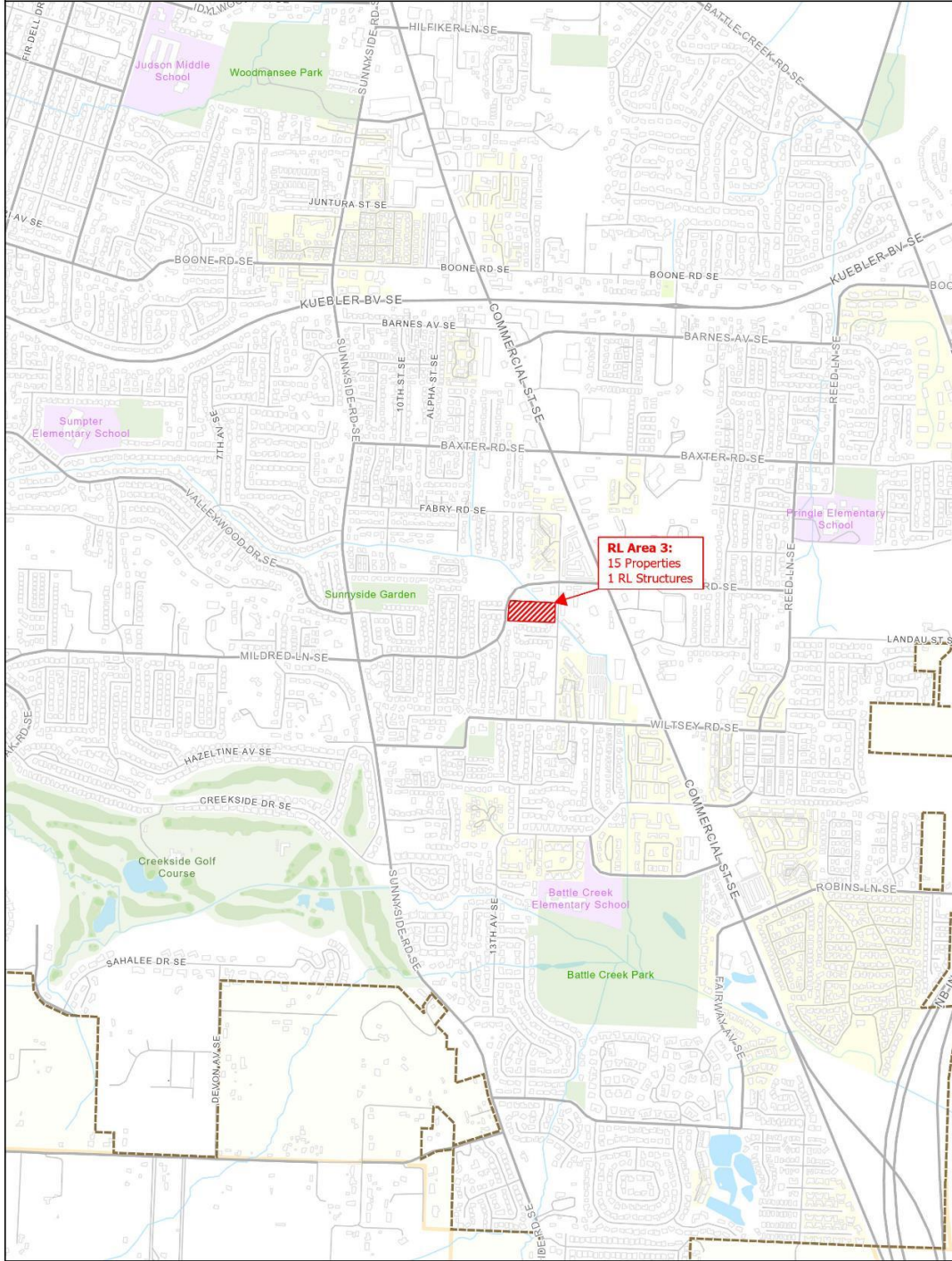
# Repetitive Loss Areas (Map 1 of 2)

City of Salem, NFIP# 410167



# Repetitive Loss Areas (Map 2 of 2)

City of Salem, NFIP# 410167



CITY OF *Salem*  
AT YOUR SERVICE

0 1/4 1/2 1 Miles

Date: 10/6/2023  
Source: All layers from City of Salem SDE database unless otherwise noted  
NAD 1983 HARN StatePlane Oregon North FIPS 3601 AIIUnits

Repetitive Loss

### Flood Inundation Maps/Interim Flood Hazard Areas

Subsequent to the flood event of 1996, City staff documented flood inundation areas and generated flood inundation maps (see Map 4) in the City's Geographic Information System (GIS). The data from the 1996 flood inundation maps were used by FEMA to generate new Flood Insurance Rate Maps (FIRMs) in 2000 and a Flood Insurance Study. Some of the FIRM panels were further revised and adopted by FEMA in 2003. The Flood Insurance Study for Marion County, Oregon and Incorporated Areas, dated October 18, 2019, was updated when new flood maps were created for the City of Turner. As a result of this study, the City received notice of an updated FIRM panel at the southeast edge of Salem City limits. Less than 1 acre of undeveloped land was affected by these map amendments, but the new FIS resulted in a Floodplain Overlay Zone ordinance update to reflect the new FIRM date.

In 2021, Salem amended Administrative Rule 109-020 *Interim Flood Hazards Area*, to include base flood water surface elevations for all A and AO flood zones in Salem. These previously mapped inundation areas included an approximate flood depth but did not include specific base flood elevations. These amendments provide better data for floodplain development and hazard evaluation purposes. The amendments to Administrative Rule 109-020 are in addition to previously adopted areas along Pringle Creek at the Commercial Street SE bridge, Pringle Creek crossing 12<sup>th</sup> Street Cutoff SE and a portion of Scotch creek upstream of Sunnyside Road.

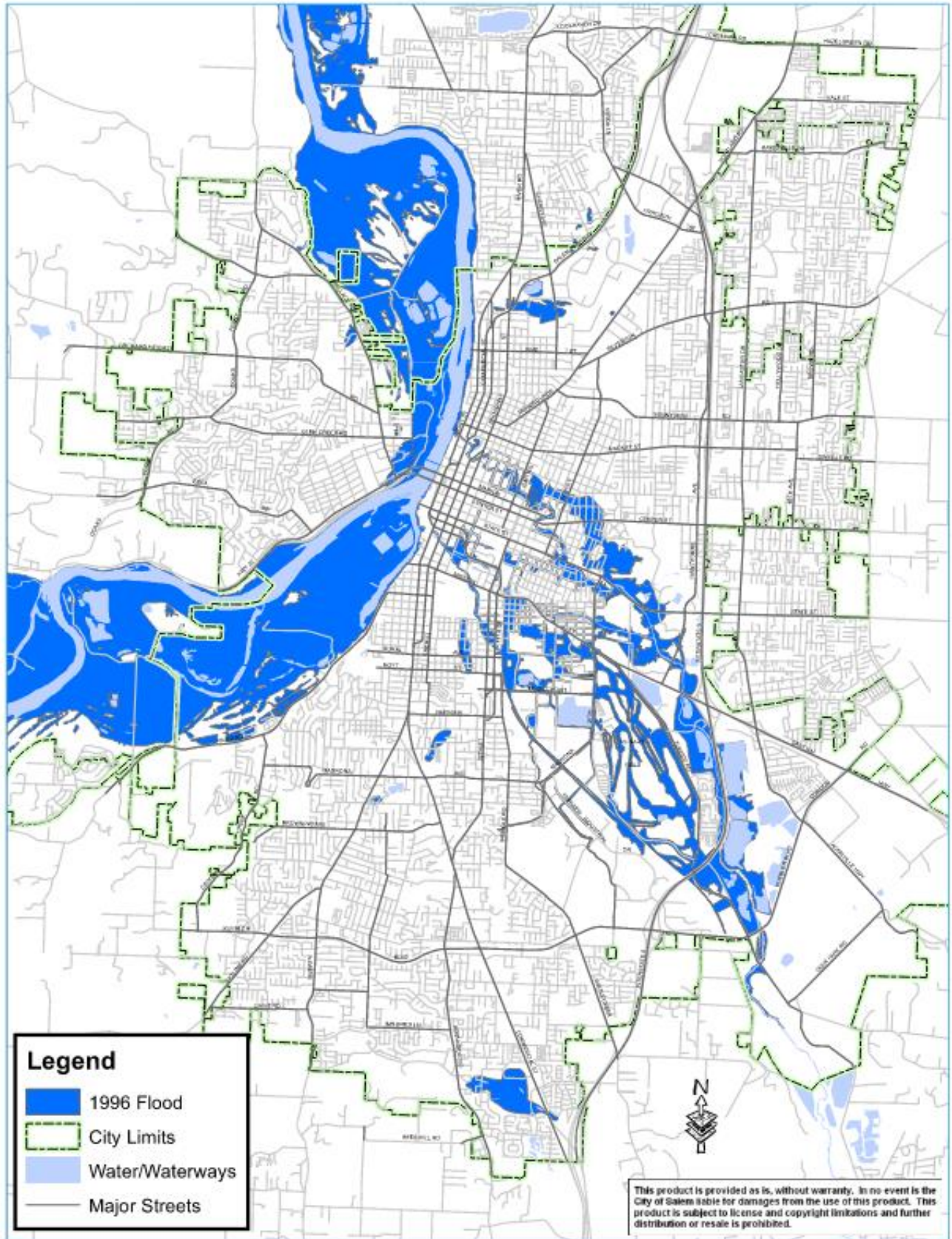
The stormwater analysis work completed with the Stormwater Master Plan update provided sufficient information to generate maps showing new flood inundation areas within the Mill Creek, Pringle Creek, and Battle Creek watersheds. These inundation areas can become regulated as Interim Flood Hazard Areas once promulgated through the Administrative Rule process pursuant to Salem Revised Code 20J.

### Annexation Areas

No new land within the Special Flood Hazard Area has been annexed into Salem City limits since adoption of the 2018 FMP.

Map 4. 1996 Flood Inundation Map (next page)







## Other Flood Hazards

### Dam Failure

Under normal loading conditions dams are generally at very low risk of failure. Specific events are associated with most dam failures. Events that might cause dams to fail include:

- An extreme flood that exceeds spillway capacity and causes an earthen dam to fail;
- Extended high-water levels in a dam that has no protection against internal erosion;
- Movement of the dam in an earthquake; and
- A large rapidly moving landslide impacting the dam or reservoir.

Failures of some dams can result in loss of life, damage to property, infrastructure, and the natural environment.

### Dam Inventory and Flood Safety Issues

In 2019, the City adopted a *Levee and Dam Breach Inundation Analysis*, that evaluated impacts from levee and dam failures. According to that report, there are no “High Hazard” dams within the City limits. However, there are thirteen U.S. Army Corps of Engineers (USACE) dams within the Willamette River Basin and two State of Oregon regulated dams. The potential failure of USACE managed Detroit, Green Peter, Foster, Lookout Point, and Hills Creek Dams would cause flooding of structures within the Salem City limits with the failure of Detroit Dam resulting in the highest flood risk to the City. As identified in the 2023 Salem NHMP, there are two High Hazard Potential Dams – Croft and Franzen – regulated by the State of Oregon that, if they were to fail, could impact Salem. These two dams, either within or close proximity of city limits, are assigned a high hazard rating based on downstream hazard to people and property, not on the condition of the dam.

The 2022 Marion County Multi-Jurisdictional Hazards Mitigation Plan, similar to the City’s *Levee and Dam Breach Inundation Analysis*, identifies two dams with high hazard potential—Big Cliff Dam and Detroit Dam—that are located on the North Santiam River, which ultimately discharges into the Willamette River upstream of Salem.

Waller Dam, although not regulated by the State of Oregon or USACE, impacts waterway flow by providing a diversion of Mill Creek to Mill Race. Mill Race run along Ferry Street and once powered the Thomas Kay Woolen Mill. The dam includes a spill gate, control gates and fish ladder. Debris jams at this diversion structure have a history of causing major flood issues in the surrounding area.

### **Inventory of Levees**

According to the 2019 *Levee and Dam Breach Inundation Analysis*, no certified or engineered levee structures exist within the City limits. Although not a certified levee, the Keizer River Wall protects the City of Keizer from Willamette River flooding. This wall was inspected by the US Army Corps of Engineers in 2010, as described in an inspection report titled Keizer River Wall, Flood Damage Reduction Project,

Periodic Inspection No. 1. Because this flood wall is located sufficiently downstream of Salem to prevent backwater effects, this flood protection measure does not appear to affect the flood hazards within the city limits of Salem.

The FIS describes that an earthen berm protects the Sun Retirement Center along the West Fork Pringle Creek at 12th Street SE. The berm at this location is not continuous and could be flaked at high flows. The depth adjacent to this structure is less than 2-feet for the 1% annual chance of exceedance (ACE) flood event. The breach of this berm structure will result in one building being inundated from the beach, with no adverse impact on health, safety and community functions.

## Potential for Increased Flooding

### Changes in Floodplain Development

The 2023 Salem NHMP evaluated changes in development related to continued growth since the 2017 Salem NHMP update. The plan states:

*Salem has seen new development in its downtown area, which allows taller, denser buildings relative to other parts of the city. Multiple waterways, including the Willamette River, Pringle Creek, and Mill Creek flow close to downtown. Limited parts of Salem's downtown area lie within the 100-year floodplain, making flooding a potential risk in these areas, especially if the intensity of floods increases in a climate-altered future.*

The *Salem Area Comprehensive Plan* includes the following goals and policies related to floodplain development:

- Environmental Protection Goal N1: Protect and enhance the quality and function of Salem's natural resources, ecosystems, and environment.
- Natural Resource Protection Policy N1.1: The quality and function of natural resources in the Salem Urban Area shall be protected, including wetlands, waterways, floodplains, and critical habitat.

Economic demands for vacant lands were analyzed in the 2014 ECONorthwest *Salem Economic Opportunities Analysis, Table 7*, which shows a surplus in industrial land and a deficit of commercial land that is suitable for development. Residential demands for vacant lands are analyzed in the *Salem Housing Needs Analysis, Table 12*, which shows a surplus of single-family residential and a deficit of multi-family residential land. Therefore, flood-prone areas in multi-family and industrial areas will be more likely to encroach into floodplain areas because of the deficiency of available land. These studies do not suggest that development patterns within the floodplain will vary significantly in the future from past trends.

Floodplain development may be affected significantly by federal changes being proposed to the National Flood Insurance Program to mitigate impacts to

endangered species in Oregon. On March 6, 2023, FEMA published a “Notice of Intent to Prepare an Environmental Impact Statement for Oregon.” The notice included the following information:

- FEMA intends to prepare an Environmental Impact Statement (EIS) for the implementation of the plan for National Flood Insurance Program (NFIP)—Endangered Species Act (ESA) Integration in Oregon.
- FEMA released a draft of this plan in October 2021.
- The public scoping process has begun for the preparation of an EIS for the proposed action.
- The purpose of the scoping process is to solicit public comments regarding the range of issues, information, and analyses relevant to the proposed action, including potential environmental impacts and reasonable alternatives to address in the EIS.
- FEMA is preparing this EIS in compliance with the National Environmental Policy Act (NEPA) of 1969 and the NEPA regulations implemented by the Council on Environmental Quality as of the date of this Notice.

Frequency of development in the floodplain will likely reduce measurably as a result of the EIS from FEMA and the new *Salem Area Comprehensive Plan* policies.

#### Development in the Watersheds

The *Salem Housing Needs Analysis*, dated December 2014, estimates a population increase within the Salem-Keizer UGB will grow from 210,035 people in 2015 to 269,274 people in 2035, adding 59,239 people over the 20-year period (page 15). The analysis shows that Salem has approximately 5,300 acres of buildable land, where approximately 1,700 acres is considered surplus land. The *Salem Area Comprehensive Plan* update in 2022 utilized the data from the 2014 *Salem Housing Needs Analysis* and incorporated goals, policies and a Comprehensive Plan Map that depict the community’s image for future growth. Environmental Protection Goal N1.6 of the *Salem Area Comprehensive Plan*, states “The amount of dedicated natural open spaces in the Salem Urban Area should be expanded to support ecosystems and enhance quality of life.” The zoning designations of some residentially zoned land in wetland and watershed areas were changed to the Public Amusement (PA) zone, which is intended for parks, natural areas, open space and outdoor recreational sites. Zoning was changed on some buildable lands to account for a growing population while also protecting some property from development in existing watersheds.

Similarly, the *Salem Economic Opportunities Analysis* also estimates that a majority of the buildable non-residential land in the Salem UGB will be developed by 2032.

The *Stormwater Master Plan* describes the size of each drainage basin within Salem, the portion located within the UGB, and its potential for development (based on development patterns and urban/rural land use) is shown on Table 9.

Table 9. Watershed Potential for Development

| Watershed         | Size (Sq. Miles) | Ration Within the UGB | Development Potential |
|-------------------|------------------|-----------------------|-----------------------|
| Battle Creek      | 10.0             | 33%                   | High                  |
| Croisan Creek     | 4.9              | 50%                   | High                  |
| East Bank         | 2.0              | 100%                  | Low                   |
| Glenn Gibson      | 10.4             | 50%                   | High                  |
| Little Pudding    | 9.1              | Not Specified         | Medium                |
| Lower Claggett    | 1.5              | Not Specified         | Low                   |
| Mill Creek        | 110              | 8%                    | Medium                |
| Petijohn Laurel   | 2.6              | Less than 50%         | Low                   |
| Pringle Creek     | 13.3             | 100%                  | Medium                |
| Upper Claggett    | 7.4              | 100%                  | Low                   |
| West Bank         | 2.3              | Nearly 100%           | Medium                |
| Willamette Slough | 4.8              | Not Specified         | Low                   |

The *Stormwater Master Plan* analyzed stormwater flows based on anticipated flows within 20 years of creation of the plan. However, 100-year inundation maps were not created as part of the 2000 plan. The 2019 *Stormwater Master Plan* included modeling that was used to create new inundation maps, first for the Battle Creek Basin, then subsequently for the Mill and Pringle Creek basins. As described in the Flood Insurance Rate Map section of this plan, these inundation areas can become regulated as Interim Flood Hazard Areas once promulgated through the Administrative Rule process pursuant to Salem Revised Code 20J.

Climate Change

According to the Fifth Oregon Climate Assessment (2021), flood magnitudes are likely to increase in Oregon. The Salem Climate Action Plan includes numerous strategies to address a variety of climate-related challenges facing the city, including flooding. The plan acknowledges significant projected climate impacts including the following:

- More intense rainfall and rain-on-snow events could also lead to flood events in areas outside of historical high-risk zones. Department of State Lands, Wetlands Functions and Assessment (May 2001)

The Salem Area Comprehensive Plan includes additional goals and policies related to Climate change as follows:

- Climate Change and Natural Hazards Policy Goal CC2, Flood prevention and mitigation Policy CC2.3: The City shall pursue a variety of flood prevention and mitigation strategies, including incentivizing property owners to make improvements that incorporate green infrastructure.
- Climate Change and Natural Hazards Policy Goal CC2, Flood prevention and mitigation Policy CC 2.4 Development in floodplains: Development in floodplains shall be regulated to minimize negative impacts on natural resources and potential danger to life and property.

### Other Natural Hazards

The City of Salem Natural Hazard Mitigation Plan (NHMP) describes all natural hazards that affect Salem in addition to flooding. A hazard summary is provided for each of the hazards addressed in the plan. The summary includes hazard history, location, extent, vulnerability, impacts, and probability. This NHMP addresses the following hazards:

- Air Quality
- Drought
- Earthquake
- Extreme Heat
- Flood
- Landslide
- Volcano
- Water Quality
- Wildfire
- Windstorm
- Winter Storm
- Hazardous Materials Incident

For the 2023 FMP Update purposes, the committee recommends referencing Section 2: Risk Assessment of the Salem NHMP for more detailed information on each hazard.

## **Problem Evaluation**

### **Community Rating System Requirements: Step 5 Assess the Problem**

In this step, the City must include an assessment of the vulnerability of the community of the hazards identified in the hazard assessment. During the FMP update process, the problem evaluation must be reviewed and brought up to date and must account for the following:

- New floodplain or hazard mapping,
- Annexation of flood-prone areas.
- Additional repetitive loss properties.
- Completed mitigation projects,
- Increased development in the floodplain or watershed,
- New flood control projects,
- Lack of maintenance of flood control projects,
- Major floods or other disasters that occurred since the plan was adopted, and
- Any other change in flooding conditions and/or development exposed to flooding or the other hazards covered in the plan.

### **Life Safety**

The most immediate threats to life safety are flash floods on Salem's smaller waterways, especially the Battle Creek and Glenn-Gibson Creek systems. These waterways can reach flood stage in a matter of hours, so immediate warning systems and prompt evacuation procedures are critical to life safety. Flood-prone properties along Battle Creek, Gibson Creek, and the upper reaches of Pringle and Glenn Creeks have mostly residential uses. Land along lower reaches of Glenn Creek are primarily commercial developments; properties at the lower reaches of Pringle Creek have a variety of land uses.

The Mill Creek system (including Shelton Ditch) poses the greatest flood hazard city-wide, encompassing a significant portion of central and southeast Salem. Because of the size of Mill Creek’s watershed, flash flooding is not a significant hazard. Water levels rise gradually, providing adequate response time for flood warning systems and evacuation. However, floods along Mill Creek have a longer duration, which cause additional impacts to life safety and property damage. Areas in the Mill Creek system also include some of the oldest infrastructure in Salem, which poses additional risk of storm and sanitary sewer overflow, clogged catch basins, and debris jams at constricted bridges and culverts.

Through a FEMA-funded grant awarded after the 2012 floods, new monitoring infrastructure in the Mill Creek watershed was installed and completed in the fall of 2014. The expansion and upgrades to the existing gauging network were critical to the development of an automated alerting system and hydrologic forecasting model. The development of a new Flood Warning System for Salem provides operational response staff and emergency managers with valuable information to aid in the warning and evacuation of residents and visitors. Warning and evacuation measures have been updated and detailed in the adopted Salem Emergency Management Plan and Salem Flood Warning and Response Plan

Life safety is a vital concern when flood events interrupt a number of critical transportation corridors throughout Salem. Emergency vehicles can be delayed because of restricted mobility in flooded areas. Major streets that may likely be closed during flood events include those indicated in Table 10.

Table 10. Critical Transportation Corridors Affected by Flooding

| Street Classification | Street Name   |
|-----------------------|---|
| <b>Parkway</b>        | Mission Street SE   |
| <b>Major Arterial</b> | Center Street NE<br>State Street<br>Capitol Street NE/SE<br>12th Street NE/SE<br>Hawthorne Avenue NE/SE<br>Summer Street NE<br>Madrona Avenue SE<br>25th Street SE<br>McGilchrist Avenue SE<br>River Road |
| <b>Minor Arterial</b> | 17th Street NE/SE<br>Airport Road SE<br>Broadway Street NE<br>Glen Creek Road NW<br>Orchard Heights Road NW<br>Fairview Industrial Drive SE<br>Turner Road SE   |
| <b>Collector</b>      | Airway Drive SE<br>Croisan Creek Road S<br>D Street NE  |



| Street Classification | Street Name       |
|-----------------------|-------------------|
|                       | Fairway Avenue SE |
|                       | Oxford Street SE  |
|                       | Hines Street SE   |
|                       | 21st Street SE/NE |
|                       | 22nd Street NE/SE |
|                       | 23rd Street NE/SE |
|                       | Rural Street SE   |
|                       | Cross Street SE   |

## Public Health

The Centers for Disease Control and Prevention warn that floodwaters pose a variety of health risks, including exposure to infectious diseases, chemical hazards, and injuries. Flood waters can become contaminated with bacteria and hazardous chemicals which pose risk of disease through physical contact, ingestion, or open wounds. Floodwaters pose risk of physical injury from floating objects and damaged electrical power lines. Floodwaters, especially when rapidly moving, also pose risk of drowning.

Floodwaters can also cause indirect health risks. Animals can be displaced during flooding and pose a risk to public health. Standing water during and after a flood can increase insect populations, posing an additional risk to insect-borne diseases. If clean-up efforts are delayed after flood events, water-damaged buildings can collect mold, which is a significant health concern to building occupants. Many of these indirect public health concerns can be reduced after flood events by expediting repair of water-damaged buildings and other cleanup efforts.

Floods in the past caused multiple major injuries or death. The potential for future injuries or deaths is anticipated to remain similar to historic events. It is estimated that 10-25% of the city’s population would be physically displaced by a flood, accounting for the number of homes located in or near floodplains, and there would be moderate impact on community social networks.

Floods significantly impacts drinking water and wastewater systems. When sewer systems are inundated with floodwaters, raw sewage can be flushed into the waterways, posing significant health hazard. Additionally, drinking water supplies can be contaminated with flushed wastewater or high levels of solids (eroded soil for example), and made unsafe for consumption. In Salem, wastewater is pumped to the Willow Lake Wastewater Pollution Control Facility, which is partially located within the floodplain. Because of this location, the facility is prone to some flooding. The City of Salem’s wastewater system serves more than 60 square miles through over 800 miles of pipe and includes the cities of Turner and Keizer. When needed, the city has a back-up facility at River Road Park, which is not located in the floodplain. During the wet weather months or when there is a storm event expected that could overload the sanitary sewer system, crews carefully and continuously monitor the wastewater collection system, including 30 sewer pump stations around Salem, so releasing untreated wastewater into the Willamette River can be avoided. Both water and sewage systems often require significant repair and maintenance work following a flood.

## **Critical Facilities and Infrastructure**

Of particular importance during flood events are critical facilities located in flood hazard areas. A critical facility is defined as a facility that needs to be operable during a flood, or for which even a slight chance of flooding might pose an unacceptable risk to health and safety. Critical facilities include schools, nursing homes, hospitals, police, fire, and other emergency responders, and installations that produce, use, or store hazardous materials.

Fourteen major critical facilities are located within the regulatory floodplain, totaling approximately \$930 million in improvement value. Salem Hospital is a critical facility that can be substantially impacted during flood events, since vehicular access to the facility can be limited by street closures surrounding the hospital. Salem has also identified approximately 200 essential facilities (i.e. schools, residential care facilities, daycares, record retention facilities, hazardous waste storage, etc.) in the regulatory floodplain. City staff coordinates contact and flood response planning efforts with both critical and essential facilities. A critical and essential facilities database is maintained in the Salem Emergency Operations Center Situational Awareness Framework for Events (SAFE) system.

In the January 2012 flood event, City public infrastructure damage was estimated at approximately \$10 million. The majority of damage, \$7.5 million, was to vehicular bridges; other damage included City-owned parks, buildings, streets, and water, wastewater, and stormwater facilities. The January 2012 event was somewhat localized to the Battle Creek and Mill Creek basins; however, the potential damage to critical facilities and infrastructure city-wide are significant.

In addition to Critical Facilities, a number of critical infrastructure and transportation corridors will be affected by flooding. Major transportation corridors along waterways can result in road closures during a major flood event.

Salem's wastewater treatment facility is prone to flooding, and a major flood could result in untreated wastewater being released into the Willamette River. Geren Island Water Treatment Facility provides treated water from Salem's primary water source and is located in a high-risk flood zone. Salem prepares for protection of these critical facilities through planning and preparation efforts.

## **Economy and Major Employers**

A number of employment centers are located within the regulatory floodplain. The Pringle Creek floodplain area includes industrial employment areas in the vicinity of McGilchrist Street SE and Salem Health, one of Salem's largest employers. Mill Creek can overflow into Salem Airport, which would potentially restrict air traffic, and the overflow can continue through industrial employment areas west of 25th Street SE, including the City Operations Complex. In West Salem, the Willamette River causes flooding in commercial areas along Wallace Road NW and Edgewater Street NW.



Transportation impacts during flood events can cause significant economic impacts. Major transportation corridors can be closed by high water, restricting commercial traffic. The most significant transportation impacts involve the potential closure of arterial streets, including the Wallace/Edgewater intersection, Mission Street SE, Center Street NE, State Street, and River Road S.

Multiple facilities throughout the city anticipate severe damage due to a flood, estimated between \$10 million and \$100 million for hazard response, structural repairs and equipment replacement. In terms of commercial business, it is likely 10-30% of businesses located in the city and surrounding area would experience commerce interruption for a period of a months. Floods have the potential to inflict widespread damage to not only buildings but also the transportation network that may likely have extensive impacts on more than 75% of the city’s ecological systems, including, clean water, wildlife habitat, and parks.

**Types of Affected Buildings**

Approximately 2,950 buildings are located within the City’s regulatory floodplain. Table 11 shows the zoning designation and the number of structures in the regulatory floodplain. As shown in Table 11, buildings zoned residential comprise approximately 70 percent of buildings in the floodplain. In addition to structural and life-safety impacts, flooding in residential areas can also result in the need for temporary shelters to house displaced residents.

Table 11: Zoning Designation of Buildings Within the Floodplain

| Zoning Designation              | Number of Structures |
|---------------------------------|----------------------|
| Critical Facilities (All Zones) |                      |
| Commercial                      |                      |
| Industrial                      |                      |
| Public                          |                      |
| Residential                     |                      |
| Mixed Use                       |                      |

NOTE: Updated data is being reviewed and tables will be updated by 10/11/23

All City-owned buildings are protected by flood insurance policies, whether or not they are located within the floodplain. Among the publicly owned properties, the City of Salem owns approximately 114 buildings that are located in the regulatory floodplain. The general uses of those buildings are tabulated in Table 12.

Table 12: City-Owned Buildings

| Use of City-Owned Building | Number of Structures |
|----------------------------|----------------------|
| Airport                    |                      |
| Fire                       |                      |
| General                    |                      |
| Housing Authority          |                      |
| Library                    |                      |

|                |  |
|----------------|--|
| Parks          |  |
| Transportation |  |
| Utility        |  |

NOTE: Updated data is being reviewed and tables will be updated by 10/11/23

### Flood Insurance Claims

FEMA records show that 204 flood insurance claims in the Salem community have been filed since 1978, totaling nearly \$3.5 million. The claim payments paid for significant flood damages are tabulated in Table 13.

Table 13: Zoning Designation of Buildings Within the Floodplain

| Date of Flood Damage | Total Claims |
|----------------------|--------------|
| February 1996        | \$901,000    |
| November 1996        | \$587,000    |
| November 1998        | \$101,000    |
| June 2000            | \$92,000     |
| January 2012         | \$1,589,000  |
| December 2015        | \$59,000     |

Of those claims listed above, approximately \$325,000 in claims were paid to owners of properties in the Salem Industrial Drive NE area. No claims have been paid in the Salem Industrial Drive NE area since 2003, so the improvements in the vicinity of Claggett Creek in 2007 may have mitigated the potential for further flood damage.

Approximately \$382,000 in claims have been paid to owners of properties in the Bellevue Street SE area; the latest claim was filed in 2012. Improvements made in 2015 to the Winter Street Bridge along Shelton Ditch may have mitigated the flooding concerns in this repetitive loss area.

There are two new areas of repetitive loss claims that have been identified since the original adoption of the Floodplain Management Plan. These areas, including State Street and Marstone Court SE, have been paid claims of approximately \$142,000 due to flood damage caused by the January 2012 and December 2015 flood events. These areas were recently identified in 2016 data provided to the City and have been assessed for possible mitigation projects.

According to the Salem NHMP, FEMA reports that 25% to 30% of all flood insurance claims are from owners of property located in low to moderate-risk areas located outside of the Special Flood Hazard Area.

### Natural Areas

The capacity of the natural environment is essential in sustaining all forms of life including human life, yet it often plays an underrepresented role in community resiliency to natural hazards such as floods. The natural environment includes land, air, water, and other natural resources that support and provide space to live, work and recreate. Natural capital such as wetlands and forested hill slopes play significant roles in protecting

communities and the environment from weather-related hazards, such as flooding and landslides. When natural systems are impacted or depleted by human activities, those activities can adversely affect community resilience to natural hazard events. Public parks and publicly owned open space and natural systems can provide a buffer between flood hazards and private property. Maintaining and restoring natural systems helps mitigate the impact of flood events on the built environment. Flooding changes the natural environment and hydrology of an affected area. High water can be beneficial to the natural processes within a floodplain and can benefit riparian areas. Wetlands in public ownership can reduce flood impacts by absorbing floodwaters and buffering water level fluctuations.

Riparian areas are important transitional area that link water and land ecosystems. Vegetation in riparian areas is dependent upon stream processes such as flooding and often is composed of plants such as willow and cottonwood trees that require large amounts of water. Healthy vegetation in riparian buffers can reduce streamside erosion. During flood events, high water can cause significant erosion. Well-managed riparian areas can reduce the amount of erosion and help to protect water quality during flooding events.

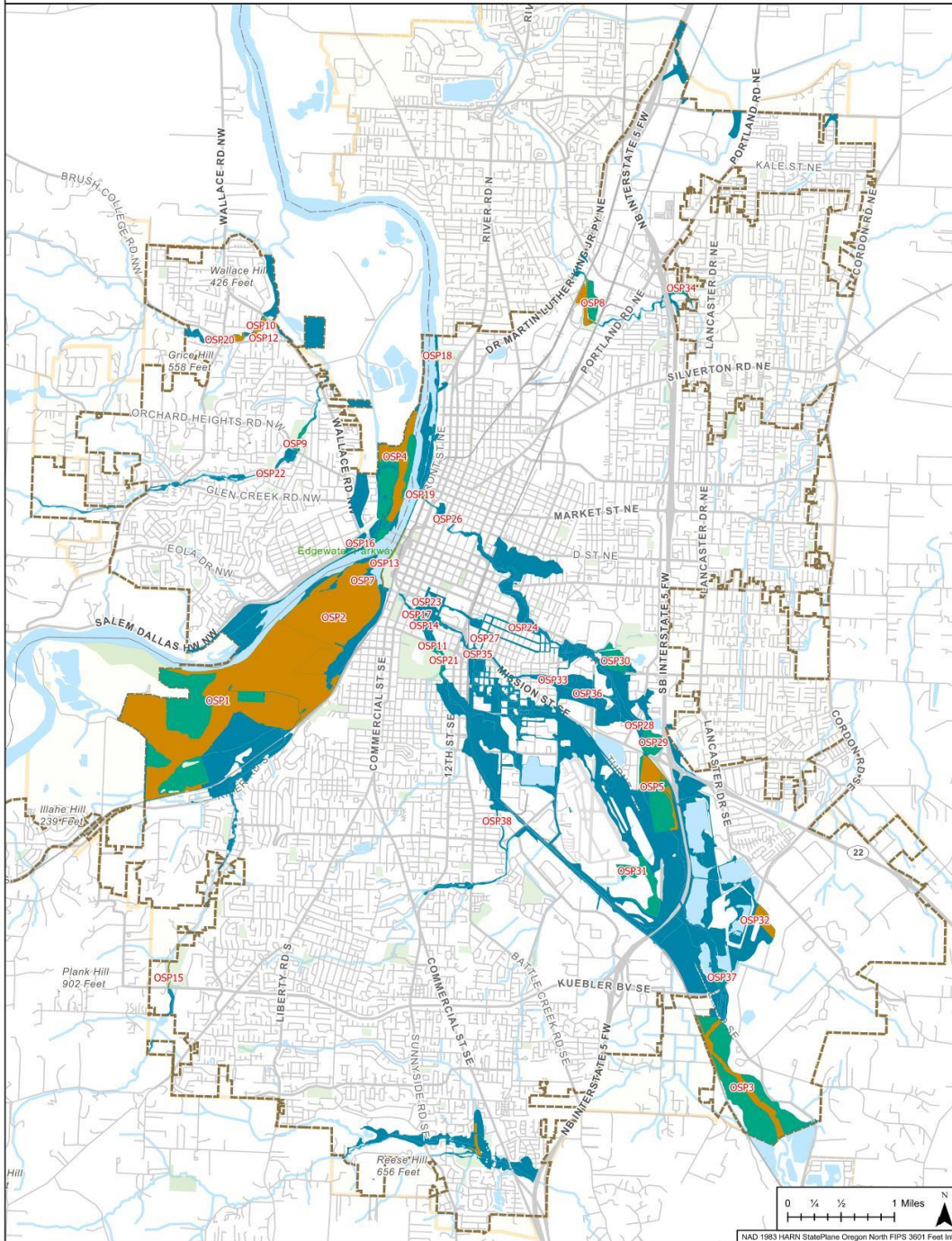
Many floodplain and stream-associated wetlands absorb and store storm water flows, which reduces flood velocities and stream bank erosion. Preserving these wetlands reduces flood damage and the need for expensive flood control devices such as levees. According to Oregon Department of State Lands (DSL), when the storms are over, many wetlands augment summer stream flows by slowly releasing the stored water back to the stream system. Wetlands are highly effective at removing nitrogen, phosphorous, heavy metals, and other pollutants from water. For this reason, artificial wetlands are often constructed for cleaning storm water runoff and for tertiary treatment (polishing) of wastewater. Wetlands bordering streams and rivers and those that intercept runoff from fields and roads naturally provide this valuable service.

According to the most recently adopted Salem's Comprehensive Park System Master Plan Update (May 2013), there are approximately 1,928 acres of park land within the city; 1,328 acres are developed, and 600 acres are undeveloped. Of these acres, many are located within the special flood hazard area. Minto-Brown Island Park, most of which is located in the floodplain, accounts for almost half of the city's total park acreage, see Map 5.

Map 4. Open Space within the Special Flood Hazard Area (next page)

**Open Space (OSP), Natural Functions Open Space (NFOS1),  
Critical Habitat (NFOS3) and Deed Restricted Map.**

**City of Salem, NFIP # 410167**



**CITY OF Salem**  
AT YOUR SERVICE

Date: 5/25/2023  
Source: All layers from City of Salem SDE database unless otherwise noted

Total Area of SFHA is **3,978 Acres**  
Total Area of Open Space in SFHA is **1,872 Acres**  
Total Area of Natural Functions Open Space is **1,187 Acres**

**Legend:**

- Natural Functions
- Open Space
- SFHA



## Impacts of Land Development

Based on hazard assessment information, three creek systems appear to be most vulnerable to future development: Battle Creek, Pringle Creek, and Croisan Creek:

- Battle Creek has a high potential for development and has experienced significant impacts from major flood events in both 1996 and 2012. Impacts of urbanization are limited because two-thirds of the watershed is located outside the UGB. Flood impacts within the basin affect mostly residential properties.
- Pringle Creek has a medium potential for development and has high impacts from urbanization because 100 percent of the watershed is located within the UGB. The Pringle Creek Watershed Management Plan, Section 3.1 states, “Estimates of current imperviousness in the Pringle Creek watershed range from 19 to 25 percent according to the City of Salem’s Impervious Surface Report. With over 20 percent of the watershed already covered with impervious surface, Pringle Creek ranks as an ‘impacted stream’ according to the index proposed by Schueler (1994). Future development will easily push this stream into the ‘non-supporting’ category. Imperviousness is projected to ultimately increase to approximately 52 percent.” These changes in imperviousness could have a considerable impact on future flood flows.
- Croisan Creek has a high potential for development with 50 percent of the watershed located within the UGB. Existing commercial and residential developments along River Road S are the most likely properties to be impacted by development within the basin, though those impacts will not be known until further study.

Other creek systems have low potential for impact and are not expected to see significant changes as a result of future development.

Recent plan updates including the Salem Area Comprehensive Plan, Stormwater Management Plan, and adoption of a new Climate Action plan, produced guiding initiatives, goals, and policies relating to reducing development within floodplain areas and ultimately reducing flood risk. As such, the likelihood of development within the floodplain is decreasing and as a result, impacts to creek system has less vulnerability to development impacts.

Stormwater management and reducing the potential for urban flooding has also been a priority in recently adopted plans and studies. Salem Revised Code Chapter 71 requires large projects to limit stormwater runoff to amounts not exceeding the preexisting condition for four different storm events. The regulatory requirement to detain stormwater onsite will decrease the potential for downstream flooding through green stormwater infrastructure and flow control facilities.

The majority of stormwater capital improvement projects over the past five years have emphasized green stormwater infrastructure and reduction of runoff. However, no significant flood control projects have been constructed that would measurably alter



the extent of flooding during major events.

## **Potential for Increased Flooding**

The hazard assessment identified three potential sources of increased flooding:

- Changes in floodplain development
- Development in the watersheds; and
- Climate change

Potential impacts from these sources of increased flooding are as follows:

### Changes in Floodplain Development

The development requirements within floodplains are contained in Salem Revised Code Chapter 601, Floodplain Overlay Zone. The current ordinance restricts all development in floodways unless an engineered analysis demonstrates no increase in flood levels. Development within floodplains is allowed as long as buildings and infrastructure are constructed to minimize flood damage.

Based on past development patterns and the current floodplain overlay zone ordinance, development in the future will reduce available flood storage as fill is placed in floodplains. Ultimately, this development will not increase flood elevations more than one foot. New buildings are required to be elevated a minimum of one-foot above base flood elevation, so new buildings are not at measurably increased risk of flooding because of development in floodplains. However, existing buildings constructed under earlier regulations may experience additional flood hazards over time as floodplains are filled and developed. These impacts are not known until further study.

### Development in the Watersheds

The Developable Land Analysis in the Hazard Assessment Chapter showed that three creek systems—Battle Creek, Pringle Creek, and Croisan Creek—are most vulnerable to potential impacts of future development within the watershed. These impacts are addressed in the 2020 update to the *Stormwater Master Plan*. As a result, mitigation measures, policies, and construction projects identified in the *Stormwater Master Plan* are expected to be mitigate the potential for future flooding within those watersheds.

### Climate Change

Warming temperatures mean that the type and timing of precipitation in Salem is likely to shift. One change will be a shift from mountain snow to rain in the winter. Another change is a likely increase in unpredictable cloudburst events, in which an extreme amount of rain falls in a short amount of time. These events could lead to increases in flash flooding events. Other impacts of climate change are thoroughly addressed in the Climate Action Plan as described in the Coordination section above. The goals, policies, and applicable action items of the Climate Action Plan related to floodplain management are included in the Possible Activities section below.

## Setting Goals

### Community Rating System Requirements: Step 6 Set Goals

During the plan update, the original plan’s goals must be reviewed to determine if they are still appropriate, given the revisions to Steps 4 and 5.

#### Set Goals

The Floodplain Management Advisory Committee was presented with two options for setting goals: (1) adopt distinct goals for the 2023 FMP Update; or (2) carry forward existing goals and adopt the updated goals from the 2023 Salem NHMP. The committee elected to adopt the NHMP goals for the 2023 FMP Update. The 2023 Salem NHMP’s goals are listed in the Table 14. Table 15 illustrates which plan goals address the issues identified in the section titled “Problem Evaluation.”

Table 14. Floodplain Management Plan Goals

| Goal # | Description   |
|--------|---|
| 1      | Develop and implement mitigation activities to protect human life in the context of a climate-altered future.   |
| 2      | Strive to protect existing buildings and infrastructure from the impacts of natural hazards.  |
| 3      | Develop and implement strategies and policies to promote more resilient future development, infrastructure, and systems.  |
| 4      | Strengthen communication, plan, practice, and coordinate emergency services among local, county, and regional governments and the private sector.   |
| 5      | Enhance community resilience, including economic continuity and recovery, to reduce the impacts of natural hazards and promote efficient and effective recovery.  |
| 6      | Preserve and rehabilitate natural systems to serve natural hazard mitigation functions and protect natural resources.   |
| 7      | Develop programs to promote social resilience within the community recognizing that our most vulnerable communities are often those who have been historically underserved and marginalized, especially among those most vulnerable to natural hazards. |

Table 15: Problem Evaluation and Identified Goals

| Flood-Related Problem                  | Goal 1 | Goal 2 | Goal 3 | Goal 4 | Goal 5 | Goal 6 | Goal 7 |
|--|--------|--------|--------|--------|--------|--------|--------|
| Life Safety                            | X      |        | X      |        |        |        | X      |
| Public Health                          | X      |        | X      |        |        |        |        |
| Critical Facilities and Infrastructure | X      | X      | X      | X      |        |        |        |
| Economy and Major Employers            |        | X      | X      |        | X      |        |        |
| Buildings                              |        | X      | X      |        |        |        |        |

|                                  |  |   |   |   |  |   |   |
|----------------------------------|--|---|---|---|--|---|---|
| Natural Functions                |  |   |   | X |  | X |   |
| Impacts of Land Development      |  | X | X | X |  |   | X |
| Potential for Increased Flooding |  | X | X | X |  | X |   |

## **Review of Possible Activities**

### **Community Rating System Requirements: Step 7**

This step of the process includes establishing activities relating to floodplain management and hazard mitigation. During the 2023 FMP Update, each activity recommended by the previous plan must be discussed, along with the status of implementation. If an activity is currently being implemented, the plan must note if it is achieving expectations and, if not, whether it should be modified. For an activity that is determined to be appropriate, the discussion must also include community’s capability to fund and implement the activity. New activities are included to reflect changing priorities, policies, goals, and initiatives established in adopted plans and studies.

### **Effectiveness of Existing Regulations**

Existing regulations were analyzed as part of selecting potential activities. Analysis of regulatory codes and plans is as follows:

#### **Comprehensive Plan:**

The Salem Area Comprehensive Plan was recently modified as described above. This updated plan includes a significant number of goals and policies related to natural resource protection, water quality improvements, flood risk reduction, and other issues that affect floodplain management. A number of these goals and policies are under consideration in Appendix D for being included in the 2023 FMP Update.

#### **Building Code:**

The building code and the City’s building permit program has been one key element in meeting CRS pre-requisites and helping Salem improve its CRS rating.

The 2018 FMP Action Item PA12, “protect new buildings from shallow flooding” was one of the few activities that was not initiated during the past 5 years is under consideration in Appendix D.

#### **Zoning Code:**

The 2018 FMP Action Item PA14 and Climate Action Plan Item NR22 recommends the City, “Investigate adoption of a new floodplain/natural area zone in the Salem Revised Code”. This Action Item was recommended by the FMP review committee in the 2020 annual review of the FMP and is listed as a Medium-Term priority in the Climate Action Plan. This activity was not initiated during the 5-year duration of the 2018 FMP and is under consideration in Appendix D. However, the 2022 adoption of the *Salem Area*

*Comprehensive Plan* did not recommend a new floodplain/natural area zone designation.

**Subdivision Ordinance:**

SRC 205.045 includes special standards for conservation lots or parcels. Subdivision approval criteria requires compliance with floodplain development standards. No activities were proposed that relate to changes to the subdivision code.

Climate Action Plan Item NR05 recommends, “Amend City code to require minimum 25-foot no-build zone within riparian corridor and require developers to plant trees/shrubs and native or ecologically well adapted vegetation to create a vegetated buffer (minimum 25 feet) within the existing riparian corridor on all new development.” The ordinance may be modified to allow or require FEMA’s cluster development standards as a potential opportunity for preserving additional open space.

**Floodplain Overlay Zone:**

Pursuant to 2018 FMP Action Item PA6, SRC Chapter 601 has been modified in conformance with the model floodplain management ordinance.

Pursuant to 2018 FMP Action Item PA9, SRC Chapter 601 was modified to require a minimum of one foot of freeboard for equipment servicing buildings.

**Stormwater Ordinance:**

Pursuant to 2018 FMP Action Item PA11, SRC Chapter 71 was modified to require large projects to manage runoff from 25-year and 100-year storm events in addition to the prior regulation of managing 1/2 the 2-year event and the 10-year event storm events.

**Overall Floodplain Management Program:**

The overall floodplain management program has helped Salem earn a Class 3 Community Rating System rating. Major adjustments are not warranted in order to address issues raised in the Problem Assessment Chapter. The scoring criteria included in the 2018 FMP Update will be used for the 2023 FMP Update. The criteria described below provides a numerical basis for determining the benefit-to-cost ratio to make minor program improvements and maximize reduction of future flood losses.

**Current and Future Conditions**

The Stormwater Master Plan includes Basin Plans for Battle Creek, Mill Creek, and Pringle Creek that provide extensive analysis of current and future conditions in the context of stormwater goals, policies, and projects. The emphasis of the recently updated Salem Area Comprehensive Plan and newly created Climate Action Plan provides sufficient guidelines for minimizing flood risks in the Salem community. A number of potential activities under consideration in Appendix D are based on flood-related goals and policies described in the Stormwater Master Plan, the Salem Area Comprehensive Plan, and the Climate Action Plan.

## Activity Selection Criteria

Appendix D includes the original 80 activities that were considered by the Floodplain Management Advisory Committee to prevent or reduce flood-related problems. These activities included a variety of floodplain management categories: regulatory standards, preventive activities (PA), property protection (PP) activities, natural resource (NR) protection activities, emergency services (ES) measures, structural projects (SP), and public information (PI) activities.

The activities were selected from Appendix D of the 2018 FMP Update along with additional activities identified within existing and new plans and reports as identified above. The activities that are included in the action plan for the 2023 FMP Update are described in Appendix E.

Criteria were adopted to aid the committee in ranking the effectiveness of each activity. The criteria included a scoring system for anticipated costs and potential benefits. Costs included available funds, available staff resources, and negative impacts to key stakeholders in the community. Potential benefits included activities that were already required or adopted in another plan, reduced cost or liability, enhanced livability, improved safety and CRS-creditable activities.

The additional criteria resulted in a numerical scoring system that ranked all potential activities. The committee then reviewed all activities to confirm that the numerical ranking was appropriate. The advisory committee generally recommended or rejected potential activities based on their benefit-to-cost ratio. This selection process ensures that funding is available or achievable for selected activities.

## Action Plan

### Review of Prior Action Plan Items

Table 16 describes each action item from the 2018 FMP along with its status of implementation.

Table 16: 2018 FMP Action Plan Items and Status

| Item | Description  | Status of Implementation/Effectiveness   |
|------|--|--|
| PA1  | Maintain benchmark data                                      | Completed. During the 2023 Community Rating System verification visit, it was determined the City of Salem has adequate coverage by National Spatial Reference System (NSRS) meeting the NSRS prerequisites. |
| PA2  | Inspect and clean streams and stormwater facilities annually | Ongoing. This activity is included in the City's Stormwater Management Plan has ensured that water quality and conveyance capacity of waterways has not degraded over time.                                  |



| <b>Item</b> | <b>Description</b>  | <b>Status of Implementation/Effectiveness</b>   |
|-------------|---|---|
| PA3         | Establish Stormwater Master Plan policies to reduce peak flows during 100-year flood events                             | Completed. Stormwater Master Plan adopted under Ordinance 11-20 in October 2020. See Policy 5 Goal: Quality and Quantity Facilities. This policy will limit degradation of local streams by managing highly fluctuating runoff from impervious surfaces.  |
| PA4         | Promote low impact development practices in development and redevelopment projects                                      | Ongoing. Green stormwater infrastructure is required for most development projects. Green stormwater infrastructure has resulted in an increase in vegetation in developed areas and has reduced the quantity of pollutants in stormwater runoff from impervious surfaces.  |
| PA5         | Create 100-year inundation maps using data from Stormwater Master Plan  | In-process. West Consultants generated inundation areas of properties not shown on federal flood maps. Staff anticipates amendment of administrative rule 109-020 by end of 2024.   |
| PA6         | Adopt Oregon model floodplain management ordinance  | Completed. Adopted under Ordinance Bill No. 17- 19 in October 2019. Salem’s ordinance is now consistent with many other local ordinances statewide.   |
| PA7         | Provide additional staff training in administering regulations  | Ongoing. Public Works staff includes two Certified Floodplain Managers (CFMs) who receive training to maintain certification, and an additional staff member is planning to become certified in FY 23/24. Current and past CFMs have been integral in ensuring that Salem’s floodplain management program remains NFIP compliant and in improving Salem’s CRS credit score. |
| PA8         | Coordinate stormwater and flood management regulations with communities and organizations that share Salem’s watersheds | Ongoing. Coordination efforts are ongoing for the City’s Stormwater Master Plan and Stormwater Management Plan. Salem has been a positive influence among other communities and has encouraged them to improve floodplain management efforts.   |
| PA9         | Improve program for periodic site inspections of existing development within the floodplain                             | Ongoing. Inspections are completed by staff throughout the process of building construction. Salem’s inspection program has ensured its NFIP compliance as documented in its most recent Community Assistance Visit.  |
| PA10        | Modify floodplain ordinance to require 1-foot freeboard for equipment servicing buildings                               | Completed. Adopted under Ordinance Bill No. 17- 19 in October 2019 and amended under Ordinance Bill No. 8-20 in September 2020. New construction projects have reduced risk of flood damage to building equipment during major flood events.  |

| <b>Item</b> | <b>Description</b>  | <b>Status of Implementation/Effectiveness</b>   |
|-------------|---|---|
| PA1<br>1    | Update stormwater ordinance to manage runoff from all storms up to and including the 100-year event | Completed. Adopted under Ordinance Bill No. 8-20 in September 2020. This provision has ensured that more runoff remains on-site to reduce potential for flooding downstream during major storm events.  |
| PA1<br>2    | Protect buildings from shallow flooding   | No activity   |
| PA1<br>3    | Update Salem Zoning Maps with public land identified as Open Space                                  | Completed. Committee member recommended amendment to Floodplain Management Plan in 2019. New areas of parks, open space, and outdoor recreation, identified as Public Amusement (PA) zone, were adopted as part of the Our Salem Comprehensive Plan update. This map amendment places greater emphasis on preserving open space for staff and applicants using zoning map data. |
| PA1<br>4    | Investigate adoption of a new floodplain/natural area zone in the Salem Revised Code                | No Activity.  |
| PA1<br>5    | Prepare Substantial Damage Management Plan in conformance with CRS Activity 510                     | In process. City staff and Still Waters Consultants have collaborated to complete an initial review draft of the plan, which is expected to be completed in early 2024.   |
| PP1         | Improve floodplain protection assistance program  | Ongoing. Program featured in outreach project OP1, Appendix F. Affected property owners occasionally request floodplain protection assistance from City floodplain management staff.  |
| PP2         | Implement Flood Insurance Plan  | Ongoing. Coverage improvement projects completed and reviewed by Floodplain Advisory Committee. Flood insurance policies in Salem increased between 2019 and 2022, with a decrease in 2022 attributed to changes that allow private flood insurance policies in some cases.   |
| PP3         | Acquire easements for public and private stormwater facilities                                      | Ongoing. Identified as RC2, Task 3, of the City's 2010 Stormwater Management Plan. Acquisitions have been targeted when special circumstances warrant access to private property by City staff.   |
| PP4         | Investigate financial assistance program for Elevation Certificates and Letter of Map changes       | In process. Staff analyzed GIS data to generate an initial list of properties eligible for removal from floodplain. WEST Consultants prepared the first package of LOMC applications and were successful in obtaining a removal decision from FEMA.   |

| Item | Description   | Status of Implementation/Effectiveness  |
|------|---|---|
| PP5  | Analyze repetitive loss areas   | Completed. Analysis completed by West Consultants. Final report will be forwarded to City Council for adoption by Resolution. Limited mitigation options are available for most repetitive loss properties.   |
| NR1  | Provide grant funding for restoration projects in riparian areas  | Ongoing. Identified as RC8 of the City's Stormwater Management Plan. Grant projects have included a number of community-based restoration endeavors and educational opportunities in riparian areas.  |
| NR2  | Amend Salem Revised Code to implement provisions of the Endangered Species Act as they relate to floodplain development | In Process. Awaiting DLCDC modification of model ordinance to incorporate Endangered Species Act policies   |
| NR3  | Enhance natural functions for City-owned properties in the floodplain   | Ongoing. Projects continue to be implemented. The Phase 2 wetland mitigation project at Mill Creek Corporate Center has been implemented. The West Forest Restoration project at Minto Brown Island Park is in the fourth year of a five-year project.  |
| NR4  | Form Watershed Planning Committee   | No activity   |
| NR5  | Develop and maintain watershed management plans   | Completed. An element in the Stormwater Master Plan adopted under Ordinance 11-20 in October 2020. The master plan policy ensures ongoing generation of basin plans to prevent the 20-year delay in watershed plan updates experienced between years 2000 and 2020.   |
| NR6  | Streamline process to accept land donations to City for natural areas   | No activity   |
| NR7  | Increase quality and quantity of vegetative cover Urban Forestry has expanded an inventory of City owned trees.         | Ongoing. The City has contracts with multiple groups to plant and establish more trees along streets and on City owned properties. SRC 86 is undergoing updates to improve the species diversity of new tree plantings and clarify the process of protecting City owned trees. Salem's tree canopy continues to improve as a result of this and other key policies. |
| NR8  | Prepare a Flood Species Assessment in conformance with CRS Activity 510   | In process. Glenn-Gibson Watershed Council was awarded an Oregon Watershed Enhancement Board (OWEB) grant to begin preparation of a flood species assessment for Salem.   |

| Item | Description  | Status of Implementation/Effectiveness   |
|------|--|--|
| ES1  | Implement emergency response plans for critical facilities   | Ongoing. Implemented through City’s Emergency Management Plan. Response plans ensure that unique characteristics of critical facilities are addressed during emergencies to minimize disruption of essential services.                                       |
| ES2  | Create post-flood procedures for gathering flood data  | Ongoing. Flood data collector application tested during December 2019 flood event. Additional procedures postponed.  |
| ES3  | Improve flood warning and response   | Ongoing. Flood Warning and Response plan updates considered as part of annual review in Winter 2022. Mill Creek flood warning and response system is capable of notifying affected properties in advance of major flood events.                              |
| ES4  | Investigate dam failure threat to Salem and prepare plan   | Completed. Inventory approved by FEMA as part of CRS Class 4 application. Inundation maps are available to assist emergency responders in the case of a dam failure.   |
| ES5  | Create a levee inventory   | Completed. Inventory approved by FEMA as part of CRS Class 4 application. Levees in Salem have a limited impact upon areas subject to flooding.  |
| ES6  | Modify questionnaires that are used during flood events to improve data  | No activity  |
| ES7  | Investigate development of incentives for critical facilities and industries in the floodplain to develop flood warning and response plans | No activity  |
| ES8  | Implement post-disaster mitigation policies from the Emergency Management Plan   | Ongoing. Post-disaster policy improvements discussed at January 2019 Flood Tabletop Exercise performed at the EOC level and recommended a SEMP annex update.   |
| SP1  | Construct stormwater capital improvement projects  | Ongoing. Implemented through City’s Capital Improvement Program. Recent projects include a flood mitigation project on Clark Creek at Ratcliff Drive and Goldcrest Brook Stormwater Improvements.  |
| SP2  | Include damage assessments from Natural Hazard Mitigation Plan as a criterion for prioritizing CIP projects                                | Completed. Included as Policy 3.12 (Flood Risks and Capital Project Criteria) in Stormwater Master Plan adopted under Ordinance 11-20 in October 2020. This policy clarifies prioritization of CIP projects to ensure that damage assessments are addressed. |

| Item | Description   | Status of Implementation/Effectiveness   |
|------|---|--|
| SP3  | Update Stormwater SDC methodology consistent with Stormwater Master Plan to provide funding for capital projects              | Completed. Resolution No. 2019-7 was adopted by Council on February 25, 2019, with limited modifications to Stormwater SDCs. A major update to the Stormwater SDC methodology is planned after additional basin plans are completed in order to an updated project list based on current information.  |
| PI1  | Require hazard disclosure in real-estate transactions   | No activity  |
| PI2  | Implement a Program for Public Information  | Ongoing. See Attachment 2. City staff has observed in multiple training events that the overall knowledge of flood-related issues has increased over time in the community.  |
| PI3  | Improve information on City website regarding floodplain management as needed to improve CRS rating                           | Completed. Annual review scheduled as part of CRS recertification, conducted prior to October 1, 2022. Residents have a variety of floodplain management information.  |
| PI4  | Coordinate floodplain management outreach efforts with the City’s stormwater program implementation activities.               | Ongoing. Floodplain management staff continues to coordinate with Public Works Outreach and Education Coordinators. Urban Streamside Program Coordinator was hired in Spring of 2022 and will focus on efforts to improve outreach to streamside residents. This coordination will optimize and minimize duplication of effort between floodplain management and stormwater management programs. |
| PI5  | Compile and improve outreach materials to guide property owners in planting and habitat restoration of flood-prone properties | Ongoing. Green Stormwater Infrastructure guides were added to City’s website to encourage natural infrastructure methods on private property. Through this and other outreach efforts, stream side property owners have more tools available to create natural environments along waterways.   |
| PI6  | Improve outreach regarding protection of tree canopy for reducing stormwater runoff   | Ongoing. SRC 808 “Preservation of Trees and Vegetation” ordinance was updated to include protection of all trees over 30- inches. Outreach opportunity options to be coordinated with new Stormwater Outreach Coordinator.   |

Action plan activities labeled as “completed” above are not under consideration as possible activities in the updated action plan. All other activities from the 2018 action plan and its annual review amendments are analyzed in revised Appendix D for consideration to be included in the updated action plan.



## Updated Action Plan Items

A detailed description of each Action Plan item is included in Appendix E as tabulated below in Table 17. Item numbers reflect the general floodplain management category of each activity: preventive activities (PA), property protection activities (PP), natural resource protection activities (NR), emergency services measures (ES), structural projects (SP), and public information activities (PI). The prioritization of each action plan item depicted in the “Time Line” column, which varies in implementation from zero to five years. Responsibility for implementation and availability of funding is included in Appendix E.

Table. 17 Floodplain Action Plan Items with Goals and Timeline

| Plan Ref. # | Activity Description   | Timeline  | Plan Goals |   |   |   |   |   |   |   |
|-------------|--|-----------|------------|---|---|---|---|---|---|---|
|             |  |           | 1          | 2 | 3 | 4 | 5 | 6 | 7 |   |
| PA1         | Inspect streams and water quality/flow control stormwater facilities annually  | Ongoing   |            | X |   |   |   |   | X |   |
| PA2         | Promote low impact development practices in development and redevelopment projects   | Ongoing   |            |   |   |   | X | X |   |   |
| PA3         | Create 100-year inundation maps using data from Stormwater Master Plan   | 0-2 years |            | X |   |   |   |   | X |   |
| PA4         | Provide additional staff training in administering regulations   | 0-2 years |            | X |   | X | X |   |   |   |
| PA5         | Coordinate stormwater and flood management regulations with communities and organizations that share Salem’s watersheds                              | Ongoing   |            |   |   | X |   |   |   |   |
| PA6         | Improve program for periodic site inspections of existing development within the floodplain  | Ongoing   | X          | X |   | X |   |   |   |   |
| PA7         | Protect buildings from shallow flooding by providing positive drainage to a public stormwater system   | 3-5 years | X          | X |   |   |   | X |   | X |
| PA8         | Modify density requirements in floodplains to increase open space  | 3-5 years | X          |   | X |   |   |   | X |   |
| PA9         | Limit fill, buildings, and/or material storage in floodplain   | 0-2 years |            | X |   |   |   | X | X |   |
| PA10        | Adopt compensatory storage requirements for development in the floodplain (1.5 to 1)   | 0-2 years |            | X | X |   |   | X |   |   |
| PA11        | Collect data and conduct analysis to detect variations in trends and changes in historic weather patterns  | Ongoing   |            | X | X |   |   |   |   | X |
| PA12        | Improve clarity in Stormwater Management Design Standards regarding infiltration testing requirements and determination of infiltration feasibility. | 0-2 years |            |   |   |   |   |   | X |   |

| Plan Ref. # | Activity Description  | Timeline  | Plan Goals |   |   |   |   |   |   |
|-------------|---|-----------|------------|---|---|---|---|---|---|
|             |   |           | 1          | 2 | 3 | 4 | 5 | 6 | 7 |
| PA13        | Update the official “waterways” geodatabase to incorporate field-verified information   | 0-2 years |            |   |   | X |   | X |   |
| PA14        | Pursue a variety of flood prevention and mitigation strategies, including incentivizing property owners to make improvements that incorporate green infrastructure. | 3-5 years |            | X |   |   | X | X |   |
| PP1         | Improve floodplain protection assistance program  | Ongoing   |            | X |   |   | X |   | X |
| PP2         | Implement Flood Insurance Plan  | Ongoing   |            | X |   |   | X |   | X |
| PP3         | Investigate financial assistance program for Elevation Certificates and Letter of Map changes   | 0-2 years |            | X |   |   | X |   |   |
| PP4         | Establish a volunteer green stormwater cleaning program   | Ongoing   |            |   |   |   | X | X |   |
| PP5         | Develop a program for private or public acquisition of floodplain land and restoration of these floodplains to prevent future damage from flooding.                 | Ongoing   | X          |   |   |   | X |   | X |
| NR1         | Provide grant funding for restoration projects in riparian areas  | Ongoing   |            |   |   |   |   | X |   |
| NR2         | Amend Salem Revised Code to implement provisions of the Endangered Species Act as they relate to floodplain development   | 0-2 years |            |   |   | X |   | X |   |
| NR3         | Increase quality and quantity of vegetative cover.  | Ongoing   |            |   |   |   |   | X |   |
| NR4         | Prepare a Flood Species Assessment in conformance with CRS Activity 510   | 0-2 years |            | X |   |   |   | X |   |
| NR5         | Provide incentives for floodplain restoration and vegetation  | Ongoing   |            |   |   |   |   | X |   |
| NR6         | Create natural floodplain functions plan  | 0-2 years |            | X |   |   |   | X |   |
| NR7         | Acquire open space lands in floodplains to preserve natural functions   | Ongoing   |            |   |   |   |   | X | X |
| NR8         | Provide information and resource assistance to streamside owners regarding stream stabilization and riparian enhancement projects                                   | Ongoing   |            | X |   |   |   | X | X |
| ES1         | Prepare Substantial Damage Management Plan in conformance with CRS Activity 510   | 0-2 years |            | X | X |   | X |   | X |
| ES2         | Implement emergency response plans for critical facilities  | Ongoing   | X          |   |   | X | X |   | X |

| Plan Ref. # | Activity Description   | Timeline  | Plan Goals |   |   |   |   |   |   |
|-------------|--|-----------|------------|---|---|---|---|---|---|
|             |  |           | 1          | 2 | 3 | 4 | 5 | 6 | 7 |
| ES3         | Create post-flood procedures for gathering flood data  | 3-5 years | X          | X |   | X |   |   | X |
| ES4         | Improve flood warning and response   | Ongoing   | X          |   |   | X |   |   | X |
| ES5         | Modify questionnaires that are used during flood events to improve data  | 0-2 years | X          | X |   |   |   |   | X |
| ES6         | Investigate development of incentives for critical facilities and industries in the floodplain to develop flood warning and response plans | 0-2 years | X          | X |   |   |   |   | X |
| ES7         | Implement post-disaster mitigation policies from the Emergency Management Plan   | Ongoing   | X          | X |   | X |   |   | X |
| SP1         | Construct stormwater capital improvement projects  | Ongoing   | X          | X |   |   |   | X |   |
| SP2         | Implement and update the City's Stormwater Retrofit Plan and Hydromodification Assessment Report.  | Ongoing   |            | X | X |   |   |   |   |
| PI1         | Require hazard disclosure in real-estate transactions  | 0-2 years |            |   |   |   | X |   | X |
| PI2         | Implement a Program for Public Information   | Ongoing   |            | X |   | X | X |   | X |
| PI3         | Coordinate floodplain management outreach efforts with the City's stormwater program implementation activities.                            | Ongoing   |            |   |   | X |   |   |   |
| PI4         | Compile and improve outreach materials to guide property owners in planting and habitat restoration of flood-prone properties              | Ongoing   |            | X |   | X |   |   |   |
| PI5         | Improve outreach regarding protection of tree canopy for reducing stormwater runoff  | 3-5 years |            | X |   | X |   | X |   |
| PI6         | Establish a storm drain and catch basin marking program.   | Ongoing   |            |   |   |   |   | X |   |

## Adoption

Prior to the public comment period, a draft version of the 2023 FMP Update was included as an information item on the City Council agenda for October 23, 2023. Upon incorporating comments into the draft document, the final 2023 FMP Update was adopted by City Council under Resolution **2023-XX on November 27, 2023.**

## Plan Evaluation and Update

In order to be implemented effectively, the Floodplain Management Plan will be

regularly monitored and evaluated. The Public Works Director and Community and Urban Development Director will oversee the implementation and evaluation of the Floodplain Management Plan with assistance from the Floodplain Management Plan advisory committee or equivalent. The advisory committee will hold annual meetings at a minimum but may meet more frequently, as warranted, to effectively monitor progress of the plan implementation. An annual evaluation report will be submitted as an information report to City Council, made available to the media, and posted on the City's website.

## **Bibliography**

Placeholder for final bibliography



## **Glossary of Abbreviations**

**CERT** - Community Emergency Response Team

**CIP** - Capital Improvements Program

**CMO** - City Manager's Office

**CIP** - Flood Insurance Coverage Improvement Plan

**CPI** - Coverage Improvement Plan Implementation

**CRS** - Community Rating System

**DEQ** - Oregon Department of Environmental Quality

**DFH** - Disclosure of Flood Hazard

**DLCD** - Oregon Division of Land Conservation and Development

**EMI** - Emergency Management Institute

**ES** - Emergency Services (Measure)

**FAA** - Financial Assistance Advice

**FEMA** - Federal Emergency Management Agency

**FIRM** - Flood Insurance Rate Map

**FIS** - Flood Insurance Study

**FMP** - Floodplain Management Plan

**GIS** - Geographic Information System

**HBA** - Home Builders Association

**LDP** - Local Drainage Protection

**LIB** - Flood Protection Library

**LID** - Low Impact Development=

**LPD** - Locally Pertinent Documents

**MS4** - Municipal Separate Storm Sewer System

**NFIP** - National Flood Insurance Program

**NHMP** - City of Salem Natural Hazards Mitigation Plan

**NR** - Natural Resource Protection (Activity)

**PA** - Preventive Activity

**PCWMP** - Pringle Creek Watershed Management Plan

**PI** - Public Information (Activity)

**PP** - Property Protection (Activity)

**PPA** - Property Protection Advice

**PPI** - Program for Public Information

**PPV** - Property Protection After Visit

**PW** - Public Works

**RB** - Real Estate Brochure

**RC** - Residential and Commercial Area

**SDR** - Stream Dumping Regulations

**SP** - Structural Project

**SRC** - Salem Revised Code

**STK** - Stakeholder Delivery

**SWMP** - City of Salem Stormwater Management Plan

**TA** - Technical Assistance

**TSP** - City of Salem Transportation System Plan

**UD** - Urban Development

**UGB** - Urban Growth Boundary

**WEB** - Flood Protection Website

**Appendix A:**

**Council Report**

**Place Holder for Council Report**

**Appendix B:**  
**Committee Meeting Materials**



## City of Salem

### Floodplain Management Plan 2023 Update

Thursday, September 7, 2023 from 12:00 PM – 2:00 PM

City Hall, Public Works Department, Traffic Control Conference Room 555 Liberty St SE, Room 325

Si necesita ayuda para comprender esta información, por favor llame 503-588-6178

#### PARTICIPANTS

##### Committee Members:

E.M. Easterly, Mike Erdman, Cory Poole, John Shepard, Jeff Leach, Steve Ward, Natalie Janney, Nathan Good, Kathleen Dewoina, Chris Christiansen, Anthony Nunn

##### City Staff:

Robin Dalke, Olivia Dias, Laurel Christian, Justin Boyington, Anita Panko, Jennifer Mongolo, Trevor Smith, Al Rossi, Nitin Joshi

#### AGENDA

1. Welcome and Introductions
2. Overview and Committee Purpose
3. Floodplain Management Plan Update
  - a. Purpose and Elements of the Plan
  - b. Public Involvement
  - c. Agency and Organization Coordination
  - d. Hazard Assessment and Problem Evaluation
4. Floodplain Information and Outreach Plan
  - a. Purpose of the Plan
  - b. Assess Public Information Needs
  - c. Inventory of Public Outreach Projects
5. Flood Insurance Plan
  - a. Purpose of the Plan
  - b. Flood Insurance Coverage Assessment
  - c. Coverage Improvement Plan
6. Committee Discussion and Next Steps

#### ADDITIONAL MEETING DETAILS

Floodplain Management Plan updates and meeting documents will be available at this link:

<https://www.cityofsalem.net/community/safety/flooding/floodplain-management-plan-update-2023>

**Point of Contact:** Robin Dalke, Certified Floodplain Manager, [Rdalke@cityofsalem.net](mailto:Rdalke@cityofsalem.net), 503-588-6211 ext. 7443.

Special accommodations are available, upon request, for persons with disabilities or those needing sign language interpretation, or languages other than English. To request accommodations or services, please call 503-540-2371 (711 for Relay) at least two business days in advance.

It is the City of Salem's policy to assure that no person shall be discriminated against on the grounds of race, religion, color, sex, marital status, familial status, national origin, age, mental or physical disability, sexual orientation, gender identity, and source of income, as provided by Salem Revised Code 97. The City of Salem also fully complies with Title VI of the Civil Rights Act of 1964, Americans with Disabilities Act of 1990, and related statutes and regulations, in all programs and activities.



**Floodplain Management Plan 2023 Update**  
**Meeting Minutes**  
**September 7, 2023**  
**12:00 p.m. – 2:00 p.m.**  
**City Hall, 555 Liberty St SE**  
**Public Works Department, Traffic Control Conference Room 325**

Members present: E.M. Easterly, Mike Erdmann, John Shepard, Jeff Leach, Steve Ward, Natalie Janney, Mark Grenz, Nathan Good, Kathleen Dewoina, Chris Christiansen, Anthony Nunn, Robin Dalke, Laurel Christian, Justin Boyington, Anita Panko, Jennifer Mongolo, Trevor Smith, Al Rossi, Nitin Joshi, Ryan McGraw, Joe Hutchinson

Members absent: Olivia Dias, Corey Poole

1. Welcome and Introductions
2. Overview and Committee Purpose
  - a. PowerPoint Presentation including background and objectives of Floodplain Management Plan
  - b. Committee's role
3. Floodplain Management Plan
  - a. Purpose and Elements of the Plan
    - Committee discussed the elevation certificate (EC) program and criteria for the program. Recommend that staff come up with recommendations for the program moving forward and include in the action summary sheet. Specifically, looking at expanding the EC program to commercial property.
      - Questions regarding if the program can be expanded to help with people outside of the Lidar program and still provide assistance with ECs.
    - Committee questioned when will the Interim Flood Hard Area (IFHA) will available for the public as it is not currently posted on the website.
      - Committee recommends making this information available as soon as possible.
      - Committee wondered if there is a concern that FEMA will be involved in the data if we make it publicly available? Specifically, if it would not trigger people to obtain flood insurance. Staff clarified, that the maps are not adopted by FEMA and would only be used to regulate new development in the floodplain.
      - Committee recommends a public outreach campaign to encourage people to purchase flood insurance even though it is not required in the IFHA. Staff would need to do this with the adoption of the IFHA maps.
      - Committee discussed how can we prepare for coming restrictions on development in the floodplain based on the FEMA Biological Opinion? Staff is anticipating amendments to FEMA regulations coming that we should be incorporated into future plans.
  - b. Public Involvement
  - c. Agency and Organization Coordination

- d. Hazard Assessment and Problem Evaluation
  - Committee wondered how can we remove properties from the repetitive loss areas and if this should be a goal or action item in the plan?
  - Committee recommended looking at any FEMA grant funding for buyout programs.
  - Committee had Questions about the Repetitive Loss Area Analysis (RLAA) – If we have claims from the 2012 flood – it seems like 2022 would be the 10 years, so is it 2 claims in the 10 year period so we don't need to worry about the 2012 claims?
4. Flood Information and Outreach Plan (PPI)
  - a. Purpose of the Plan
    - Committee recommended including IFHA areas as a stakeholder.
    - Committee discussed new techniques to get information out.
  - b. Assess Public Information Needs
  - c. Inventory of Public Outreach Projects
5. Flood Insurance Plan (FIA)
  - a. Purpose of the Plan
  - b. Flood Insurance Coverage Assessment
    - Committee discussed private insurance versus FEMA backed insurance. Could this be where we are seeing the decrease?
    - Committee asked if we are able to get the data on private insurance. Staff only has access to FEMA backed policies.
    - Committee recommended adding a banker or mortgage lender to add to the group so we can have some information on flood insurance.
    - Committee asked staff to get updated information from FEMA on policy counts so we have better data from Risk Rating 2.0.
  - c. Coverage Improvement Plan
5. Committee Discussion
  - Committee questioned if there are opportunities for the former Mill Creek Correctional site.
  - Committee asked if staff could perform an evaluation of properties that we could acquire for increased flood storage areas. This would be a longer term project
  - Committee asked for information on private insurance rates. Staff understands the scope of coverage is also different.
  - Committee discussed Lloyds of London.
  - Committee asked for an update on the FEMA biological opinion at the next meeting and questioned when we should begin to apply the coming regulations. Staff is waiting until making code changes until the final changes are adopted by FEMA.
  - Committee asked if staff can add IFHA base flood elevations (BFE) to a new webpage that is easier to find.
6. Adjourn – Meeting ended at 1:20 p.m. Next Meeting is scheduled for Thursday, September 21, 2023 at 12:00 p.m.



## City of Salem

### Floodplain Management Plan 2023 Update

Thursday, September 21, 2023 from 12:00 PM – 2:00 PM

City Hall, Public Works Department, Traffic Control Conference Room 555 Liberty St SE, Room 325

Si necesita ayuda para comprender esta información, por favor llame 503-588-6178

#### PARTICIPANTS

##### Committee Members:

E.M. Easterly, Mike Erdman, Cory Poole, John Shepard, Jeff Leach, Steve Ward, Natalie Janney, Nathan Good, Kathleen Dewoina, Chris Christiansen, Anthony Nunn, Ethan Manela, Dynee Medlock

##### City Staff:

Robin Dalke, Olivia Dias, Laurel Christian, Joe Hutchinson, Anita Panko, Jennifer Mongolo, Trevor Smith, Al Rossi, Nitin Joshi

#### AGENDA

1. Floodplain Management Plan
  - a. Set Goals
  - b. Review Possible Activities
    - i. Compile Activities
    - ii. Review Criteria for Scoring
    - iii. Committee Recommendations
2. Coverage Improvement Plan (Flood Insurance Plan)
  - a. Review Coverage Improvement Plan Outreach and Project Goals
3. Program for Public Information (Flood Information and Outreach Plan)
  - a. Review and Formulate New Messages
  - b. Identify and Review Outreach Projects
  - c. Other Public Information Initiatives
4. Committee Discussion
  - a. Next Steps – Review Draft Plan
  - b. Identify Additional Information Needed

#### ADDITIONAL MEETING DETAILS

Floodplain Management Plan updates and meeting documents will be available at this link:

<https://www.cityofsalem.net/community/safety/flooding/floodplain-management-plan-update-2023>

**Point of Contact:** Robin Dalke, Certified Floodplain Manager, [Rdalke@cityofsalem.net](mailto:Rdalke@cityofsalem.net), 503-588-6211 ext. 7443.

**Next Meeting:** Tuesday, October 3, 2023 from 12:00 PM – 2:00 PM

Special accommodations are available, upon request, for persons with disabilities or those needing sign language interpretation, or languages other than English. To request accommodations or services, please call 503-540-2371 (711 for Relay) at least two business days in advance.

It is the City of Salem's policy to assure that no person shall be discriminated against on the grounds of race, religion, color, sex, marital status, familial status, national origin, age, mental or physical disability, sexual orientation, gender identity, and source of income, as provided by Salem Revised Code 97. The City of Salem also fully complies with Title VI of the Civil Rights Act of 1964, Americans with Disabilities Act of 1990, and related statutes and regulations, in all programs and activities.

**Floodplain Management Plan 2023 Update**  
**Meeting Minutes**  
**September 21, 2023**  
**12:00 p.m. – 2:00 p.m.**  
**City Hall, 555 Liberty St SE**  
**Public Works Department, Traffic Control Conference Room 325**

Members present: E.M. Easterly, Mike Erdmann, John Shepard, Jeff Leach, Steve Ward, Natalie Janney, Mark Grenz, Nathan Good, Kathleen Dewoina, Chris Christiansen, Anthony Nunn, Robin Dalke, Laurel Christian, Justin Boyington, Anita Panko, Jennifer Mongolo, Trevor Smith, Al Rossi, Nitin Joshi, Ryan McGraw, Joe Hutchinson, Olivia Dias

Members absent: Justin Boyington, Corey Poole

1. Floodplain Management Plan

a. Set Goals

- Committee had no objections to using the Natural Hazards Mitigation Plan (NHMP) goals.

b. Review Possible Activities

i. Compile Activities

ii. Review Criteria for Scoring

iii. Committee Recommendations on activities:

- Look closely at timelines for action items due to staffing issues.
- PA2 – needs to be clarified to stormwater facilities and publicly owned.
- PA9 – needs to expand on this program.
- PA12 – clarify what this means in the short description
- PA14 – Not adopted through Salem Area Comprehensive Plan (SACP) so scored negatively. The SACP more appropriate place for a new zone.
- Item 41 – Item related to FEMA upcoming Biological Opinion (BIOP) – Density swapping for undevelopable areas would be a good recommendation. Density bank to be used off-site? Can this be a process that is not a PUD? Need to look at this with the BIOP.
- Item 45 – Needs to be implemented with the BOIP.
- Should livability be a scoring criteria?
- Recommend land acquisition activities be scored positively.
- Item 53: Needs to be more clear in the table and in the scoring sheet.
- Item 52: Why was this negatively scored? Previously informally informed by FEMA we would not be supported. Our GIS program exceeds FEMA resources.
- Item 63 – Recommend scoring action positively.
- Item 67 – why was this negatively scored? There is a Dedicated Climate Action Plan (CAP) manager. Harder to justify solely for flood purposes.
- Item 62 – Recommend scoring negatively since this program is for water quality and not quantity.
- Item 80 – How are we incentivizing existing developments? SDC? Utility rates? What are the incentives? Credit program from the past? Can we

look at that program and make it easier to go through? Incentives for parking lot rehab – can they have a lower threshold to meet? What about pervious pavement for rehab projects without requiring GSI? Green stormwater is very expensive. Takes a lot of land also. Subsidy or grants for GSI for rehab projects? If we are touching the dirt can we do mechanical treatment? Seems like the standards should treat rehab projects differently than new projects so we can get something rather than nothing.

- NR8 –Rescore positively. Also rescore 39 under natural resources.
- NR36 Why did 50-foot score low? We are waiting for the BIOP to determine the appropriate riparian buffer.
- What items will improve our CRS program? All items improving CRS program should be identified in activity sheets.
- 2012 Flood cause? Build up of debris and lumber that created a Dam. City removal of debris programs? Also questions about waller dam, silt and natural vegetation. How is this mitigation happening? And how are we cleaning them? Seems like this program needs work. Dam needs to be cleaned.
- Should the plan address this cause of flooding during 2012? Look at language for the beginning of the plan introduction and how we look at the 2012 flood.
- Can we add lessons learned from the previous flood events?
- Waller Dam study hopefully coming because the City is working on grants.
- Plan needs a date updated annually for document protection.

## 2. Program for Public Information (Flood Information and Outreach Plan)

- a. Review and Formulate New Messages
- b. Identify and Review Outreach Projects
- c. Other Public Information Initiatives

## 3. Coverage Improvement Plan (Flood Insurance Plan)

- a. Review Coverage Improvement Plan Outreach and Project Goals
  - Would we put public versus private insurance information . Consider updating annual mailer with additional flood insurance information. The title of the letter on the presentation is not grabbing enough people.
  - Can we ask neighborhood associations to take surveys within their areas?
  - Risk Rating 2.0 messaging.

## 4. Committee Discussion

- a. Next Steps – Review Draft Plan
- b. Identify Additional Information Needed

## 5. Adjourn – Meeting ended at 2:00 p.m. Next Meeting is scheduled for Wednesday, October 4, 2023 at 11:00 a.m.





## City of Salem

### Floodplain Management Plan 2023 Update

Wednesday, October 4, 2023 from 11:00 PM – 1:00 PM

City Hall, Public Works Department, Traffic Control Conference Room 555 Liberty St SE, Room 325

Si necesita ayuda para comprender esta información, por favor llame 503-588-6178

#### PARTICIPANTS

##### Committee Members:

E.M. Easterly, Mike Erdman, Cory Poole, John Shepard, Jeff Leach, Steve Ward, Natalie Janney, Mark Grenz, Nathan Good, Kathleen Dewoina, Chris Christiansen, Anthony Nunn, Ethan Manela, Dynee Medlock, Toni Kirk

##### City Staff:

Robin Dalke, Olivia Dias, Laurel Christian, Justin Boyington, Joe Hutchinson, Anita Panko, Jennifer Mongolo, Trevor Smith, Al Rossi, Nitin Joshi

#### AGENDA

1. Floodplain Management Plan
  - a. Review Scored Activities – Final List
  - b. Discuss Draft Plan and Comments
  - c. Final Plan Recommendations
2. Coverage Improvement Plan (Flood Insurance Plan)
  - a. Review Draft Plan Changes
3. Program for Public Information (Flood Information and Outreach Plan)
  - a. Review Draft Plan Changes
4. Committee Discussion
  - a. Next Steps – Draft Plan Info Report to Council for Public Comment
  - b. Recommendation to Council

#### ADDITIONAL MEETING DETAILS

Floodplain Management Plan updates and meeting documents will be available at this link:

<https://www.cityofsalem.net/community/safety/flooding/floodplain-management-plan-update-2023>

**Point of Contact:** Robin Dalke, Certified Floodplain Manager, [Rdalke@cityofsalem.net](mailto:Rdalke@cityofsalem.net), 503-588-6211 ext. 7443.

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**Floodplain Management Plan 2023 Update**  
**Meeting Minutes**  
**October 4, 2023**  
**11:00am – 1:00pm**  
**City Hall, 555 Liberty St SE**  
**Public Works Department, Traffic Control Conference Room 325**

Members present: Steve Ward, Mike Erdman, Natalie Janey, Mark Grenz, Kathleen Dewoina, E.M. Easterly, Jeff Leach, Dynee Medlock, Ethan Manela, John Shepherd, Toni Kirk, Cory Poole, Trevor Smith, Nitin Joshi, Anita Panko, Justin Boylinton, Joe Hutchinson, Olivia Dias, Al Rossi, Robin Dalke, Laurel Christian

Members absent: Anthony Nunn, Chris Christiansen, Jennifer Mongolo,

1. Floodplain Management Plan

a. Review Scored Activities – Final List

- Committee discussed scoring activities and how the scoring works.
- Committee discussed that the plan is a guiding document over the next years
- Reviewed scoring structure at the next 5-year update, the scoring structure is not great.
- Staff prefers to limit activities adopted into the plan so that efforts can be more focused annually.
- Committee would like a revised sheet that is sorted by what scored highest. Send out so they can review.
- Committee wondered if item scored highest (3) would be more focused than items that scored (1).
- Committee discussed PA1, positively and likes that this is a priority. Natural benefit to leaving some things within the creek as natural.
- Committee discussed low impact development (LID) practices. Ensure LID is within the acronym list. We should look at the annual update to clarify the work completed by the consultant.
- PA10 – Why is this mixed in costs. Robin views this as mixed for costs, stakeholders at the state might feel differently that stakeholders who are impacted by the regulations.
  - Staff clarified that stakeholders vary by activity.
  - This should score negatively if we only looked at builders/developers.
  - This is an activity that will be required from FEDS/State.
  - Those impacted by development downstream would have mixed reviews on storage requirements. Higher costs for downstream development.
  - Same concerns with PA9
- Should our action sheets include stakeholders?
- PA12 – Stakeholder impacts should be positive? Mixed feelings in the room because the standards could be more clear but also more restrictive.
  - A lot of discussion about infiltration testing. Can we allow no infiltration testing with some stipulations? Assuming a factor of safety would only make facility larger if they are already designing for no infiltration. Maybe this only applies to simplified methods projects.

- Discussion about I&I and whether or not there are any action items relating to this? Program to install check valves? Maybe this is something we can look at?
  - Action item for incentivizing improvements? PA14-can we clarify incentivizing check valves? Is the more appropriate location in the sanitary sewer master plan?
    - Could this be messaging rather than an action item? Could this go into the narrative of PP1?
- b. Discuss Draft Plan and Comments (Action Plan Summary Sheets)
- PA8 – Caution not to define it too closely in order to restrict. Should this only be restricted to single-family developments? Planned unit development could allow more flexibility. Density swaps are not supported by staff at this time. Can we add the BiOP buildable land language to add to the action sheet? Buildable land inventory also needs to be updated.
  - PA9 – Discussed ordinance coming. Concerns about takings.
  - PA10 – Equal conveyance versus equal storage. Do we need to clarify this language?
  - PA11
  - PA12
  - Questions about compiling information from 2012 flood? No immediate plans. Can we provide what we sent to FEMA?
  - PA14 – Add back flow incentives for homes with basements.
  - PA4 – Add neighborhood associations to external partners and include as outreach.
  - P16 – No dumping signs along Mill Creek for Waller Dam area.
- c. Final Plan Recommendations
- Committee would like a copy of the final version with all attachments ahead of the 23<sup>rd</sup>.
  - Ensure Mark gets the current mailing list.
  - EM wants to be identified as part of the Glenn Gibson Watershed Council.
2. Program for Public Information (Flood Information and Outreach Plan)
- a. Review draft plan changes
- Discussed minor changes and new stakeholders.
  - Discussed who gets mail notices – not all zone X – but people within a buffered area of the regulated floodplain area. Messaging should probably start going to the IFHA areas, even before they are adopted.
3. Coverage Improvement Plan (Flood Insurance Plan)
- a. Review draft plan changes
- Discussed minor changes and new information for why insurance rates have gone down and some information about private vs. public insurance.
  - Discussed refinancing and homes being mortgages with not federally backed loans that no longer require FEMA federally backed insurance.
4. Committee Discussion
5. Adjourn – Meeting ended at 1:50 p.m. No additional committee meetings are scheduled.

## **Appendix D:**

### **Notification Letter and Mailing List**



**Public Works Department**

555 Liberty Street SE / Room 325 • Salem OR 97301-3513 • Phone 503-588-6211 • Fax 503-588-6025

**Si usted necesita esta información traducido, por favor llame 503-588-6211.**

August 30, 2023

**SUBJECT: City of Salem Floodplain Management Plan Update**

To Whom it May Concern:

The City of Salem (City) has initiated a planning process for a 5-year update to the previously adopted City of Salem Floodplain Management Plan (Plan Update). The overall goals of the Plan Update are to identify new flood hazards, update the program of identified activities to mitigate flood hazards, and coordinate mitigation activities to prevent conflicts with other community needs.

The City is following a ten-step planning process consistent with Federal Emergency Management Agency (FEMA) guidelines and anticipates completing the process by the end of December, 2023. An important step in the planning process is coordination with outside agencies to ensure the Plan Update is consistent with goals, policies, and plans already adopted in the surrounding community.

We invite outside agencies and community groups to participate in the process by submitting written testimony, providing links to existing adopted plans, scheduling individual meetings with City staff, or other opportunities for coordination. You can review meeting agendas and the current Floodplain Management Plan on the City’s website at: <https://www.cityofsalem.net/community/safety/flooding/floodplain-management-plan-update-2023>. We anticipate a draft of the Plan Update will be available for public review by mid-October. We encourage public review and input on the draft Plan Update and appreciate feedback prior to its finalization by the end of December, 2023.

If you would like to participate in the planning process, provide technical materials that would assist the advisory committee, schedule an individual discussion, or would like more information about City floodplain management planning, please contact me at [rdalke@cityofsalem.net](mailto:rdalke@cityofsalem.net) or submit written materials to the Public Works Department, 555 Liberty Street SE, Room 325, Salem, Oregon 97301.

Thank you for helping coordinate the City’s floodplain management planning process.

Sincerely,

Robin Dalke, C.F.M.  
Floodplain Administrator

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cc: File

**Transportation and Utility Operations**

1410 20<sup>th</sup> Street SE / Building 2  
Salem OR 97302-1209  
Phone 503-588-6063  
Fax 503-588-6480

**Parks Operations**

1460 20<sup>th</sup> Street SE / Building 14  
Salem OR 97302-1209  
Phone 503-588-6336  
Fax 503-588-6305

**Willow Lake Water Pollution Control Facility**

5915 Windsor Island Road N  
Keizer OR 97303-6179  
Phone 503-588-6380  
Fax 503-588-6387

## Appendix C – Agency Notification Letter Mailing List

| <b>Federal Agencies</b>   |  |
|---|--|
| US Bureau of Reclamation<br><a href="#">Pacific Northwest Regional Office</a><br>1150 North Curtis Road, Suite 100<br>Boise, Idaho 83706-1234   | Oregon National Resources Conservation<br>Science - Salem Service Center<br>650 Hawthorne Ave SE STE 130<br>Salem, OR 97301-5894 |
| U.S. Army Corps of Engineers, Portland District<br>Attention: CENWP-OP-G<br>P.O. Box 2946<br>Portland, OR 97208-2946  | Federal Emergency Management Agency<br>Federal Regional Center<br>130 228th Street, SW<br>Bothell, WA 98021-8627                 |
| National Weather Service<br>NWS Local Coordinator<br>5241 NE 122 <sup>nd</sup> Ave<br>Portland OR 97230   | USGS National Flood Hazard Coordinator<br>1730 East Parham Road<br>Richmond, VA 23228  |
| <b>Neighboring Cities and Counties</b>  |  |
| City of Independence<br>PO Box 7<br>Independence, OR 97351-2420   | City of Monmouth<br>151 Main Street W<br>Monmouth, OR 97361-2136   |
| City of Stayton<br>362 N 3 <sup>rd</sup> Ave<br>Stayton, OR 97383-1726  | City of Turner<br>PO Box 456<br>Turner, OR 97392-9452  |
| City of Aumsville<br>595 Main St<br>Aumsville, OR 97325-9005  | City of Corvallis<br>501 SW Madison Ave<br>Corvallis, OR 97333-4601  |
| City of Albany<br>333 Broadalbin St SE<br>Albany, OR 97321-2247   | City of Keizer<br>PO Box 21000<br>Keizer, OR 97307   |
| Marion County<br>P.O. Box 14500<br>Salem, OR 97309-5036   | Polk County<br>850 Main Street<br>Dallas, OR 97338-3128  |
| <b>State and Regional Agencies</b>  |  |
| State National Flood Insurance Program (NFIP)<br>Coordinator<br>Deanna Wright, NFIP Coordinator<br>Oregon Dept. of Land Conservation and<br>Development<br>635 Capitol Street NE, Suite 150<br>Salem, OR 97301-2540 | Oregon Department of Agriculture<br>Natural Resources Division<br>635 Capitol Street NE<br>Salem, OR 97301-2532                  |
| Marion County Emergency Management<br>5155 Silverton Road NE<br>Salem, OR 97305-3802  | Oregon Emergency Management<br>P.O. Box 14370<br>Salem, OR 97309-5062  |
| Polk County Emergency Management<br>820 SW Ash St<br>Dallas, OR 97338-3185  | Oregon Department of Environmental Quality<br>DEQ Headquarters Office<br>700 NE Multnomah St #600<br>Portland OR 97232-4100      |
| Suburban East Salem Water District<br>3805 La Branch St SE  | Oregon Department of Fish and Wildlife<br>(ODFW)   |



## Appendix C – Agency Notification Letter Mailing List

|   |  |
|---|--|
| Salem OR 97317-5373   | 4034 Fairview Industrial Dr SE<br>Salem, OR 97302-1142   |
| ODA Soil and Water Conservation District<br>(SWCD)<br>Natural Resources Division<br>635 Capitol Street NE<br>Salem, OR 97301-2532 |  |
| <b>Local Watershed Councils and Associations</b>  |  |
| Network of Oregon Watershed Councils<br>Vanessa Green, M.S., Executive Director<br>PO Box 3082<br>Hillsboro, OR 97123             | Salem-Keizer Urban Watershed Councils,<br>Association<br>650 Hawthorne Ave SE, Suite 130<br>Salem, OR 97301-5894 |
| <b>Local Interested Organizations</b>   |  |
| Oregon Red Cross – Willamette Chapter<br>1860 Hawthorne Ae NE<br>Salem OR 97301   | Oregon State Chamber of Commerce<br>991 Liberty St SE<br>Salem, OR 97302   |
| Oregon Home Builders Association<br>2075 Madrona Ave SE #150<br>Salem, OR 97302-1149  |  |

## Appendix D:

### Possible Activities

All possible activities were analyzed based on a scoring system of costs and benefits as shown in Table X. Numerical values for items in Table 18, which provides a Key for Table 19.

Table 18. Key to Table 19

| Column                                  | Description  | Numerical Score |       |          |
|---|--|-----------------|-------|----------|
|   |  | 0               | 1     | 2        |
| Availability of Funds                   | Availability of financial investments necessary to implement activity.   | High            | Low   | Very Low |
| Availability of Staff Resources         | The level of City staff resources need to implement the activity and available of staff time.                        | High            | Low   | Very Low |
| Stakeholder Impacts                     | The overall impact of the activity to stakeholders within the community.   | Positive        | Mixed | Negative |
| Already Required or Adopted             | Indicates whether existing plans or programs identify this activity as required or needed.                           | No              | Yes   | -        |
| Reduces Cost or Liability               | Indicates whether existing costs or known liabilities to the community will be reduced as a result of this activity. | No              | Mixed | Yes      |
| Enhances Livability and Improves Safety | Indicates whether this activity will enhance livability and improve safety within the community.                     | No              | Yes   | -        |
| CRS Points                              | Activity is eligible for Community Rating System (CRS) credit.   | No              | Yes   | -        |

Appendix D: Table 19. Review of Possible Activities with Scoring

| Activity Number              | Plan Reference Number | Activity Description   | Costs (C)             |                                 |                     |              | Benefits (B)                |                           |                                |            |              | Total (B-C) |
|------------------------------|-----------------------|--|-----------------------|---------------------------------|---------------------|--------------|-----------------------------|---------------------------|--------------------------------|------------|--------------|-------------|
|                              |                       |  | Availability of Funds | Availability of Staff Resources | Stakeholder Impacts | Subtotal (C) | Already required or adopted | Reduced cost or liability | Enhanced livability and safety | CRS Points | Subtotal (B) |             |
| <i>Preventive Activities</i> |                       |  |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 1                            |                       | Maintain benchmark data (Complete)   | 0                     | 1                               | 0                   | 1            | 0                           | 1                         | 0                              | 0          | 2            | -1          |
| 2                            | PA1                   | Inspect streams and water quality/flow control stormwater facilities annually  | 0                     | 1                               | 0                   | 1            | 1                           | 1                         | 1                              | 1          | 4            | 3           |
| 3                            | PA2                   | Promote low impact development practices in development and redevelopment projects   | 0                     | 0                               | 1                   | 1            | 1                           | 1                         | 1                              | 1          | 4            | 3           |
| 4                            | PA3                   | Create 100-year inundation maps using data from Stormwater Master Plan   | 1                     | 1                               | 1                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| 5                            | PA4                   | Provide additional staff training in administering regulations   | 0                     | 1                               | 0                   | 1            | 0                           | 1                         | 0                              | 1          | 2            | 1           |
| 6                            | PA5                   | Coordinate stormwater and flood management regulations with communities and organizations that share Salem's watersheds                              | 0                     | 0                               | 0                   | 0            | 1                           | 1                         | 1                              | 0          | 3            | 3           |
| 7                            | PA6                   | Improve program for periodic site inspections of existing development within the floodplain  | 0                     | 2                               | 0                   | 2            | 0                           | 1                         | 1                              | 1          | 3            | 1           |
| 8                            | PA7                   | Protect buildings from shallow flooding by providing positive drainage to a public stormwater system   | 0                     | 1                               | 1                   | 2            | 0                           | 1                         | 1                              | 1          | 3            | 1           |
| 9                            |                       | Investigate adoption of a new floodplain/natural area zone in the Salem Revised Code   | 0                     | 2                               | 1                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 41                           | PA8 (NEW)             | Modify density requirements in floodplains to increase open space  | 1                     | 1                               | 1                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| 42                           |                       | Provide variable detention requirements throughout the watershed to minimize peak flows during 100-year flood events                                 | 2                     | 2                               | 1                   | 5            | 0                           | 1                         | 1                              | 0          | 2            | -3          |
| 43                           |                       | Revise or update zoning ordinances to provide incentive, performance, or watershed-based zoning  | 1                     | 2                               | 1                   | 4            | 0                           | 1                         | 1                              | 1          | 3            | -1          |
| 45                           | PA9 (NEW)             | Limit fill, buildings, and/or material storage in floodplain   | 0                     | 1                               | 1                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 46                           |                       | Increase freeboard floor requirements  | 1                     | 1                               | 2                   | 4            | 0                           | 1                         | 1                              | 1          | 3            | -1          |
| 47                           |                       | Require engineered foundations in floodplain   | 1                     | 1                               | 2                   | 4            | 0                           | 1                         | 1                              | 1          | 3            | -1          |
| 48                           |                       | Restrict substantial improvements cumulatively   | 0                     | 2                               | 2                   | 4            | 0                           | 0                         | 0                              | 1          | 1            | -3          |
| 49                           |                       | Reduce substantial improvement threshold below 50%   | 0                     | 2                               | 2                   | 4            | 0                           | 0                         | 0                              | 1          | 1            | -3          |
| 50                           |                       | 500-year protection of critical facilities   | 2                     | 2                               | 1                   | 5            | 0                           | 1                         | 1                              | 1          | 3            | -2          |
| 51                           |                       | Analyze unmapped areas to create new flood studies   | 2                     | 2                               | 1                   | 5            | 0                           | 0                         | 1                              | 1          | 2            | -3          |
| 52                           |                       | Sign Cooperating Technical Partner agreement with FEMA   | 1                     | 1                               | 1                   | 3            | 0                           | 0                         | 0                              | 1          | 1            | -2          |
| 53                           | PA10 (NEW)            | Adopt compensatory storage requirements for development in the floodplain (1.5 to 1)   | 1                     | 0                               | 1                   | 2            | 0                           | 1                         | 1                              | 1          | 3            | 1           |
| 58                           |                       | Adopt more restrictive floodway standard   | 2                     | 1                               | 2                   | 5            | 0                           | 1                         | 1                              | 1          | 3            | -2          |
| 59                           | PA11 (NEW)            | Collect data and conduct analysis to detect variations in trends and changes in historic weather patterns  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 0          | 3            | 1           |
| 62                           |                       | Dry weather outfall and illicit discharge screening plan and inspection program  | 1                     | 1                               | 1                   | 3            | 1                           | 1                         | 1                              | 0          | 3            | 0           |
| 63                           | PA12 (NEW)            | Improve clarity in Stormwater Management Design Standards regarding infiltration testing requirements and determination of infiltration feasibility. | 0                     | 0                               | 1                   | 1            | 1                           | 0                         | 1                              | 1          | 3            | 2           |
| 64                           |                       | Evaluate existing codes and standards for LID and GSI approaches and prepare LID/GSI prioritization strategy   | 1                     | 1                               | 1                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 65                           | PA13 (NEW)            | Update the official "waterways" geodatabase to incorporate field-verified information  | 1                     | 1                               | 0                   | 2            | 1                           | 0                         | 1                              | 1          | 3            | 1           |
| 66                           |                       | Update the City's Operations Pollution Prevention Plan   | 1                     | 0                               | 0                   | 1            | 1                           | 0                         | 1                              | 0          | 2            | -1          |

Appendix D: Table 19. Review of Possible Activities with Scoring

| Activity Number                               | Plan Reference Number | Activity Description  | Costs (C)             |                                 |                     |              | Benefits (B)                |                           |                                |            |              | Total (B-C) |
|---|-----------------------|---|-----------------------|---------------------------------|---------------------|--------------|-----------------------------|---------------------------|--------------------------------|------------|--------------|-------------|
|   |                       |   | Availability of Funds | Availability of Staff Resources | Stakeholder Impacts | Subtotal (C) | Already required or adopted | Reduced cost or liability | Enhanced livability and safety | CRS Points | Subtotal (B) |             |
| 67  |                       | Incentivize the inclusion of smaller, walkable parks/open space in new, large, subdivision developments.  | 1                     | 1                               | 1                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 70  |                       | Provide assistance to local institutions to increase their own tree coverage and create spaces such as urban forests, community gardens, and pollinator habitats    | 2                     | 1                               | 0                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 71  |                       | Offer incentives/rebates to homeowners, businesses, and developers to install pervious surfaces with the goal of decreasing runoff and flooding.                    | 2                     | 1                               | 0                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 72  |                       | Identify areas (e.g., underutilized parking lots, empty malls/commercial space) that can be “de-paved” and converted to green space.                                | 2                     | 2                               | 0                   | 4            | 1                           | 0                         | 1                              | 0          | 2            | -2          |
| 80  | <b>PA14 (NEW)</b>     | Pursue a variety of flood prevention and mitigation strategies, including incentivizing property owners to make improvements that incorporate green infrastructure. | 1                     | 1                               | 1                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| <b>Property Protection Activities</b>         |                       |   |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 11  | <b>PP1</b>            | Improve floodplain protection assistance program  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 12  | <b>PP2</b>            | Implement Flood Insurance Plan  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 0                              | 1          | 3            | 1           |
| 13  |                       | Acquire easements for public and private stormwater facilities  | 2                     | 1                               | 0                   | 3            | 0                           | 2                         | 0                              | 0          | 2            | -1          |
| 14  | <b>PP3</b>            | Investigate financial assistance program for Elevation Certificates and Letter of Map changes   | 1                     | 1                               | 0                   | 2            | 1                           | 2                         | 0                              | 0          | 3            | 1           |
| 44  |                       | Acquire gravel pits/lakes for flood mitigation (\$24M)  | 2                     | 2                               | 0                   | 4            | 1                           | 1                         | 1                              | 0          | 3            | -1          |
| 54  |                       | Acquire repetitive loss / flood prone properties  | 2                     | 1                               | 1                   | 4            | 0                           | 1                         | 1                              | 1          | 3            | -1          |
| 55  |                       | Retrofit existing buildings or other structural protection  | 2                     | 2                               | 0                   | 4            | 0                           | 1                         | 1                              | 0          | 2            | -2          |
| 61  | <b>PP4 (NEW)</b>      | Establish a volunteer green stormwater cleaning program   | 0                     | 1                               | 0                   | 1            | 1                           | 1                         | 1                              | 0          | 3            | 2           |
| 73  | <b>PP5 (NEW)</b>      | Develop a program for private or public acquisition of floodplain land and restoration of these floodplains to prevent future damage from flooding.                 | 1                     | 1                               | 1                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| <b>Natural Resource Protection Activities</b> |                       |   |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 15  | <b>NR1</b>            | Provide grant funding for restoration projects in riparian areas  | 1                     | 0                               | 0                   | 1            | 1                           | 1                         | 1                              | 0          | 3            | 2           |
| 16  | <b>NR2</b>            | Amend Salem Revised Code to implement provisions of the Endangered Species Act as they relate to floodplain development   | 1                     | 0                               | 1                   | 2            | 1                           | 1                         | 1                              | 0          | 3            | 1           |
| 17  |                       | Enhance natural functions for City-owned properties in the floodplain   | 1                     | 1                               | 1                   | 3            | 0                           | 0                         | 1                              | 1          | 2            | -1          |
| 18  |                       | Form Watershed Planning Committee   | 0                     | 2                               | 0                   | 2            | 0                           | 0                         | 1                              | 0          | 1            | -1          |
| 19  |                       | Streamline process to accept land donations to City for natural areas   | 0                     | 2                               | 0                   | 2            | 0                           | 0                         | 1                              | 0          | 1            | -1          |
| 20  | <b>NR3</b>            | Increase quality and quantity of vegetative cover.  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 0          | 3            | 1           |
| 21  | <b>NR4 (NEW)</b>      | Prepare a Flood Species Assessment in conformance with CRS Activity 510   | 0                     | 0                               | 1                   | 1            | 0                           | 0                         | 1                              | 1          | 2            | 1           |
| 35  | <b>NR5 (NEW)</b>      | Provide incentives for floodplain restoration and vegetation  | 1                     | 2                               | 0                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| 36  |                       | Create a 50-foot riparian setback for all development   | 1                     | 1                               | 1                   | 3            | 0                           | 1                         | 1                              | 0          | 2            | -1          |
| 37  |                       | Establish local ordinance for wetland protection  | 2                     | 1                               | 1                   | 4            | 0                           | 1                         | 1                              | 0          | 2            | -2          |
| 38  |                       | Expand erosion control program to include projects over 1 acre  | 0                     | 2                               | 1                   | 3            | 0                           | 0                         | 1                              | 0          | 1            | -2          |
| 39  | <b>NR6 (NEW)</b>      | Create natural floodplain functions plan  | 0                     | 1                               | 0                   | 1            | 0                           | 0                         | 1                              | 1          | 2            | 1           |

Appendix D: Table 19. Review of Possible Activities with Scoring

| Activity Number                      | Plan Reference Number | Activity Description   | Costs (C)             |                                 |                     |              | Benefits (B)                |                           |                                |            |              | Total (B-C) |
|--------------------------------------|-----------------------|--|-----------------------|---------------------------------|---------------------|--------------|-----------------------------|---------------------------|--------------------------------|------------|--------------|-------------|
|                                      |                       |  | Availability of Funds | Availability of Staff Resources | Stakeholder Impacts | Subtotal (C) | Already required or adopted | Reduced cost or liability | Enhanced livability and safety | CRS Points | Subtotal (B) |             |
| 40                                   | <b>NR7 (NEW)</b>      | Acquire open space lands in floodplains to preserve natural functions  | 2                     | 1                               | 0                   | 3            | 1                           | 1                         | 1                              | 1          | 4            | 1           |
| 68                                   |                       | Amend City code to require minimum 25-foot no-build zone within riparian corridor  | 1                     | 2                               | 1                   | 4            | 1                           | 0                         | 1                              | 1          | 3            | -1          |
| 69                                   |                       | Require developers to plant ecologically well adapted vegetation to create a vegetated buffer within the existing riparian corridor on all new development.                      | 1                     | 1                               | 1                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 74                                   |                       | Enhance natural floodplain functions on City-owned properties in the floodplain  | 1                     | 1                               | 1                   | 3            | 1                           | 0                         | 1                              | 0          | 2            | -1          |
| 76                                   |                       | Allow or require FEMA's cluster development standards as a mechanism for preserving additional open space in the floodplain and adapting to climate change-exacerbated flooding. | 2                     | 1                               | 1                   | 4            | 0                           | 1                         | 1                              | 1          | 3            | -1          |
| 77                                   | <b>NR8 (NEW)</b>      | Provide information and resource assistance to streamside owners regarding stream stabilization and riparian enhancement projects  | 1                     | 1                               | 0                   | 2            | 1                           | 0                         | 1                              | 1          | 3            | 1           |
| 78                                   |                       | Increase riparian buffer protection through local assessment   | 2                     | 1                               | 1                   | 4            | 1                           | 0                         | 1                              | 0          | 2            | -2          |
| 79                                   |                       | Update and implement Riparian Outreach Plan  | 2                     | 1                               | 1                   | 4            | 1                           | 0                         | 1                              | 0          | 2            | -2          |
| <b>Emergency Services Activities</b> |                       |  |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 10                                   | <b>ES1</b>            | Prepare Substantial Damage Management Plan in conformance with CRS Activity 510  | 1                     | 1                               | 0                   | 2            | 0                           | 1                         | 1                              | 1          | 3            | 1           |
| 22                                   | <b>ES2</b>            | Implement emergency response plans for critical facilities   | 0                     | 1                               | 0                   | 1            | 1                           | 1                         | 1                              | 0          | 3            | 2           |
| 23                                   | <b>ES3</b>            | Create post-flood procedures for gathering flood data  | 0                     | 1                               | 0                   | 1            | 0                           | 1                         | 1                              | 0          | 2            | 1           |
| 24                                   | <b>ES4</b>            | Improve flood warning and response   | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 25                                   | <b>ES5</b>            | Modify questionnaires that are used during flood events to improve data  | 0                     | 1                               | 0                   | 1            | 0                           | 1                         | 1                              | 1          | 2            | 1           |
| 26                                   | <b>ES6</b>            | Investigate development of incentives for critical facilities and industries in the floodplain to develop flood warning and response plans                                       | 1                     | 1                               | 1                   | 3            | 0                           | 2                         | 1                              | 1          | 4            | 1           |
| 27                                   | <b>ES7</b>            | Implement post-disaster mitigation policies from the Emergency Management Plan   | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 0                              | 1          | 3            | 1           |
| 75                                   |                       | Create a philanthropic fund to assist small businesses in recovering from and preparing for natural disasters  | 2                     | 1                               | 1                   | 4            | 1                           | 1                         | 0                              | 0          | 2            | -2          |
| <b>Structural Project Activities</b> |                       |  |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 28                                   | <b>SP1</b>            | Construct stormwater capital improvement projects  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 34                                   | <b>SP2 (NEW)</b>      | Implement and update the City's Stormwater Retrofit Plan and Hydromodification Assessment Report.  | 0                     | 1                               | 0                   | 1            | 1                           | 2                         | 1                              | 0          | 4            | 3           |
| 56                                   |                       | Increase stormwater conveyance capacity  | 2                     | 1                               | 1                   | 4            | 0                           | 1                         | 0                              | 0          | 1            | -3          |
| 57                                   |                       | Channel and floodplain redesign & construction   | 1                     | 1                               | 1                   | 3            | 0                           | 1                         | 1                              | 0          | 2            | -1          |
| <b>Public Information Activities</b> |                       |  |                       |                                 |                     |              |                             |                           |                                |            |              |             |
| 29                                   | <b>PI1</b>            | Require hazard disclosure in real-estate transactions  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 0                              | 1          | 3            | 1           |
| 30                                   | <b>PI2</b>            | Implement a Program for Public Information   | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 31                                   | <b>PI3</b>            | Coordinate floodplain management outreach efforts with the City's stormwater program implementation activities.  | 0                     | 0                               | 0                   | 0            | 0                           | 2                         | 0                              | 0          | 2            | 2           |
| 32                                   | <b>PI4</b>            | Compile and improve outreach materials to guide property owners in planting and habitat restoration of flood-prone properties  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 33                                   | <b>PI5</b>            | Improve outreach regarding protection of tree canopy for reducing stormwater runoff  | 1                     | 1                               | 0                   | 2            | 1                           | 1                         | 1                              | 1          | 4            | 2           |
| 60                                   | <b>PI6 (NEW)</b>      | Establish a storm drain and catch basin marking program.   | 0                     | 1                               | 0                   | 1            | 1                           | 0                         | 1                              | 0          | 2            | 1           |

## **Appendix E:**

### **Action Plan Item Summary Sheets and Goals**



Proposed Action Item:

Preventative Activity 1

| Proposed Action Item PA1   |          | Alignment with Goals   |
|--|----------|--|
| Inspect streams and water quality/flow control stormwater facilities annually.   |          | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Protect the natural environment</li> </ul> |
| Rationale for Proposed Action Item   |          |  |
| This item is identified as IL-3 of the 2022 Stormwater Management Plan. By removing debris and obstructions to flow, flooding hazard are reduced and water quality is improved. Activity points through the CRS program are available for this activity under CRS Activity 540.  |          |  |
| Ideas for Implementation   |          |  |
| <ul style="list-style-type: none"> <li>• The City of Salem Stormwater Operations division operates a drainage system maintenance program that includes annual inspection and regular maintenance of the open channel drainage system in Salem.</li> <li>• The City of Salem Stormwater Operations also operations a Storage Basin Maintenance program which includes inspection and maintenance of the publicly- and privately-owned earthen and vegetated detention basins inside Salem’s corporate limits.</li> <li>• Continue supporting annual Stream Cleaning Program. More than one half of the stream miles in Salem are inspected annually by walking each stream segment. Using summer interns, the City inspects the riparian areas and streams, picks up litter and garbage, inspects for illicit discharges, addresses potential conveyance concerns, and evaluates areas for stream restoration.</li> </ul> |          |  |
| Lead Agency  | Timeline | Funding Source   |
| Salem Public Works   | Ongoing  | Local Funding Sources  |
| Internal Partners  |          | External Partners  |
| Community Development - Planning   |          | FEMA, DEQ  |

Proposed Action Item:

Preventative Activity 2

| Proposed Action Item PA2  |          | Alignment with Goals  |
|---|----------|---|
| Promote low impact development practices in development and redevelopment projects.   |          | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Protect the natural environment</li> </ul> |
| Rationale for Proposed Action Item  |          |   |
| <p>Low impact development techniques can reduce stormwater runoff through interception, evapotranspiration, and infiltration. This action item is identified in activity PC-2 in the City’s 2022 Stormwater Management Plan. The Post-Construction Stormwater Management BMP recommends the City conduct an evaluation of the City’s current Stormwater Management Design Standards to document the City’s existing strategy to prioritize LID strategies in new development and redevelopment and GSI approaches to stormwater management.</p> |          |   |
| Ideas for Implementation  |          |   |
| <ul style="list-style-type: none"> <li>• Update the Stormwater Management Design Standards and Salem Revised Code to eliminate requirements for piped drainage and other barriers to LID.</li> <li>• Update the Salem Transportation System Plan to include LID features within the rights-of-way.</li> <li>• Prepare a documentation memorandum to include in the SWMP annual report.</li> </ul>   |          |   |
| Lead Agency   | Timeline | Funding Source  |
| Salem Public Works  | Ongoing  | Local Funding Resources   |
| Internal Partners   |          | External Partners   |
| Community Development – Planning<br>Fire – Emergency Management   |          | DEQ   |

Proposed Action Item:

Preventative Activity 3

|   |                        |  |
|---|------------------------|--|
| <b>Proposed Action Item PA3</b>   |                        | <b>Alignment with Goals</b>  |
| Create 100-year inundation maps using data from Stormwater Master Plan  |                        | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Protect the natural environment</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                        |  |
| <p>This item was recommended by the Council-appointed Managing Flood Risks Task Force committee in January of 2018. The Task Force unanimously recommended to use the data and modeling methods developed for the Stormwater Master Plan to update the floodplain maps in Salem, specifically;</p> <ol style="list-style-type: none"> <li>1. The Federal Emergency Management Agency (FEMA) will be notified of the Interim Flood Hazard Areas that will be locally promulgated by the City. Further, the data/modeling used to determine the areas will be made available to the agency. However, because the City will not be using the FEMA-approved methodology for delineating floodplains, the City will not be able to submit the new floodplain maps for official adoption by FEMA.</li> <li>2. The floodplains should be delineated using a methodology that applies best professional judgment regarding whether embankments should be credited for reducing risks of flooding.</li> <li>3. The new floodplain maps will be promulgated locally as Interim Flood Hazard Areas and will be regulated as such by the City.</li> <li>4. The City will evaluate how the Interim Flood Hazard Areas would change if no credit was given for embankments not specifically designed or constructed as flood control structures. The resulting information will be used to apprise the public of potential flood risk .</li> </ol> <p>This action item is consistent with Policy 3.15 of the 2020 Salem Stormwater Master Plan.</p> |                        |  |
| <b>Ideas for Implementation</b>   |                        |  |
| <ul style="list-style-type: none"> <li>• Follow Committee recommendation.</li> <li>• Complete draft update of the SWMP.</li> <li>• Contract professional services to produce new maps and complete public outreach.</li> <li>• Adopt Interim Flood Hazard Area maps.</li> </ul>   |                        |  |
| <b>Lead Agency</b>  | <b>Timeline</b>        | <b>Funding Source</b>  |
| Salem Public Works  | Short term (0-2 years) | Local Fundings Resources   |
| <b>Internal Partners</b>  |                        | <b>External Partners</b>   |
| Community Development - Planning<br>Legal Department  |                        | FEMA, DLCD   |

Proposed Action Item:

Preventative Activity 4

|   |                        |   |
|---|------------------------|---|
| <b>Proposed Action Item PA4</b>   |                        | <b>Alignment with Goals</b>   |
| Provide additional staff training in administering regulations.   |                        | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> <li>• Reduce economic loss</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                        |   |
| CRS provides credit points for obtaining Certified Floodplain Manager certification or otherwise providing floodplain management training for staff members who administer floodplain regulations. Certified floodplain managers are integral to reviewing development within floodplain areas.   |                        |   |
| <b>Ideas for Implementation</b>   |                        |   |
| <ul style="list-style-type: none"> <li>• Provide opportunities for staff to obtain Certified Floodplain Manager certification.</li> <li>• Enroll staff members in FEMA’s Emergency Management Institute (EMI).</li> <li>• Encourage other staff training opportunities that are eligible for CRS credit.</li> <li>• Improve floodplain management training of field personnel to help identify hazards and code violations in flood-prone areas.</li> </ul> |                        |   |
| <b>Lead Agency</b>  | <b>Timeline</b>        | <b>Funding Source</b>   |
| Salem Public Works  | Short term (0-2 years) | Local Fundings Resources  |
| <b>Internal Partners</b>  |                        | <b>External Partners</b>  |
| Fire – Emergency Management<br>Community Development – Building Department  |                        | FEMA, DLCD  |

Proposed Action Item:

Preventative Activity 5

| <b>Proposed Action Item PA5</b>   |                 | <b>Alignment with Goals</b>  |
|---|-----------------|--|
| Coordinate stormwater and flood management regulations with communities and organizations that share Salem’s watersheds.  |                 | <ul style="list-style-type: none"> <li>Increase coordination among stakeholders</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |  |
| This action item is consistent with the 2020 Salem Stormwater Master Plan Policy 7. This policy identifies that intergovernmental coordination is necessary with other agencies when addressing stormwater issues of mutual interest such as programs in shared creek basins, municipal regulations, joint planning, and other activities that span jurisdictional boundaries.  |                 |  |
| <b>Ideas for Implementation</b>   |                 |  |
| <ul style="list-style-type: none"> <li>Coordination may include the establishment of appropriate intergovernmental agreements (IGAs) regarding potential uniform stormwater design standards, operations and maintenance activities, and public education and involvement efforts within the Urban Growth Boundary (UGB).</li> <li>Continue to be an active member of the Oregon Association of Clean Water Agencies (ORACWA).</li> </ul> |                 |  |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>  |
| Salem Public Works  | Ongoing         | Local Funding Resources  |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>   |
| Community Development - Planning<br>Fire – Emergency Management   |                 | FEMA, DLCD   |

Proposed Action Item:

Preventative Activity 6

|   |  |   |                         |
|---|--|---|-------------------------|
| <b>Proposed Action Item PA6</b>   |  | <b>Alignment with Goals</b>   |                         |
| Improve program for periodic site inspections of existing development within the floodplain.  |  | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |                         |
| <b>Rationale for Proposed Action Item</b>   |  |   |                         |
| A better understanding of current and existing development within the regulated floodplain is important for local floodplain managers to help plan and further develop the floodplain management program. Periodic site inspections of existing developments within the floodplain will help identify potential violations or substantial improvements that may require permits and mitigation. |  |   |                         |
| <b>Ideas for Implementation</b>   |  |   |                         |
| <ul style="list-style-type: none"> <li>• Continue staff training to help identify floodplain permitting requirements.</li> <li>• Improve notification program for floodplain property owners.</li> <li>• Establish site inspection schedule for staff.</li> </ul>   |  |   |                         |
| <b>Lead Agency</b>  |  | <b>Timeline</b>   | <b>Funding Source</b>   |
| Salem Public Works  |  | Ongoing   | Local Funding Resources |
| <b>Internal Partners</b>  |  | <b>External Partners</b>  |                         |
| Community Development – Building Department<br>Fire – Emergency Management  |  | FEMA, DLCD  |                         |



Proposed Action Item:

Preventative Activity 7

|   |  |  |                        |
|---|--|--|------------------------|
| <b>Proposed Action Item PA7</b>   |  | <b>Alignment with Goals</b>  |                        |
| Protect buildings from shallow flooding by providing positive drainage to a public stormwater system.   |  | <ul style="list-style-type: none"> <li>• Protect existing and future development.</li> <li>• Reduce economic loss.</li> <li>• Protect human life</li> <li>• Promote social resilience</li> </ul> |                        |
| <b>Rationale for Proposed Action Item</b>   |  |  |                        |
| FEMA data from 2023 indicates approximately 40 percent of NFIP claims are for properties located outside the SFHA. Some of these claims are from flooding caused by local drainage problems. Community Rating System credits are available for ensuring that new buildings are well above the street level or otherwise protected from shallow drainage flooding.   |  |  |                        |
| <b>Ideas for Implementation</b>   |  |  |                        |
| <ul style="list-style-type: none"> <li>• Create regulations, administrative rules, and/or Stormwater Management Design Standards that conform with CRS guidelines for local drainage protection (LDP)</li> <li>• The preferred alternative for CRS credit is LDP2, which requires an applicant to prepare a site plan that accounts for street flooding and local drainage from and onto adjoining properties and protects the building from local drainage flows.</li> </ul> |  |  |                        |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  | <b>Funding Source</b>  |
| Salem Public Works  |  | Long term (3-5 years)  | Local Funding Resource |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |                        |
| Community Development – Building Department   |  | FEMA, DLCD, Oregon Building Codes Division   |                        |

Proposed Action Item:

**Preventative Activity 8 (NEW)**

| <b>Proposed Action Item PA8</b>  |                       | <b>Alignment with Goals</b>   |
|--|-----------------------|---|
| Modify density requirements in floodplains to increase open space.   |                       | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Promote resilient development and infrastructure</li> <li>• Protect the natural environment</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                       |   |
| The Salem Area Comprehensive Plan, Goal CC 2.4, identifies that development in floodplains should be regulated to minimize negative impacts on natural resources and potential danger to life and property. Removing barriers to developments that avoid floodplain areas will promote preservation of the floodplain for natural functions and reduce development impacts on the natural environment. |                       |   |
| <b>Ideas for Implementation</b>  |                       |   |
| <ul style="list-style-type: none"> <li>• Review and modify local zoning regulations in <i>Salem Revised Code</i> 510.010(c)(3) to allow floodplain areas to be excluded when calculating minimum density requirements.</li> </ul>  |                       |   |
| <b>Lead Agency</b>   | <b>Timeline</b>       | <b>Funding Source</b>   |
| Community Development - Planning   | Long-term (3-5 years) | Local Funding Resources   |
| <b>Internal Partners</b>   |                       | <b>External Partners</b>  |
| Salem Public Works   |                       | DLCD  |

Proposed Action Item:

Preventative Activity 9 (NEW)

|   |  |  |                         |
|---|--|--|-------------------------|
| <b>Proposed Action Item PA9</b>   |  | <b>Alignment with Goals</b>  |                         |
| Limit fill, buildings, and/or material storage in floodplain.   |  | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> </ul> |                         |
| <b>Rationale for Proposed Action Item</b>   |  |  |                         |
| <p>The Salem Area Comprehensive Plan, Goal CC 2.4, identifies that development in floodplains should be regulated to minimize negative impacts on natural resources and potential danger to life and property. By limiting development, the floodplain can be preserved for natural functions.</p> <p>In addition to local goals, the Oregon Implementation Plan for National Flood Insurance Program-Endangered Species Act Integration proposes measures that:</p> <ul style="list-style-type: none"> <li>• Require avoidance, minimization, and/or mitigation of impacts to natural floodplain functions, with mitigation provided at specific ratios</li> <li>• Limit development in a 170-foot riparian buffer zone</li> <li>• Track all permitted development and mitigation activities and report to FEMA</li> </ul> |  |  |                         |
| <b>Ideas for Implementation</b>   |  |  |                         |
| <ul style="list-style-type: none"> <li>• Form a planning committee to review draft measures and paths available to communities in Oregon.</li> <li>• Review and amend local floodplain ordinance to provide reasonable limits to development in the floodplain in accordance with the Oregon Implementation Plan for NFIP-ESA Integration.</li> </ul>   |  |  |                         |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  | <b>Funding Source</b>   |
| Salem Public Works  |  | Short-term (0-2 years)   | Local Funding Resources |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |                         |
| Community Development – Planning<br>Community Development – Building  |  | FEMA, DLCD<br>Local Professional Land Surveyors and Engineers  |                         |

Proposed Action Item:

Preventative Activity 10 (NEW)

|  |  |  |                         |
|--|--|--|-------------------------|
| <b>Proposed Action Item PA10</b>   |  | <b>Alignment with Goals</b>  |                         |
| Adopt compensatory storage requirements for development in the floodplain.   |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> <li>• Promote resilient development and infrastructure</li> </ul> |                         |
| <b>Rationale for Proposed Action Item</b>  |  |  |                         |
| <p>The Oregon Implementation Plan for NFIP-ESA Integration proposes an implementation strategy that includes compensatory mitigation requirements for all impacts to flood storage, water quality (impervious surface) and riparian habitat. A detailed technical guidance on implementing compensatory mitigation requirements will be developed to help effective mitigation outcomes, potentially including technical tools for quantifying development impacts and mitigation outcomes. An example provided of compensatory storage requirements includes a standard for all fill placed at or within a special flood hazard area boundary be balanced with at least an equal amount of soil material removal from the same parcel and within the active flood area.</p> <p>The CRS program also incentivizes balanced cut-fill in the Higher Regulatory Standards Activity 430.</p> |  |  |                         |
| <b>Ideas for Implementation</b>  |  |  |                         |
| Review and amend local floodplain ordinance to adopt compensatory storage requirements for development in the floodplain in accordance with the Oregon Implementation Plan for NFIP-ESA Integration.   |  |  |                         |
| <b>Lead Agency</b>   |  | <b>Timeline</b>  | <b>Funding Source</b>   |
| Salem Public Works   |  | Short Term (0-2 Years)   | Local Funding Resources |
| <b>Internal Partners</b>   |  | <b>External Partners</b>   |                         |
| Community Development - Building   |  | FEMA, DLCD<br>Local Professional Land Surveyors and Engineers  |                         |

Proposed Action Item:

Preventative Activity 11 (NEW)

| <b>Proposed Action Item PA11</b>  |                 | <b>Alignment with Goals</b>  |
|---|-----------------|--|
| Collect data and conduct analysis to detect variations in trends and changes in historic weather patterns.  |                 | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Promote resilient development and infrastructure</li> <li>• Promote social resilience</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |  |
| This activity is recommended in the 2020 Stormwater Master Plan, Policy 3.14. In addition, the 2022 Climate Action Plan identifies that temperature changes and changes to precipitation patterns can pose an increased risk of natural hazards. Understanding current and historic trends in weather patterns can help inform plan preparations and mitigation of natural hazards. |                 |  |
| <b>Ideas for Implementation</b>   |                 |  |
| <ul style="list-style-type: none"> <li>• Continue to use historical data when conducting hydrologic and hydraulic analysis, and collect data and conduct analysis to detect variations in trends and changes in historic weather patterns.</li> </ul>   |                 |  |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>  |
| Salem Public Works  | Ongoing         | Local Funding resources  |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>   |
| Community Development - Planning  |                 | NOAA   |

Proposed Action Item:

Preventative Activity 12 **(NEW)**

| <b>Proposed Action Item PA12</b>   |                        | <b>Alignment with Goals</b>   |
|--|------------------------|---|
| Improve clarity in Stormwater Management Design Standards regarding infiltration testing requirements and determination of infiltration feasibility.   |                        | <ul style="list-style-type: none"> <li>Protect the natural environment</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                        |   |
| This action is consistent with the 2020 Salem Stormwater Master Plan Policies 5.1, 5.2, 6.1, and 6.3 relating to green stormwater infrastructure. Additionally, the 2022 SWMP identifies that City stormwater standards need review and updates to comply with the Oregon Department of Environment Quality MS4 permit.  |                        |   |
| <b>Ideas for Implementation</b>  |                        |   |
| <ul style="list-style-type: none"> <li>Contract professional services to review, update, and adopt revisions to SRC 71 and the Stormwater Management Design Standards to address NPDES MS4 Permit requirements.</li> <li>Consider adopting a Factor of safety on infiltration rates and a protocol for infiltration testing requirements to ensure consistency.</li> </ul> |                        |   |
| <b>Lead Agency</b>   | <b>Timeline</b>        | <b>Funding Source</b>   |
| Salem Public Works   | Short term (0-2 years) | Local Funding Resources   |
| <b>Internal Partners</b>   |                        | <b>External Partners</b>  |
| Public Works – Engineering   |                        | DEQ<br>Local Professional Engineers   |



Proposed Action Item:  
Preventative Activity 13 (NEW)

|  |  |   |                          |                         |  |
|--|--|---|--------------------------|-------------------------|--|
| <b>Proposed Action Item PA13</b>   |  | <b>Alignment with Goals</b>   |                          |                         |  |
| Update the official “waterways” geodatabase to incorporate field-verified information.   |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |                          |                         |  |
| <b>Rationale for Proposed Action Item</b>  |  |   |                          |                         |  |
| This activity implements the Stormwater Management Program BMP OM-1: “Asset Management and Systemwide Mapping: Continue to update the official “waterways” geodatabase for use by all City staff in applying various regulations and standards”. Accurate mapping will ensure regulations are applied appropriately to preserve riparian areas and natural floodplain functions. |  |   |                          |                         |  |
| <b>Ideas for Implementation</b>  |  |   |                          |                         |  |
| <ul style="list-style-type: none"> <li>• Contract professional services to review and update an inventory of wetlands, perennial streams, waterways, and floodplain and floodway designation.</li> <li>• Continue routine maintenance and updates to GIS databases with best available information.</li> </ul>   |  |   |                          |                         |  |
| <b>Lead Agency</b>   |  | <b>Timeline</b>   |                          | <b>Funding Source</b>   |  |
| Salem Public Works   |  | Short term (0-2 years)  |                          | Local Funding Resources |  |
| <b>Internal Partners</b>   |  |   | <b>External Partners</b> |                         |  |
| Community Development - Planning   |  |   | ACOE, DEQ, DLCD          |                         |  |

Proposed Action Item:

Preventative Activity 14 (NEW)

|   |  |  |  |
|---|--|--|--|
| <b>Proposed Action Item PA14</b>  |  | <b>Alignment with Goals</b>  |  |
| Pursue a variety of flood prevention and mitigation strategies, including incentivizing property owners to make improvements that incorporate green infrastructure.   |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> <li>• Reduce economic loss</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>   |  |  |  |
| This action item is identified in the 2023 Salem Area Comprehensive Plan, Action Item CC2.3. The plan identifies that the City should prepare and protect the community from the impacts of natural hazards and recommends implementing additional flood protection and mitigation strategies. The 2022 SWMP also includes BMP PC-2, the LID/GSI strategy to prioritize strategies in new development and redevelopment that apply GSI approaches to stormwater management.   |  |  |  |
| <b>Ideas for Implementation</b>   |  |  |  |
| <ul style="list-style-type: none"> <li>• Review and amend zoning, floodplain, and stormwater ordinances to implement incentives.</li> <li>• Review stormwater ordinance and Public Works Design Standards to provide clear standards for green stormwater infrastructure (GSI).</li> <li>• Consider alternative standards for existing development where impervious surface is being replaced to incentivize the use of GSI. Examples: allow pervious pavement for rehab projects without other forms of GSI; lower detention thresholds for rehab projects; allow mechanical treatment if rehab project does not disturb earth material.</li> <li>• Review SDC credits, utility rates and grant options as a possible incentive.</li> <li>• Review the Stormwater Credit Program and remove barriers to application of credit. Establish better outreach materials and information for the program.</li> <li>• Consider incentives for implementing flood mitigation measures, such as installation of backflow preventors in homes that have a basement.</li> </ul> |  |  |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  |  |
| Salem Public Works  |  | Long-term (3-5 years)  |  |
| <b>Funding Source</b>   |  |  |  |
| Local Funding Resources   |  |  |  |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |  |
| Community Development – Planning<br>Community Development - Building  |  | DEQ, Local Developers  |  |

Proposed Action Item:

Property Protection Activity 1

| <b>Proposed Action Item PP1</b>  |                 | <b>Alignment with Goals</b>  |
|--|-----------------|--|
| Improve floodplain protection assistance program.  |                 | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> <li>• Protect existing and future development</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                 |  |
| <p>FEMA has found citizens are more likely to undertake activities to reduce flood hazards to their property if they can get reliable information in their own community. Community information and advice could be for addressing drainage problems, retrofitting existing structures, and properly locating and building new structures. Research has also found that property owners are much more likely to implement appropriate mitigation measures if they have financial support.</p>  |                 |  |
| <b>Ideas for Implementation</b>  |                 |  |
| <p>Implement four areas of protection assistance as specified in the CRS Coordinator’s Manual:</p> <ul style="list-style-type: none"> <li>• Property protection advice for providing one-on-one advice about property protection (such as retrofitting techniques and drainage improvements).</li> <li>• Establishing a policy to make a site visit before providing property protection advice.</li> <li>• Providing advice on financial assistance programs that may be available.</li> <li>• Providing training for advisors through the Emergency Management Institute on retrofitting or grant programs.</li> </ul> |                 |  |
| <b>Lead Agency</b>   | <b>Timeline</b> | <b>Funding Source</b>  |
| Salem Public Works   | Ongoing         | Local Funding Resources  |
| <b>Internal Partners</b>   |                 | <b>External Partners</b>   |
| Community Development - Planning<br>Fire – Emergency Management  |                 | FEMA   |

Proposed Action Item:

Property Protection Activity 2

| <b>Proposed Action Item PP2</b>   |                 | <b>Alignment with Goals</b>  |
|---|-----------------|--|
| Implement Flood Insurance Plan  |                 | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |  |
| <p>Many people are not aware that flood insurance is available to all property owners, even those not located in a Special Flood Hazard Area. Promoting flood insurance protects citizens from the consequences of flooding. A Flood Insurance Plan was created in 2014 as an appendix to the Floodplain Management Plan, with a goal to increase flood insurance coverage in Salem. Since the plan adoption, coverage has improved but needs continued implementation to reach a higher level of coverage in the community This is a CRS credited activity under Activity 370 (Flood Insurance Promotion).</p> |                 |  |
| <b>Ideas for Implementation</b>   |                 |  |
| <ul style="list-style-type: none"> <li>• Continue to assess the community’s current level of coverage and identify shortcomings.</li> <li>• Hold annual review meetings with the Floodplain Management Plan committee to update and evaluate the current Flood Insurance Plan.</li> <li>• Implement projects in the coverage improvement plan.</li> <li>• Provide advice to citizens about flood insurance.</li> </ul>  |                 |  |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>  |
| Salem Public Works  | Ongoing         | Local Funding Resources  |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>   |
| Community Development – Planning<br>Fire – Emergency Management   |                 | FEMA, DLCD, Salem Chamber of Commerce  |

Proposed Action Item:

Property Protection Activity 3

|  |  |   |                         |
|--|--|---|-------------------------|
| <b>Proposed Action Item PP3</b>  |  | <b>Alignment with Goals</b>   |                         |
| Investigate financial assistance program for Elevation Certificates and Letter of Map changes.   |  | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Protect existing and future development</li> </ul> |                         |
| <b>Rationale for Proposed Action Item</b>  |  |   |                         |
| Elevation Certificates provide valuable information related to flood risks for existing structures. Most buildings built prior to Salem joining the National Flood Insurance Program in 1979 (pre-FIRM structures) do not have an existing Elevation Certificate on record. Lack of an Elevation Certificate can make mitigation planning, flood insurance purchase and property sales difficult. The community has expressed an interest in financial assistance for funding purchase of Elevation surveys performed by Professional Licensed Surveyors, Architects or Engineers. |  |   |                         |
| <b>Ideas for Implementation</b>  |  |   |                         |
| <ul style="list-style-type: none"> <li>• Investigate different forms of financial assistance to offset the cost of an elevation survey.</li> <li>• Consider contracts with local professionals qualified to complete Elevation Certificates.</li> <li>• Develop public outreach materials.</li> <li>• Consider expanding program to commercial developments.</li> </ul>  |  |   |                         |
| <b>Lead Agency</b>   |  | <b>Timeline</b>   | <b>Funding Source</b>   |
| Salem Public Works   |  | Short term (0-2 years)  | Local Funding Resources |
| <b>Internal Partners</b>   |  | <b>External Partners</b>  |                         |
| Public Works – Engineering Division  |  | FEMA, Local Professional Land Surveyors, Engineers, and Architects  |                         |

Proposed Action Item:

Property Protection Activity 4 **(NEW)**

|   |  |   |  |
|---|--|---|--|
| <b>Proposed Action Item PP4</b>   |  | <b>Alignment with Goals</b>   |  |
| Establish a volunteer green stormwater cleaning program.  |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Reduce economic loss</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>   |  |   |  |
| This action is recommended in the 2022 SWMP. Green stormwater infrastructure (GSI) facilities are constructed to help reduce stormwater pollutant load that reaches local streams. These facilities require trash removal and landscape maintenance on a regular basis to ensure the facility functions properly. Salem contains both public and private GSI facilities.  |  |   |  |
| <b>Ideas for Implementation</b>   |  |   |  |
| <ul style="list-style-type: none"> <li>• Establish a new program focused on volunteer organizations and educational facilities, the program could be expanded to industry, businesses, and individuals, pending available funding.</li> <li>• Improve property owner information regarding benefits to maintaining green stormwater infrastructure.</li> <li>• Perform annual inspections of Green Stormwater Infrastructure facilities.</li> </ul> |  |   |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>   |  |
| Salem Public Works  |  | Ongoing   |  |
|   |  | <b>Funding Source</b>   |  |
|   |  | Local Funding Resources   |  |
| <b>Internal Partners</b>  |  | <b>External Partners</b>  |  |
| Community Development - Building  |  | Salem Area Chamber of Commerce,<br>Watershed Councils,  |  |

Proposed Action Item:

Property Protection Activity 5 (NEW)

| <b>Proposed Action Item PP5</b>   |                 | <b>Alignment with Goals</b>   |
|---|-----------------|---|
| Develop a program for private or public acquisition of floodplain land and restoration of these floodplains to prevent future damage from flooding.   |                 | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |   |
| Salem’s 2022 Climate Action Plan proposed Action Item NR19 to identify land in the floodplain that can be acquired publicly or privately for restoration and flood mitigation. This strategy was included as an objective to reduce runoff and impacts from flooding.                   |                 |   |
| <b>Ideas for Implementation</b>   |                 |   |
| <ul style="list-style-type: none"> <li>• Explore grant opportunities for buyout options, especially for repetitive loss areas.</li> <li>• Explore opportunities for property purchases as they arise through development application review or Capital Improvement Projects.</li> </ul> |                 |   |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Public Works  | Ongoing         | Local Funding Resources<br>FEMA Buyout Grants   |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>  |
| Community Development - Planning  |                 | FEMA, DLCD, DSL   |



Proposed Action Item:

Natural Resource Protection Activity 1

|  |  |   |                                |                         |  |
|--|--|---|--------------------------------|-------------------------|--|
| <b>Proposed Action Item NR1</b>  |  | <b>Alignment with Goals</b>   |                                |                         |  |
| Provide grant funding for restoration projects in riparian areas.  |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> </ul> |                                |                         |  |
| <b>Rationale for Proposed Action Item</b>  |  |   |                                |                         |  |
| <p>This item is identified as PI-2 in the 2022 Stormwater Management Plan. The City’s watershed grants provide the community opportunity to be involved with enhancing local streams and watersheds. To be eligible, projects must be located inside the City’s water/sewer customer service area. Exceptions may be made for projects that have a direct impact on the City’s drinking water supply or water quality on streams flowing through Salem. The grant supports riparian restoration efforts, education, and/or stormwater-related improvements within the city, such as stormwater quantity reduction and/or stormwater quality/treatment.</p>                     |  |   |                                |                         |  |
| <b>Ideas for Implementation</b>  |  |   |                                |                         |  |
| <ul style="list-style-type: none"> <li>• Promote program on the City website and during site visits.</li> <li>• Select projects that reduce stormwater runoff, restore natural areas, and protect water quality through education.</li> <li>• Currently focused on volunteer organizations and educational facilities, the program could be expanded to industry, businesses, and individuals, pending available funding.</li> <li>• Evaluate the criteria for selecting projects to optimize the benefits and the costs for each project and to assure meeting overall water quality goals of the Stormwater Management Program in reducing pollutants to the MEP.</li> </ul> |  |   |                                |                         |  |
| <b>Lead Agency</b>   |  | <b>Timeline</b>   |                                | <b>Funding Source</b>   |  |
| Salem Public Works   |  | Ongoing   |                                | Local Funding Resources |  |
| <b>Internal Partners</b>   |  |   | <b>External Partners</b>       |                         |  |
| Community Development - Planning<br>Fire – Emergency Management  |  |   | DLS, USACE, Watershed Councils |                         |  |

Proposed Action Item:

Natural Resources Protection Activity 2

| Proposed Action Item NR2   |                        | Alignment with Goals  |
|--|------------------------|---|
| Amend <i>Salem Revised Code</i> to implement provisions of the <i>Endangered Species Act</i> as they relate to floodplain development.   |                        | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |
| Rationale for Proposed Action Item   |                        |   |
| <p>As required by the Endangered Species Act (ESA), the National Marine Fisheries Service (NMFS) issued a Biological Opinion in 2016 on the National Flood Insurance Program (NFIP) in Oregon. In 2020-2021, the Oregon NFIP Implementation Planning Group, informed by the Oregon Department of Land Conservation and Development (DLCD) stakeholder work groups, developed the draft Oregon Implementation Plan for NFIP-ESA Integration (the Plan). The Plan outlines the performance standards NFIP-participating communities must meet to ensure the implementation of the NFIP in Oregon is compliant with the ESA and that floodplain development actions do not jeopardize ESA-listed species and their critical habitat.</p> <p>NFIP-participating communities will have to ensure that negative impacts to the following three floodplain functions are either avoided or fully mitigated when approving floodplain development with their jurisdictions: flood storage, water quality, and riparian vegetation. The goal is for floodplain development in Oregon to achieve “no net loss” to these functions. “No net loss” means that mitigation of all negative impacts is provided on site, within the same reach, or in the same watershed, with increasing mitigation ratios for each.</p> |                        |   |
| Ideas for Implementation   |                        |   |
| <ul style="list-style-type: none"> <li>• Follow NEPA Review Process and review four paths proposed to meet the “no net loss” standard.</li> <li>• After NEPA Review Process is complete, adopt Oregon model ordinance language regarding endangered species protection in floodplains. Estimated to be complete for community implementation in 2025.</li> </ul>   |                        |   |
| Lead Agency  | Timeline               | Funding Source  |
| Salem Public Works   | Short term (0-2 years) | Local Funding Resources   |
| Internal Partners  |                        | External Partners   |
| Community Development - Planning   |                        | FEMA, NMFS, DLCD, League of Oregon Cities   |

Proposed Action Item:

Natural Resource Protection Activity 3

|  |  |   |  |
|--|--|---|--|
| <b>Proposed Action Item NR3</b>  |  | <b>Alignment with Goals</b>   |  |
| Increase quality and quantity of vegetative cover.   |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>  |  |   |  |
| Tree canopy provides a host of watershed benefits, including water purification, ground water and surface flow regulation, erosion control, and stream bank stabilization. Floodplain functions can be restored to a more natural condition by increasing the quality and quantity of tree canopy. |  |   |  |
| <b>Ideas for Implementation</b>  |  |   |  |
| Create and implement a Community Forestry Strategic Plan based on committee recommendations.   |  |   |  |
| <b>Lead Agency</b>   |  | <b>Timeline</b>   |  |
| Salem Public Works   |  | Ongoing   |  |
|  |  | <b>Funding Source</b>   |  |
|  |  | Local Funding Resources   |  |
| <b>Internal Partners</b>   |  | <b>External Partners</b>  |  |
| Community Development – Planning<br>Urban Forester   |  | FEMA, Watershed Councils  |  |

Proposed Action Item:

Natural Resources Protection Activity 4 (NEW)

|  |                        |  |
|--|------------------------|--|
| <b>Proposed Action Item NR4</b>  |                        | <b>Alignment with Goals</b>  |
| Prepare a Flood Species Assessment in conformance with CRS Activity 510.   |                        | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                        |  |
| Salem’s floodplains are important for the survival and support of multiple species that have been listed as threatened or endangered by state and federal agencies. A comprehensive assessment of floodplain-dependent species or the habitats that are important to these species has not been conducted in Salem. Therefore, the completion of a Floodplain Species Assessment and a Natural Floodplain Functions Plan would provide City staff with additional tools for guiding floodplain development and managing our floodplain habitats to allow for better protection of the important ecological functions of Salem’s floodplains. |                        |  |
| <b>Ideas for Implementation</b>  |                        |  |
| <ul style="list-style-type: none"> <li>• Partner with Glenn-Gibson Watershed Council to develop an assessment and public information materials that will be used to inform staff and the public and floodplain dependent species.</li> <li>• Engage a variety of stakeholders when developing public information.</li> <li>• Utilize grant funding and local funding matches resources to complete the assessment within the timeline of the OWEB grant award.</li> </ul>  |                        |  |
| <b>Lead Agency</b>   | <b>Timeline</b>        | <b>Funding Source</b>  |
| Salem Public Works   | Short Term (0-2 years) | Local Funding Resources<br>Oregon Watershed<br>Enhancement Board (OWEB)  |
| <b>Internal Partners</b>   |                        | <b>External Partners</b>   |
| Community Development - Planning   |                        | Glenn-Gibson Watershed Council, FEMA,<br>OWEB, DLCD, DSL   |

Proposed Action Item:

Natural Resource Protection Activity 5 (NEW)

| Proposed Action Item NR5   |          | Alignment with Goals  |
|--|----------|---|
| Provide incentives for floodplain restoration and vegetation.  |          | <ul style="list-style-type: none"> <li>Protect the natural environment</li> </ul> |
| Rationale for Proposed Action Item   |          |   |
| Community Rating System Open Space credit is available for floodplain areas that are in an undeveloped natural state or restored to a state approximating their natural, pre-development conditions. Floodplain restoration projects can help to moderate flooding, retain flood waters, reduce erosion and sedimentation, recharge groundwater and provide beneficial fish and wildlife habitat.  |          |   |
| Ideas for Implementation   |          |   |
| <ul style="list-style-type: none"> <li>Establish a program that provides incentives to projects that reduce stormwater runoff, restore natural areas, and protect water quality.</li> <li>Evaluate the criteria for selecting projects to optimize the benefits and the costs for each project and to assure meeting overall water quality goals of the Stormwater Management Program in reducing pollutants to the maximum extent practicable.</li> <li>Consider incentive options such as stormwater quality and storage credits for projects required to implement green stormwater infrastructure.</li> <li>Incorporate Natural Floodplain Functions recommendation in Community Rating System Manual Activity 332.g, Activity 420 Open Space Preservation and Natural Floodplain Functions plan in the Stormwater Management Plan.</li> </ul> |          |   |
| Lead Agency  | Timeline | Funding Source  |
| Salem Public Works   | Ongoing  | Local Funding Resources   |
| Internal Partners  |          | External Partners   |
| Community Development - Planning   |          | DLCD, Watershed Councils  |

Proposed Action Item:

Natural Resource Protection Activity 6 **(NEW)**

| <b>Proposed Action Item NR6</b>   |                        | <b>Alignment with Goals</b>  |
|---|------------------------|--|
| Create natural floodplain functions plan.   |                        | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                        |  |
| The CRS program provides credit for adoption of a natural floodplain functions plan that protect one or more natural functions within the community's Special Flood Hazard Area.  |                        |  |
| <b>Ideas for Implementation</b>   |                        |  |
| <ul style="list-style-type: none"> <li>• Coordinate completion of a Natural Floodplain Functions Plan, which will include a Floodplain Species Assessment (FSA) and Floodplain Species Plan (FSP). Prepare the plan document and public outreach in alignment with CRS requirements for the plan established in section 512.</li> <li>• Provide annual reporting on the plan implementation in accordance with CRS Manual section 512.</li> <li>• Utilize planning document to help inform or support portions of the Goal 5 Riparian Corridor inventory and planning process.</li> </ul> |                        |  |
| <b>Lead Agency</b>  | <b>Timeline</b>        | <b>Funding Source</b>  |
| Salem Public Works  | Short term (0-2 years) | Local Funding Resources<br>Oregon Watershed Enhancement Board (OWEB)   |
| <b>Internal Partners</b>  |                        | <b>External Partners</b>   |
| Community Development - Planning  |                        | Glenn-Gibson Watershed Council, FEMA, OWEB, DLCD, DSL  |

Proposed Action Item:

Natural Resource Protection Activity 7 **(NEW)**

|  |  |  |                          |                         |  |
|--|--|--|--------------------------|-------------------------|--|
| <b>Proposed Action Item NR7</b>  |  | <b>Alignment with Goals</b>  |                          |                         |  |
| Acquire open space lands in floodplains to preserve natural functions.   |  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Promote social resilience</li> </ul> |                          |                         |  |
| <b>Rationale for Proposed Action Item</b>  |  |  |                          |                         |  |
| <p>The Salem Stormwater Master Plan, Policy 3.13, identifies that property should be purchased when it cannot reasonably be protected from flooding and the land can be used to enhance a creek system or riparian habitat. Riparian areas, adjacent wetlands and local floodplains are important drainage features in the watershed because they decrease flood volumes and rates of flow. Salem has designated nearly 2,000 acres of land preserved as open space with the potential for enhancements to the natural functions of these areas. Acquisition of open space will enhance and preserve natural floodplain functions. CRS credits are available for preservation of open space within floodplain areas.</p> |  |  |                          |                         |  |
| <b>Ideas for Implementation</b>  |  |  |                          |                         |  |
| <ul style="list-style-type: none"> <li>• Explore opportunities for land acquisition as they arise through development proposals or Capital Improvement projects.</li> <li>• Prioritize areas with existing development that is non-conforming with current floodplain development standards or in high-risk floodway areas.</li> </ul>   |  |  |                          |                         |  |
| <b>Lead Agency</b>   |  | <b>Timeline</b>  |                          | <b>Funding Source</b>   |  |
| Salem Public Works   |  | Ongoing  |                          | Local Funding Resources |  |
| <b>Internal Partners</b>   |  |  | <b>External Partners</b> |                         |  |
| Community Development - Planning<br>Parks<br>Urban Development – Real Estate Division  |  |  | DLCD, DSL, FEMA          |                         |  |



Proposed Action Item:

Natural Resource Protection Activity 8 (NEW)

| <b>Proposed Action Item NR8</b>  |                 | <b>Alignment with Goals</b>   |
|--|-----------------|---|
| Provide information and resource assistance to streamside owners regarding stream stabilization and riparian enhancement projects.   |                 | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Promote social resilience</li> <li>• Protect existing and future development</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                 |   |
| Native vegetation provides watershed benefits, including water purification, ground water and surface flow regulation, erosion control, and stream bank stabilization. Floodplain function can be restored to a more natural condition by ensuring the stability of riparian corridors.  |                 |   |
| <b>Ideas for Implementation</b>  |                 |   |
| <ul style="list-style-type: none"> <li>• Establish a program to assist in helping property owners through the permitting process for bank stabilization projects when property is at risk.</li> <li>• Enhance the outreach program for public information regarding the natural benefits of natural vegetation in riparian corridors.</li> </ul> |                 |   |
| <b>Lead Agency</b>   | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Public Works   | Ongoing         | Local Funding Resources   |
| <b>Internal Partners</b>   |                 | <b>External Partners</b>  |
| Community Development - Planning<br>Community Development - Building   |                 | DSL, Local builders, and engineers  |

Proposed Action Item:

Emergency Service Activity 1

|   |  |  |                          |                         |  |
|---|--|--|--------------------------|-------------------------|--|
| <b>Proposed Action Item ES1</b>   |  | <b>Alignment with Goals</b>  |                          |                         |  |
| Prepare Substantial Damage Management Plan in conformance with CRS Activity 510   |  | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Promote resilient development and infrastructure</li> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> </ul> |                          |                         |  |
| <b>Rationale for Proposed Action Item</b>   |  |  |                          |                         |  |
| <p>FEMA’s CRS Coordinator’s Manual states regarding substantial damage management plans, “A management plan for substantial damage to properties outlines community responsibilities, identifies available data about buildings in the SFHA, describes the community’s approach to damage estimation, and lists the steps the community will take if buildings are determined to be substantially damaged. CRS credit for a such a plan is provided.” This plan prepares in advance for flood events and helps to minimize the negative impacts to the community when structures are substantially damaged.</p> |  |  |                          |                         |  |
| <b>Ideas for Implementation</b>   |  |  |                          |                         |  |
| <ul style="list-style-type: none"> <li>• Contract professional services to review best available information and prepare a plan.</li> <li>• Adopt and implement plan.</li> </ul>  |  |  |                          |                         |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  |                          | <b>Funding Source</b>   |  |
| Salem Public Works  |  | Short term (0-2 years)   |                          | Local Funding Resources |  |
| <b>Internal Partners</b>  |  |  | <b>External Partners</b> |                         |  |
| Community Development – Building<br>Community Development - Planning  |  |  | FEMA                     |                         |  |

Proposed Action Item:

Emergency Service Activity 2

| <b>Proposed Action Item ES2</b>  |                 | <b>Alignment with Goals</b>   |
|--|-----------------|---|
| Implement emergency response plans for critical facilities.  |                 | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Reduce economic loss</li> <li>• Increase coordination and cooperation among stakeholders</li> <li>• Promote social resilience</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                 |   |
| Critical facilities throughout the community should all include emergency response plans. Joint efforts continue among emergency management representatives to coordinate emergency responses community-wide. City resources should be used to assist in creation and updates to emergency response plans for Critical and Essential facilities. |                 |   |
| <b>Ideas for Implementation</b>  |                 |   |
| Continue multi-jurisdictional coordination efforts throughout the community through emergency management representatives.  |                 |   |
| <b>Lead Agency</b>   | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Public Works   | Ongoing         | Local Funding Resources   |
| <b>Internal Partners</b>   |                 | <b>External Partners</b>  |
| Community Development – Planning<br>Fire – Emergency Management  |                 | FEMA, OEM, City of Keizer, Marion County, Polk County, Salem Hospital   |

Proposed Action Item:

Emergency Service Activity 3

| Proposed Action Item   |                       | Alignment with Goals   |
|--|-----------------------|--|
| Create post-flood procedures for gathering flood data.   |                       | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> <li>• Promote social resilience</li> </ul> |
| Rationale for Proposed Action Item   |                       |  |
| <p>During and after flood events, City staff receives numerous questions and comments from citizens affected by flooding. Citizens often have first-hand information regarding flood data, including depth of flooding, damage assessment, and other related flood information. By establishing post-flood procedures, City staff will be prepared to collect key flood information from affected parties immediately after a flood event.</p> |                       |  |
| Ideas for Implementation   |                       |  |
| <ul style="list-style-type: none"> <li>• Develop a post-flood procedure for documenting damaged properties.</li> <li>• Develop a post-flood procedure for collecting survey information about flood elevations.</li> </ul>   |                       |  |
| Lead Agency  | Timeline              | Funding Source   |
| Salem Public Works   | Long-term (3-5 years) | Local Funding Resources  |
| Internal Partners  |                       | External Partners  |
| Community Development—Planning<br>Fire—Emergency Management  |                       | FEMA, OEM  |

Proposed Action Item:

Emergency Service Activity 4

|  |                 |   |
|--|-----------------|---|
| <b>Proposed Action Item ES4</b>  |                 | <b>Alignment with Goals</b>   |
| Improve flood warning and response.  |                 | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Promote social resilience</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                 |   |
| <p>This item is identified in part as Mitigation Action, Multi-Hazard #7 in the Salem Natural Hazards Mitigation Plan. CRS credits are available for flood warning and response to encourage communities to ensure timely identification of impending flood threats, disseminate warnings to appropriate floodplain occupants, and coordinate flood response activities to reduce the threat to life and property.</p>   |                 |   |
| <b>Ideas for Implementation</b>  |                 |   |
| <ul style="list-style-type: none"> <li>• Develop strategies in local building codes and zoning ordinances to reduce the impact of natural hazard events on buildings and infrastructure.</li> <li>• Continue to develop Early Warning System and Everbridge hosted Marion-Polk alert system for community outreach before, during, and after flood events.</li> <li>• Investigate reverse 911 system to send mobile alerts to nearby residents and businesses during natural hazard events.</li> <li>• Coordinate with critical and essential facilities to identify advanced early warning needs.</li> <li>• Promote Marion-Polk community wide alert systems.</li> </ul> |                 |   |
| <b>Lead Agency</b>   | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Fire —Emergency Management   | Ongoing         | Local Funding Resources   |
| <b>Internal Partners</b>   |                 | <b>External Partners</b>  |
| Salem Public Works<br>Community Development – Planning<br>Salem Police   |                 | ODOT, FEMA, OSHA, OEM   |

Proposed Action Item:

Emergency Service Activity 5

|  |                        |  |  |
|--|------------------------|--|--|
| <b>Proposed Action Item ES5</b>  |                        | <b>Alignment with Goals</b>  |  |
| Modify questionnaires that are used during flood events to improve data.   |                        | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Protect existing and future development</li> <li>• Promote social resilience</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>  |                        |  |  |
| During flood events, City staff receives valuable information from citizens, volunteers, emergency responders and operations staff regarding flooding characteristics. Modifying the questionnaires utilized by City staff and volunteers during flood events will streamline information received and provide consistent data that can be used to improve post flood reporting. |                        |  |  |
| <b>Ideas for Implementation</b>  |                        |  |  |
| <ul style="list-style-type: none"> <li>• Collect questionnaires utilized in past flood events.</li> <li>• Coordinate with Emergency Management staff to update flood event procedures and produce universal questionnaire for distribution.</li> </ul>   |                        |  |  |
| <b>Lead Agency</b>   | <b>Timeline</b>        | <b>Funding Source</b>  |  |
| Salem Public Works   | Short term (0-2 years) | Local Funding Resources  |  |
| <b>Internal Partners</b>   |                        | <b>External Partners</b>   |  |
| Fire—Emergency Management<br>Salem Police  |                        | FEMA, OEM, Community Emergency Response Team (CERT)  |  |

Proposed Action Item:

Emergency Service Activity 6

|   |  |  |                         |
|---|--|--|-------------------------|
| <b>Proposed Action Item ES6</b>   |  | <b>Alignment with Goals</b>  |                         |
| Investigate development of incentives for critical facilities and industries in the floodplain to develop flood warning and response plans.   |  | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Protect existing and future development</li> <li>• Promote social resilience</li> </ul> |                         |
| <b>Rationale for Proposed Action Item</b>   |  |  |                         |
| CRS credits are available for coordinating flood warning and response activities with operators of critical facilities. Coordinating flood warning and response planning with these facilities will allow more timely and effective protection of these facilities resulting in a more rapid response and community recovery. Additionally, this item is identified in part as Mitigation Action, Multi-Hazard #7 in the Salem Natural Hazards Mitigation Plan. |  |  |                         |
| <b>Ideas for Implementation</b>   |  |  |                         |
| <ul style="list-style-type: none"> <li>• Investigate development of incentives to encourage critical facilities to develop and implement flood warning and response plans.</li> <li>• Conduct outreach to facilities identified as essential in the City of Salem SAFE system.</li> <li>• Draft flood warning and response template for facilities to utilize.</li> </ul>   |  |  |                         |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  | <b>Funding Source</b>   |
| Fire – Emergency Management   |  | Short term (0-2 years)   | Local Funding Resources |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |                         |
| Salem Public Works<br>Community Development - Planning  |  | FEMA, Salem Hospital, CERT   |                         |



Proposed Action Item:

Emergency Service Activity 7

|   |  |  |  |
|---|--|--|--|
| <b>Proposed Action Item ES7</b>   |  | <b>Alignment with Goals</b>  |  |
| Implement post-disaster mitigation policies from the Emergency Management Plan.   |  | <ul style="list-style-type: none"> <li>• Protect human life</li> <li>• Increase cooperation and coordination among stakeholders</li> <li>• Promote social resilience</li> <li>• Protect existing and future development</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>   |  |  |  |
| <p>The Salem Emergency Management Plan (SEMP) Flood Hazard Annex includes post disaster recovery policies that require enhanced mitigation plans, community recovery procedures and After-Action Reports. Existing post-disaster redevelopment and mitigation policies and procedures need to account for expected damage from the base flood and include more specific responsibilities for emergency management staff, Public Works engineering, public information outreach and community development planning and code enforcement staff. This effort should be combined with existing Flood Response Preparations plans that are already in place.</p> |  |  |  |
| <b>Ideas for Implementation</b>   |  |  |  |
| <ul style="list-style-type: none"> <li>• Update existing SEMP post-disaster recovery phase sections.</li> <li>• Coordinate efforts with Salem’s Flood Warning and Response planning team to enhance post-disaster mitigation policies.</li> <li>• Review policies and procedures on an annual basis and conduct trainings with Emergency Management staff and Public Works Flood Recovery Leadership Team.</li> </ul>   |  |  |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  |  |
| Fire – Emergency Management   |  | Ongoing  |  |
| <b>Funding Source</b>   |  |  |  |
| Local Funding Resources   |  |  |  |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |  |
| Salem Public Works<br>Community Development – Planning<br>Salem Police  |  | ODOT, FEMA, OEM, Salem Hospital, CERT  |  |

Proposed Action Item:

Structural Project Activity 1

|   |  |  |  |
|---|--|--|--|
| <b>Proposed Action Item SP1</b>   |  | <b>Alignment with Goals</b>  |  |
| Construct stormwater capital improvement projects.  |  | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Protect the natural environment</li> <li>• Protect human life</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>   |  |  |  |
| <p>The 2020 Stormwater Master Plan, Policy 2.1, identifies that Capital Improvement Projects (CIP) that reduce risks to life and property caused by flooding should be prioritized. In addition, The Stormwater Master Plan identifies the location of deficient culverts and open channel facilities. Capital improvement projects are often needed in order to provide additional capacity or other forms of mitigation to reduce flood damage. By addressing 100-year flood flows and damage caused during major flood events, the Master Plan targets expenditures for flood mitigation based on a comprehensive view of all flood impacts. Capital improvement projects can provide increased capacity, restore natural and beneficial functions and reduce flood hazards.</p>         |  |  |  |
| <b>Ideas for Implementation</b>   |  |  |  |
| <ul style="list-style-type: none"> <li>• Include 100-year flood flows when developing stormwater modeling analysis for the Master Plan.</li> <li>• Consider valuation from damage assessments in the Natural Hazard Mitigation Plan when prioritizing mitigation projects.</li> <li>• When proposing solutions to flooding problems in the Master Plan, prioritize solutions based on reduction in flood damage during 100-year events.</li> <li>• Implement stormwater projects based on priorities established under the Capital Improvement Program (CIP) and the Stormwater Master Plan consistent with available funding.</li> <li>• Update the Stormwater Systems Development Charge methodology consistent with the Master Plan to provide funding for eligible projects.</li> </ul> |  |  |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  |  |
| Salem Public Works  |  | Ongoing  |  |
|   |  | <b>Funding Source</b>  |  |
|   |  | Local Funding Resources  |  |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |  |
| Community Development—Planning<br>Fire—Emergency Management<br>Administrative Services—Finance  |  | FEMA, DSL, USACE   |  |

Proposed Action Item:

Structural Project Activity 2 (NEW)

| Proposed Action Item SP2  |          | Alignment with Goals  |
|---|----------|---|
| Implement and update the City’s Stormwater Retrofit Plan and Hydromodification Assessment Report.   |          | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Promote resilient development and infrastructure</li> </ul> |
| Rationale for Proposed Action Item  |          |   |
| BMP SP-2 (Retrofit Progress Report) from the Stormwater Management Program includes documentation of additional structural stormwater projects that have incorporated elements to retrofit the stormwater system for increased water quality treatment. BMP SP-3 (Hydromodification Progress Report) from the SWMP includes Identification of new goals, tools, priorities, or potential projects to address hydromodification. These endeavors improve water quality and stream stability within Salem’s natural stormwater systems. |          |   |
| Ideas for Implementation  |          |   |
| <ul style="list-style-type: none"> <li>• Review November progress report in annual Floodplain Management Plan committee meetings.</li> <li>• Incorporate and review Capital Improvement Plan projects based on annual report.</li> </ul>  |          |   |
| Lead Agency   | Timeline | Funding Source  |
| Salem Public Works  | Ongoing  | Local Funding Resources   |
| Internal Partners   |          | External Partners   |
| Public Works Engineering  |          | DEQ, EPA  |

Proposed Action Item:

Public Information Activity 1

|  |                        |   |
|--|------------------------|---|
| <b>Proposed Action Item PI1</b>  |                        | <b>Alignment with Goals</b>   |
| Require hazard disclosure in real-estate transactions.   |                        | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                        |   |
| Federal regulations enacted pursuant to the Flood Disaster Protection Act of 1973 (as amended by the National Flood Insurance Reform Act of 1994) require only that a lender advise a person of the flood hazard before closing on the loan. CRS credits are available when communities require hazard disclosure earlier in the real-estate transaction.  |                        |   |
| <b>Ideas for Implementation</b>  |                        |   |
| <ul style="list-style-type: none"> <li>• Require real estate agents to notify those interested in purchasing properties located in the Special Flood Hazard Area (SFHA) about the flood hazard and the flood insurance purchase requirement.</li> <li>• Provide multiple methods of hazard disclosure, such as subdivision plats, landlord disclosure to renters, disclosure in deed records, and other methods as described in the CRS Coordinator’s Manual.</li> <li>• Create brochures or handouts for real estate agents to advise potential buyers to investigate the flood hazard for a property.</li> <li>• Include disclosure of other flood-related hazards, such as erosion, subsidence, or wetlands.</li> </ul> |                        |   |
| <b>Lead Agency</b>   | <b>Timeline</b>        | <b>Funding Source</b>   |
| Salem Public Works   | Short term (0-2 years) | Local Funding Resources   |
| <b>Internal Partners</b>   |                        | <b>External Partners</b>  |
| Community Development—Planning<br>Legal  |                        | FEMA, Salem Chamber of Commerce, Oregon Real Estate Agency, Mid-Willamette Valley Association of Realtors     |

Proposed Action Item:

Public Information Activity 2

| <b>Proposed Action Item PI2</b>   |                 | <b>Alignment with Goals</b>  |
|---|-----------------|--|
| Implement a Program for Public Information.   |                 | <ul style="list-style-type: none"> <li>• Reduce economic loss</li> <li>• Promote social resilience</li> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |  |
| <p>CRS credits are available for communities that create a public information program for floodplain management. The Program for Public Information (PPI) is an ongoing public information effort to design and transmit the messages most important to flood safety and the protection of natural floodplain Functions. A PPI includes a variety of public information endeavors, such as outreach efforts, website information, and technical assistance.</p> |                 |  |
| <b>Ideas for Implementation</b>   |                 |  |
| <ul style="list-style-type: none"> <li>• Improve floodplain information on the City website.</li> <li>• Promote floodplain information and outreach through various media and news outlets in alignment with the Plan for Public Information.</li> </ul>  |                 |  |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>  |
| Salem Public Works  | Ongoing         | Local Funding Resources  |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>   |
| Community Development—Planning<br>Fire—Emergency Management   |                 | FEMA, OEM  |

Proposed Action Item:

Public Information Activity 3

|   |  |  |  |
|---|--|--|--|
| <b>Proposed Action Item PI3</b>   |  | <b>Alignment with Goals</b>  |  |
| Coordinate floodplain management outreach efforts with the City’s stormwater program implementation activities.   |  | <ul style="list-style-type: none"> <li>Increase cooperation and coordination among stakeholders</li> </ul> |  |
| <b>Rationale for Proposed Action Item</b>   |  |  |  |
| The City’s 2020 Stormwater Management Plan includes Public Education and Participation program. The objective of the program is to <i>(1) promotes pollutant source control and a reduction of pollutants in stormwater discharges; (2) provides educational materials describing the impacts of stormwater discharges on water bodies and identifying steps to reduce pollutants in stormwater runoff; (3) provides public education on the proper operation and appropriate maintenance of privately owned or operated stormwater facilities; and (4) evaluates the success of public education activities.</i> |  |  |  |
| <b>Ideas for Implementation</b>   |  |  |  |
| <ul style="list-style-type: none"> <li>Coordinate the Program for Public Information Plan (formerly Flood Information and Outreach Plan) identified outreach efforts conducted by Floodplain Managers with Water Resources and Stormwater Services staff.</li> <li>Participate in quarterly meetings of various groups assigned responsibility for public outreach and citizen contacts on stormwater matters.</li> </ul>   |  |  |  |
| <b>Lead Agency</b>  |  | <b>Timeline</b>  |  |
| Salem Public Works  |  | Ongoing  |  |
|   |  | <b>Funding Source</b>  |  |
|   |  | Local Funding resources  |  |
| <b>Internal Partners</b>  |  | <b>External Partners</b>   |  |
| Community Development—Planning<br>Fire—Emergency Management   |  | FEMA, OEM<br>Oregon Association of Clean Water Agencies  |  |

Proposed Action Item:

Public Information Activity 4

| <b>Proposed Action Item PI4</b>  |                 | <b>Alignment with Goals</b>   |
|--|-----------------|---|
| Compile and improve outreach materials to guide property owners in planting and habitat restoration of flood-prone properties.   |                 | <ul style="list-style-type: none"> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |
| <b>Rationale for Proposed Action Item</b>  |                 |   |
| The City’s 2022 Stormwater Management Plan Public Education and Outreach element EO-2 discusses strategies for improving public outreach for stream enhancement and riparian protection. In addition, element PI-2 encourages the use of the City’s Stormwater Grant Program to assist property owners, businesses and industries in their specific efforts to improve stormwater quality. This includes utilizing grant funding to restore riparian areas through the use of native plants. Improved outreach materials to help guide property owners in planting and habitat restoration projects will assist in reaching these goals. |                 |   |
| <b>Ideas for Implementation</b>  |                 |   |
| <ul style="list-style-type: none"> <li>• Compile and update existing outreach materials produced by Public Works Water Resources and Stormwater Operations staff.</li> <li>• Update City website to include additional outreach materials for property owners.</li> <li>• Include resources for riparian restoration outreach materials in an annual mailer to flood-prone property owners.</li> </ul>   |                 |   |
| <b>Lead Agency</b>   | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Public Works   | Ongoing         | Local Funding Resources   |
| <b>Internal Partners</b>   |                 | <b>External Partners</b>  |
| Community Development—Planning<br>Fire—Emergency Management  |                 | FEMA, OEM   |



Proposed Action Item:

Public Information Activity 5

| Proposed Action Item PI5  | Alignment with Goals   |                         |
|---|--|-------------------------|
| Improve outreach regarding protection of tree canopy for reducing stormwater runoff.  | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> <li>• Protect existing and future development</li> <li>• Increase cooperation and coordination among stakeholders</li> </ul> |                         |
| Rationale for Proposed Action Item  |  |                         |
| <p>The 2019 City of Salem Urban Tree Canopy Assessment identifies opportunities to increase Salem’s tree canopy in riparian corridors. Benefits would include a decrease in the urban heat island effect, and improved infiltration, stormwater runoff mitigation and water quality. In addition, the 2014 City of Salem Community Forestry Strategic Plan includes goals to preserve and increase the tree canopy within Salem and to educate the public, decision-makers, and City staff about the benefits of trees.</p> |  |                         |
| Ideas for Implementation  |  |                         |
| <ul style="list-style-type: none"> <li>• Coordinate with Public Works Water Resources, Urban Forestry Program, and Stormwater Services staff to evaluate existing outreach and recommend opportunities for enhancement .</li> <li>• Improve information on City website regarding protection and enhancement of tree canopy</li> </ul>  |  |                         |
| Lead Agency   | Timeline   | Funding Source          |
| Salem Public Works  | Long term (3–5 years)  | Local Funding Resources |
| Internal Partners   |  | External Partners       |
| Community Development – Planning<br>Urban Forestry  |  | Tree City USA           |

Proposed Action Item:

Public Information Activity 6 **(NEW)**

|   |                 |   |
|---|-----------------|---|
| <b>Proposed Action Item PI6</b>   |                 | <b>Alignment with Goals</b>   |
| Establish a storm drain and catch basin marking program.  |                 | <ul style="list-style-type: none"> <li>• Protect the natural environment</li> </ul> |
| <b>Rationale for Proposed Action Item</b>   |                 |   |
| The City's 2022 SWMP includes BMP PI-5, a storm drain marking program that includes messaging to help spread the word that trash and dirty water that enters a storm drain ends up in local streams where it creates water pollution and can harm wildlife. Maintaining healthy watersheds promotes natural floodplain functions. |                 |   |
| <b>Ideas for Implementation</b>   |                 |   |
| <ul style="list-style-type: none"> <li>• Provide storm drain marking program each summer.</li> <li>• Volunteers work with City staff to mark storm drains.</li> <li>• Establish messaging as part of annual outreach materials.</li> </ul>  |                 |   |
| <b>Lead Agency</b>  | <b>Timeline</b> | <b>Funding Source</b>   |
| Salem Public Works  | Ongoing         | Local Funding Resources   |
| <b>Internal Partners</b>  |                 | <b>External Partners</b>  |
| Community Development - Planning  |                 | Watershed Councils  |

# APPENDIX F:

## Program for Public Information

### Introduction

This plan coordinates all flood-related public information and outreach programs Citywide and meets the criteria as a Program for Public Information under FEMA’s Community Rating System. This program identifies target areas and audiences that can benefit from additional public information related to flood safety and floodplain management. Outreach projects are coordinated so that key flood-related messages are delivered where public information is needed and that messages are consistent as they are delivered to various target audiences within the community.

### Flood Information and Insurance Committee

In August 2023, a notice of solicitation for committee members was delivered to key stakeholders who have been involved in floodplain management, stormwater, and emergency management-related committees in recent years. Solicitation for committee members continued through the end of August with committee meetings scheduled to begin in September 2023. The planning committee was formed to review and update the City’s Floodplain Management Plan. The members of the Floodplain Management Advisory Committee and business affiliations are given in **Table 16**.

| Committee Member         | Affiliation  |
|--------------------------|--|
| E.M. Easterly            | Director, Glenn-Gibson Watershed Council                                   |
| Mike Erdmann             | C.E.O., Home Builders Association of Marion and Polk Counties              |
| John Shepard             | Floodplain Property Owner; Salem Business Owner                            |
| Jeff Leach, SESNA Member | Floodplain Property Owner; Southeast Salem Neighborhood Association Member |
| Steve Ward, P.E.         | President, Westech Engineering   |
| Mark Grenz, P.E.         | President, MultiTech Engineering   |
| Natalie Janney, P.E.     | Vice President, MultiTech Engineering                                      |
| Nathan Good, A.I.A.      | Owner, Nathan Good Architects  |
| Kathleen Dewoina         | Real Estate Broker, Berkshire Hathaway                                     |
| Chris Christiansen       | Executive Officer, Mid-Valley Association of Realtors                      |
| Corey Poole              | Southeast Mill Creek Association Chair; Floodplain Property Owner          |
| Anthony Nunn             | Agency Owner, Farmers Insurance  |

| Committee Member | Affiliation   |
|------------------|---|
| Ethan Manela     | Mortgage Loan Officer, CMG Mortgage Inc.  |
| Dynee Medlock    | South Gateway Neighborhood Association Chair  |
| Toni Kirk        | Floodplain Property Owner   |
| Joe Hutchinson   | City of Salem: Emergency Manager, Fire Department                                   |
| Olivia Dias      | City of Salem: Current Planning Manager, Community and Urban Development Department |
| Justin Boyington | City of Salem: Flow Monitoring Analyst, Public Works Department                     |
| Anita Panko      | City of Salem: Stormwater Quality Supervisor, Public Works Department               |
| Jennifer Mongolo | City of Salem: Senior Natural Resource Planner, Public Works Department             |
| Trevor Smith     | City of Salem: Public Information Officer, Public Works Department                  |
| Laurel Christian | City of Salem: Planner II, Public Works Department                                  |
| Al Rossi         | City of Salem: Senior Building Official, Building and Safety Division               |
| Nitin Joshi      | City of Salem: Environmental and Regulatory Affairs Manager                         |
| Robin Dalke      | City of Salem: Floodplain Administrator, Public Works Department                    |
| Shelby Guizar    | City of Salem: Planner I, Public Works Department                                   |

Table 16: Flood Information and Insurance Committee Member

After coordinating with FEMA representatives regarding federal requirements for committee meetings, the project planning team scheduled three meetings for the planning committee. Committee meetings followed the 7-step planning process recommended by FEMA for a Program for Public Information, along with separate planning processes recommended for the Floodplain Management Plan and for the Flood Insurance Coverage Improvement Plan updates. Each meeting focused primarily on one or more specific steps of FEMA’s planning process. Agendas were provided to committee members before each meeting. Agendas were posted to the City’s floodplain management website, and notices of upcoming meetings were posted on the City’s calendar of events web page. Agendas and minutes of those committee meetings are included in **Appendix B**. Committee meeting dates and topics are summarized in **Table 17**.

| Date               | Main Subjects   |
|--------------------|---|
| September 7, 2023  | Organization<br>Assess Public Information Needs Inventory of Public Outreach        |
| September 21, 2023 | Formulate Messages Review Outreach Projects<br>Other Public Information Initiatives |
| October 4, 2023    | Review Draft Plan Changes   |

Table 17: Committee Dates and Topics

The committee participated in the update and development of four related but separate activities being credited under the Community Rating System: (1) Flood Insurance Assessment; (2) Coverage Improvement Plan; (3) Program for Public Information; and (4) Flood Response Preparations. Action items and outreach projects for each of the plans were coordinated to optimize outreach efforts to each target area and audience.

## Public Outreach Assessment

This element of the plan establishes target areas and audiences within the community, documents flood hazards within the target areas, and creates an inventory of existing public information and outreach efforts being conducted within the community.

### Target Areas

Target areas are delineated within the community based on drainage basin boundaries. This approach is consistent with the City’s *Stormwater Master Plan*. The target areas are shown in **Map 6**, except for the Preferred Risk target area, which is explained below. The Advisory Committee reviewed this approach from the 2018 plan and agreed this is an appropriate method for identifying target areas in the 2023 Plan Update.

Each target area is limited to the regulatory floodplain boundary within each drainage basin, except for the Preferred Risk target area. The Preferred Risk area includes properties citywide that are outside regulatory floodplains but potentially subject to flooding, which are defined as buildings within flood zone X5 or within 100 feet of mapped waterways.

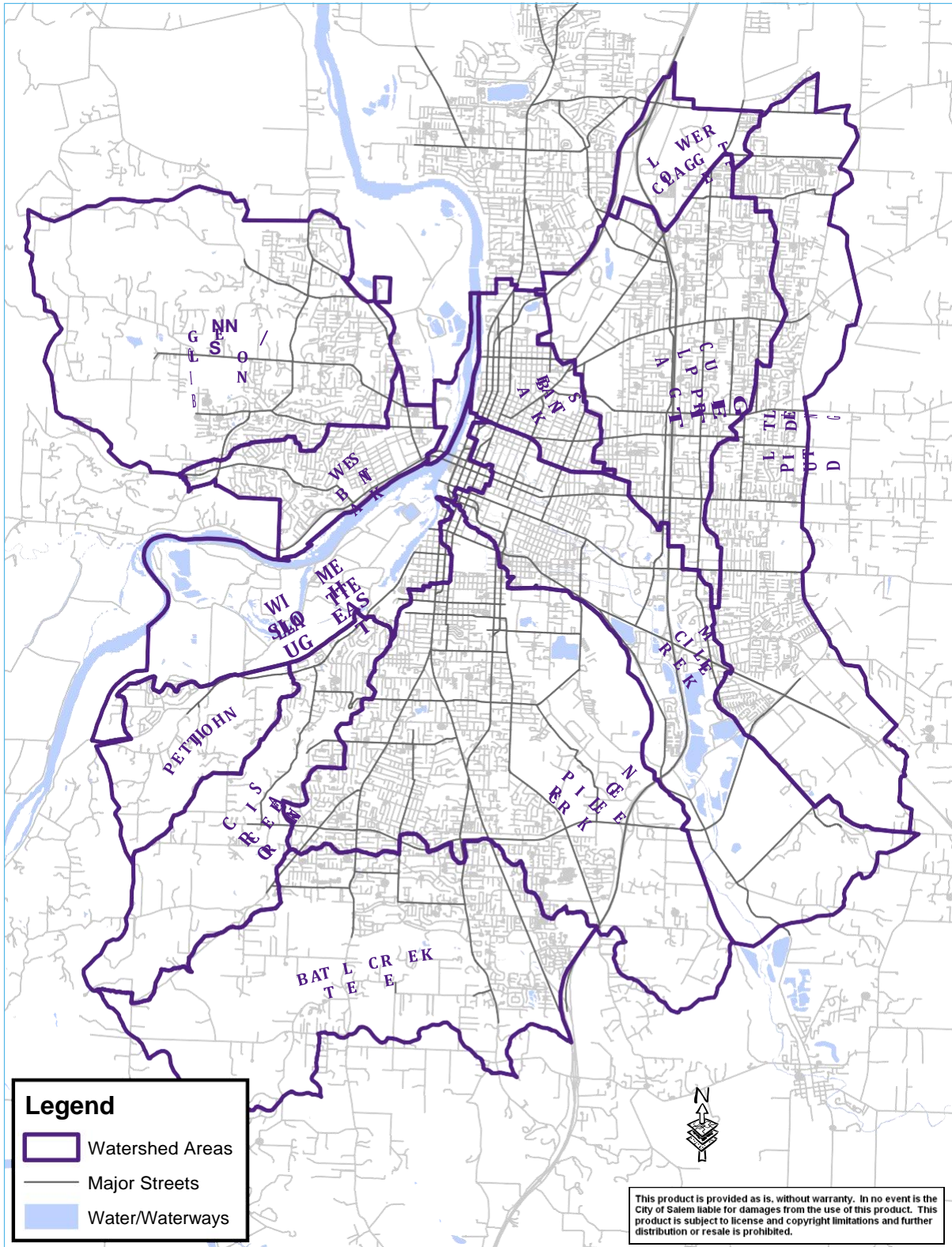
Evaluation of flood hazards within these target areas is included in the **Hazard Assessment** and **Problem Evaluation** chapters. In summary, flood hazards common to all areas include transportation safety, public health, critical and non-critical facilities, economy, and natural areas. Flood hazards from land development vary based on the amount of developable land within each target area.

### Inventory of Public Outreach

**Table 18** describes what existing outreach efforts are being conducted by the community, which City departments are responsible for the outreach, which audience is being targeted, and which efforts are appropriate for flood outreach.

| Outreach Effort              | Department(s) | Audience                                    | Potential for Flood Outreach |
|------------------------------|---------------|---|------------------------------|
| Advisory Board Announcements | All           | Advisory Board members                      | Maybe                        |
| Community Action Agency      | CMO           | Staff and clients (lower income population) | No                           |
| Community Connection         | All           | All   | Yes                          |

# Map 6: Target Areas



| Outreach Effort                    | Department(s)   | Audience  | Potential for Flood Outreach |
|------------------------------------|-----------------|---|------------------------------|
| Community List Serves              | CMO             | United Way recipients, DOJ victims, Children's Services | Maybe                        |
| Crime Victims                      | CMO             | Crime victims   | No                           |
| E-blast                            | CD              | Neighborhood associations                               | Maybe                        |
| Floodplain Outreach Letter         | PW              | Floodplain residents                                    | Yes                          |
| Historic Landmarks Blog            | CD              | Historic  | Maybe                        |
| Housing Authority Newsletter       | UD              | Residential, rental                                     | Yes                          |
| Human Rights                       | CMO             | Protected classes                                       | No                           |
| Info Tables at Community Events    | CD, CMO, PW, UD | All   | Yes                          |
| Landmark Quarterly Newsletter      | CD              | Historic  | Maybe                        |
| Leadership Update                  | CD              | NA chairs and board members                             | Maybe                        |
| MailChimp Campaign                 | All             | All   | Yes                          |
| Media Release                      | CMO, PW, UD     | All   | Yes                          |
| Most Wanted Posters                | Police          | Crime prevention  | No                           |
| Neighborhood Associations          | CD              | Residential   | Yes                          |
| Neighborhood Communications        | CD              | Neighborhood associations                               | Yes                          |
| Partnership Meetings               | CD              | Specific neighborhoods                                  | Maybe                        |
| Permit Application Center Handouts | PW              | Contractors, Developers                                 | Yes                          |
| PSAs                               | PW              | All   | Yes                          |
| Sights & Sounds Newsletter         | Police          | Neighborhood Watch                                      | No                           |
| Social Media                       | All             | All   | Yes                          |
| Streamside Mailer                  | PW              | Streamside Residents                                    | Yes                          |
| UD Quarterly                       | UD              | Businesses, realtors, developers                        | Yes                          |
| Water Quality Report               | PW              | Water users   | No                           |

Table 18: Inventory of Public Outreach

## Target Audiences

In order to better reach the entire community, this element of the plan identifies target audiences which have unique public information needs. The committee analyzed the existing public information programs to determine how those existing efforts would reach target audiences. This analysis identified that some target audiences were not being reached by existing outreach programs.



The committee reviewed each target audience to determine whether additional outreach efforts were warranted that could better serve each target audience. The summary of the analysis of target audiences is shown in **Table 19**. The target audiences summarized below have been identified as those who would benefit most from public information outreach:

**Target Audience 1—Streamside and Floodplain Property Owners in the SFHA.** The committee determined outreach efforts are essential for owners of properties that are located in the FEMA identified Special Flood Hazard Area (SFHA) and of properties adjacent to waterways that are not yet identified in the SFHA. These property owners are often not aware of their individual flood risks, property protection measures and flood insurance implications.

**Target Audience 2—All Salem Property Owners and Residents.** Flooding has a potential impact on all Salem property owners and residents even if they are not located in a high risk flood hazard area. All Salem residents can be affected by street closures due to flooding, emergency service operations, and local drainage issues, so these types of messages are most applicable to a City-wide audience.

**Target Audience 3—Repetitive Loss Properties.** Salem currently has five repetitive loss areas with history of flood damage. Repetitive loss properties warrant additional outreach efforts because of their increased likelihood of flood damage.

**Target Audience 4—Real Estate, Insurance Agents, Property Managers and Restoration Companies.** This audience group is key to providing informed flood hazard and flood insurance information to property owners, residents, buyers, and sellers. They are often the first point of contact for buyers and sellers of real property, so additional outreach efforts to this audience can provide these professionals the correct tools to give accurate flood hazard information and promote the purchase of flood insurance. Restoration Companies were added because they often provide training to insurance agents are first response in the event of flood damaged homes and businesses.

**Target Audience 5—Developers, Contractors, and Design Professionals.** Development of floodplain and flood-prone properties often starts with a team of design professionals, developers, and contractors collaborating on ways to utilize the land available. Outreach efforts to this audience can help them to better understand the inherent flood risks of developing property in the floodplain, and the local, state, and federal regulations they must follow. Early outreach to this audience will provide an opportunity for incorporating low-impact development techniques, ensuring flood-safe construction of new buildings and preventing unnecessary development of flood-prone areas.

**Target Audience 6—Educators, Students, and Natural Resource Groups.** Outreach to local schools and students is an opportunity to convey the importance of protecting our local creeks, rivers, and streams. Natural resource groups also provide an opportunity to collaborate and encourage outreach about the benefits of protecting floodplains.

**Target Audience 7—Media and WRAPPIO.** Flood response outreach relies heavily on the Media and the Willamette Region Association of Public Information Officers (WRAPPIO) to convey flood hazard, safety and response messages to the community. Pre-scripted messaging and collaboration with these groups will provide timely and appropriate messaging to the community before, during, and after flood events.



## Stakeholders

The Stakeholders listed below have proven to be a valuable resource for flood information and outreach events to be coordinated with City staff:

- Insurance agents and real estate agents are represented by one or more professional associations and licensing agencies that could potentially participate as external stakeholders in the City’s public information efforts.
- Title companies often organize continuing education courses for local professionals.
- Restoration companies often provide outreach and educational materials related to flood damage and restoration to local professionals.

| Audience   | Existing Outreach Effort   | Potential New Outreach | Assignment  |
|--|--|------------------------|---|
| All  | Community Connection<br>E-blast<br>Info Tables at Community Events<br>MailChimp Campaign<br>Media Release<br>Neighborhood Associations<br>Public Service Announcements<br>Social Media |                        | City (CMO) City (CD) City (Varies)<br>City (PW) City (PW)<br>City (CD) City (PW)<br>City (PW) |
| Contractors  | Development Services Handouts  | PAC Portal             | City (PW)   |
| Developers   | Development Services Handouts<br>UD Quarterly<br>Planning Commission   |                        | City (PW) City (UD)<br>City (CD)  |
| Design Professionals–<br>Engineers, Architects,<br>and Surveyors | Development Services Handouts<br><br>Flood information and insurance letter to local design professionals  |                        | City (PW)   |
| Educators  | Teachers Association<br>Stormwater Outreach Program  |                        | City (PW)   |
| Floodplain Properties  | Floodplain Outreach Letter,<br>Streamside Mailer, Social Media   |                        | City (PW)   |
| Historic   | Historic Landmarks Commission<br>Landmark Quarterly Newsletter   |                        | City (CD) City (CD)   |

| Audience                      | Existing Outreach Effort   | Potential New Outreach                                       | Assignment                          |
|-------------------------------|--|--|-------------------------------------|
| Insurance Agents              | Insurance Association  | Continuing Education Courses                                 | Stakeholder                         |
| Lenders                       | Financial Association  | Continuing Education Courses                                 | Stakeholder                         |
| Media (during flood events)   | Radio, Public Service Announcements, Media Releases              |  | City (PW)                           |
| Natural Resource Groups       | Watershed Councils, Interpretive Signs at Minto Island Park      |  | Stakeholder                         |
| Non-residential Buildings     | UD Quarterly   |  | City (UD)                           |
| Owner-occupied Residences     | Floodplain Outreach Letter                                       |  |                                     |
| Parks Users                   | Parks and Recreation Advisory Board                              |  | City (PW)                           |
| Preferred Risk Properties     | Floodplain Outreach Letter                                       |  |                                     |
| Property Management Companies |  | Outreach Mailer  |                                     |
| Real Estate Agents            | UD Quarterly   | Salem Association of Realtors                                | City (UD)<br>Stakeholder            |
| Rental Residences             | Salem Housing Advisory Committee<br>Housing Authority Newsletter |  | City (UD) City (UD),<br>Stakeholder |
| Restoration Companies         |  | Continuing Education Courses hosted by Restoration Companies |                                     |
| Repetitive Loss Properties    | Repetitive Loss Letter   |  | City (PW)                           |

Table 19: Target Audiences and Outreach Efforts

## Flood Information Community Message Topics

The Community Rating System recommends that flood information be delivered based on specific topics and desired outcomes. **Table 20** shows applicable Community Rating System topics recommended by the Advisory Committee to be delivered at times of low flood hazard.

| Seven Priority CRS Topics                    |
|--|
| 1 Know your flood hazard                     |
| 2 Insure your property for your flood hazard |
| 3 Protect people from the hazard             |
| 4 Protect your property from the hazard      |
| 5 Build responsibly                          |
| 6 Protect natural floodplain functions       |
| 7 Flood Warning                              |

## Flood Information Messages

The Community Rating System recommends that flood information be delivered based on specific topics and desired outcomes. Flood information messages and desired outcomes differ based on the extent of the flood hazard. **Table 21** shows applicable Community Rating System topics, key messages, and desired outcomes for general flood information messages that will be delivered at times of low flood hazard.

| Topic  | PPI Message   | Outcome                                      |
|--|---|--|
| 1 Know your flood hazard                     | A Your property is at risk for flooding   | 1 Increase number of flood inquiries         |
|  | B Know your watershed and how flooding can occur  |  |
|  | C Contact information of those who can help you   |  |
| 2 Insure your property for your flood hazard | D Homeowner insurance does not cover flood damage   | 2 Increase flood insurance coverage          |
|  | E Federally backed flood insurance receives a 35% CRS premium discount in Salem.                  |  |
|  | F Purchase flood insurance before it's too late   |  |
| 3 Protect people from the hazard             | G Make an evacuation plan   | 3 Reduce injuries during flood events        |
|  | H Flood waters are dangerous for cars and pedestrians Do you walk or drive through flooded areas? |  |
|  | I Watch for power lines and gas leaks   |  |
| 4 Protect your property from the hazard      | J Elevating your home could save you money  | 4 Reduce property damage during flood events |
|  | K Retrofitting your home will reduce flood damage   |  |

|  |  |   |
|--|--|---|
|  | L Sandbags can be found by calling PW Dispatch or visiting <a href="http://www.cityofsalem.net/emergencies">www.cityofsalem.net/emergencies</a>  |   |
| 5 Build responsibly                    | M Avoid obstructions in the floodway, like fences  | 5 Reduce negative impacts of development on floodplains   |
|  | N Know the floodplain development permit requirements  |   |
|  | O Check flood elevations early in the project  |   |
| 6 Protect natural floodplain functions | P Preserve/restore native vegetation and trees   | 6 Reduce negative impacts of development on natural floodplain function and protect existing resources            |
|  | Q No dumping into storm drains, these drain directly to our waterways  |   |
|  | R Look but don't touch<br>Floodplain areas provide refuge for wildlife, some of which are threatened or endangered   |   |
| 7 Flood Warning                        | S Sign up for the Marion Polk Alert System to receive emergency flood warnings on your mobile device, landline, or email Sign up at <a href="http://www.cityofsalem.net/com/munityalerts">www.cityofsalem.net/com/munityalerts</a> | 7 Increase Marion Polk Alert System subscribers who may not have a landline to receive automated emergency alerts |

Table 21: Messages During Low Flood Hazard

## Flood Response Messages

The Community Rating System provides credit for Flood Response Preparations that develop a plan for public information to be implemented during and after a flood.

**Table 22** demonstrates the messages that will be delivered during or after a flood.

| CRS Topic                                    | FRP Message  | Outcome  |
|--|--|--|
| 1 Know your flood hazard                     | A Notify areas of high flood risk                    | Increase information about the flood event                       |
|  | B Notify areas of actual flooding                    |  |
|  | C Contact information of emergency service providers |  |
| 2 Insure your property for your flood hazard | D Contact information for flood insurance claims     | Increase efficiency of flood insurance claims after flood events |

| CRS Topic                               | FRP Message  | Outcome  |
|---|--|--|
| 3 Protect people from the hazard        | G Do not enter flood-damaged buildings until cleared by inspector                    | Reduce injuries during flood events                |
|   | H Flood waters are dangerous for cars and pedestrians                                |  |
|   | I Watch for power lines and gas leaks  |  |
| 4 Protect your property from the hazard | J Mitigate flood risks while doing flood damage repairs                              | Reduce property damage during flood events         |
|   | K Report debris blockages by calling PW Dispatch                                     |  |
|   | L Sandbags can be found by calling PW Dispatch                                       |  |
| 5 Build responsibly                     | M Get a permit for repairs   | Reduce future flood hazards for damaged properties |
|   | N Use flood-resistant materials  |  |
|   | O Substantially damaged properties may not be able to be restored to prior condition |  |

Table 22: Messages During or After a Flood

## Outreach Projects

**Table 23** summarizes the proposed outreach projects and flood response preparations. Outreach projects are intended for distribution during periods of low flood hazard. Flood response preparations are to be made ready during periods of low flood hazard and delivered during and after a flood.

| Target Audience                                       | Topics and Messages (see Table 24) | Outcomes (see Table 24) | Project(s)  | Assignment | Schedule   |
|---|------------------------------------|-------------------------|---|------------|--|
| Audience 1: Streamside and Floodplain Property Owners | Topic 1–7 and associated messages  | 1–7                     | OP1 Annual letter to owners of flood-prone properties | City (PW)  | Mailer sent to streamside and floodplain residents and property owners each fall prior to wet weather season |
|   | Topic 1–7 and associated messages  | 1–7                     | OP2 Streamside Mailer to flood-prone properties       | City (PW)  | Mailer sent to all streamside properties in the Spring of each year  |

| Target Audience                                     | Topics and Messages (see Table 24)     | Outcomes (see Table 24) | Project(s)   | Assignment              | Schedule  |
|---|--|-------------------------|--|-------------------------|---|
| Audience 2: All Salem Property Owners and Residents | Topics 1–7 and associated messages     | 1–7                     | OP3 City newsletter article                                | City (PIO)              | Community Connection article early winter and during September Preparedness Month   |
|   | Topics 1–6 and associated messages     | 1–6                     | OP4 Presentation to Neighborhood association               | City (PW)               | Bi-annual presentations scheduled before and during wet weather season              |
|   | Topics 1–4, 7 and associated messages  | 1–4, 7                  | OP5 Sandbag station brochure and sign                      | City (PW)               | Sign posted at permanent sandbag station at Operations Complex, brochures available |
|   | Topic 6 and associated messages        | 6                       | OP6 Placards next to storm catch basin inlets              | City (PW)               | Placards installed annually and replaced as necessary                               |
|   | Topics 1 and 6 and associated messages | 1–6                     | OP7 Floodplain Interpretive Trail Sign at Minto Brown Park | City (PW)               | Signs in place and inspected for damage annually                                    |
|   | Topics 2–4, 7 and associated messages  | 2–4, 7                  | OP8 Social Media Messages                                  | City (PIO)              | September Preparedness Month, wet weather season                                    |
|   | Topics 1–7 and associated messages     | 1–7                     | OP9 Salem Service Day floodplain booth                     | City (PW)               | Annual event in June  |
|   | Topics 1, 2, 3 and associated messages | 1, 2, 3                 | FRP3 Social media messages during flood events             | City (PIO and IT)       | Annual review and update prior to September 1                                       |
|   | Topics 2, 4, 5 and associated messages | 2, 4, 5                 | FRP4 Social media messages after flood events              | City (PIO and IT)       | Annual review and update prior to September 1                                       |
|   | Topics 1–6 and associated messages     | 1–6                     | FRP5 Update City web page to emergency information         | City (PIO, IT, and EPM) | Annual review and update prior to September 1                                       |

| Target Audience   | Topics and Messages (see Table 24)            | Outcomes (see Table 24) | Project(s)   | Assignment   | Schedule  |
|---|---|-------------------------|--|--|---|
| Target Area 3: Repetitive Loss Properties   | Topics 1–5, 7 and associated messages         | 1–5, 7                  | OP10 Repetitive Loss Letter  | City (PW)  | Annual letter mailed to repetitive loss properties on or before October 15                                    |
| Target Area 4: Real Estate Agents, Insurance Companies, Property Managers and Restoration Companies | Topics 1–5, and associated messages           | 1–5                     | OP11 Information flier for real estate agents  | City (PW) and real estate brokers (stakeholder)                                | Flood Hazards: flier disseminated to local real estate brokers annually                                       |
|   | Topics 1–5 and associated messages            | 1–5                     | OP12 Training for real estate professionals, insurance agents, property managers and restoration companies | City (PW), title companies (stakeholder) & restoration companies (stakeholder) | Schedule a minimum of two training sessions with local real estate and insurance offices prior to September 1 |
| Target Area 5: Developers, Contractors, and Design Professionals                                    | Topics 1–6 and associated messages            | 1–6                     | OP13 Information kiosk at PAC  | City (PW)  | Pamphlets available at PAC and updated in January of each year  |
|   | Topics 1, 3, 4, and 5 and associated messages | 1, 3, 4, 5              | OP14 Flood information and insurance mailer to design professionals  | City (PW)  | Annual mailer each fall prior to wet weather season   |
| Target Area 6: Educators, Students, Natural Resource Groups   | Topics 1, 3, 4, and 6 and associated messages | 1, 3, 4, 6              | OP15 Presentation to schools, teachers, or watershed council   | City (PW)  | Presentations scheduled monthly by Stormwater Outreach Coordinator  |

| Target Audience                 | Topics and Messages (see Table 24)     | Outcomes (see Table 24) | Project(s)                                      | Assignment | Schedule                                      |
|---------------------------------|--|-------------------------|---|------------|---|
| Target Area 7: Media and WRAPIO | Topics 1–5 and associated FRP messages | 1–5                     | FRP1 Media kit for reports during flood event   | City (PIO) | Annual review and update prior to September 1 |
|                                 |  |                         | FRP2 Media kit for reporters after flood event  |            |   |
|                                 |  |                         | FRP6 Radio PSAs after flood event               |            |   |
|                                 |  |                         | FRP7 FRP messages for WRAPIO during flood event |            |   |
|                                 |  |                         | FRP8 FRP messages for WRAPIO after flood event  |            |   |

Table 23: Proposed Outreach Projects

## Community Rating System Activities

As part of the City’s participation in the Community Rating System, public information and outreach is needed for a number of its floodplain management activities. **Table 24** summarizes the existing activities eligible for credit under the Community Rating System and how they are being incorporated into the proposed outreach projects.

Specific Community Rating System activities have been incorporated into this Program for Public Information as follows:

### **Activity 310—Elevation Certificates**

Information regarding access to Elevation Certificates will be a key element of most outreach projects. Outreach projects to real estate agents, insurance agents, and property owners will include a description of how to locate existing or create new Elevation Certificates. Upgrades to the City’s floodplain management website will also include additional information regarding access to Elevation Certificates and records of existing Elevation Certificates on file with the City.



### **Activity 320—Map Information Service**

Target audiences for map information services include owners, residents, lenders, insurance agents, and real estate agents. Most outreach projects will include a description of map information services because most projects are targeted toward one or more of those audiences. Outreach materials will direct target audiences to the City’s floodplain management website where additional information is available to determine flood risks.

### **Activity 330—Outreach Projects**

Outreach projects have been developed consistent with Community Rating System activity Program of Public Information (PPI) as described in the Community Rating System Coordinator’s Manual. Certain outreach projects have been identified for stakeholder delivery per Community Rating System activity Stakeholder Delivery (STK); however, specific stakeholders assigned to deliver each project have not been identified within this plan. Instead, each stakeholder will be determined at the time the outreach project is implemented in order to maximize flexibility of stakeholder participation and to maximize the effectiveness of the public information program.

### **Activity 340—Hazard Disclosure**

The outreach projects targeted to real estate agents will include implementation of Community Rating System activities Disclosure of Flood Hazard (DFH) and Real Estate Brochure (RB). The DFH and RB activities will include coordination with a variety of stakeholders related to the real estate industry, such as Willamette Valley Multiple Listing Service, the Salem Association of Realtors, and local real estate companies to advise home buyers and sellers of flood hazards.

### **Activity 350—Flood Protection Information**

Community Rating System activities Flood Protection Library (LIB) and Locally Pertinent Documents (LPD) are advertised in the annual outreach letter described in outreach project OP1. Community Rating System activity Flood Protection Website (WEB) will be addressed with each annual review of the flood-related webpages on the City’s website. The website will be updated to include the Committee recommended topic number 7, Flood Warning. Additional information will be added to web to include messaging encouraging the community to sign up for the Salem Community Alert System.

### **Activity 360—Flood Protection Assistance**

Certified Floodplain Managers within the Public Works Department provide flood protection assistance as described in Community Rating System activities Property Protection Advice (PPA), Property Protection Advice after Visit (PPV), and Financial Assistance Advice (FAA). The following describes how advisory services should be conducted:

- PPA—All property protection advice shall be provided by a Certified Floodplain Manager (CFM) familiar with structural and non-structural flood protection and mitigation measures, and flood insurance. In cases where structural mitigation

measures are discussed, the CFM shall consult with the building official and provide follow-up information to the requester. Drainage issues should be discussed with the Public Works Stormwater Operations staff prior to advice being given. Where appropriate, property protection information should be emailed, mailed, or hand-delivered to the inquirer if the advice is not provided face-to-face. A site visit should be recommended to inquirers that wish to pursue property protection measures. Record of the one-on-one advice shall be retained in the City's Permitting system, AMANDA, and should include: the date and type of assistance given, the property address, the details of the findings, contact information, and the recommendations provided to the inquirer.

- PPV—Site visits shall be conducted when property protection advice cannot be reasonably made over the phone, email, or in-person meetings off-site. Site visits are important when the source of flooding, drainage, or sewer problems are not obvious or apparent. Site visits shall be coordinated and conducted by a CFM, and the CFM shall be accompanied by an appropriate advisor, depending on the type of service. Possible advisors include Stormwater Services personnel for private property drainage issues, building inspector/plan reviewer for structural mitigation measures, Public Works Engineering for public infrastructure drainage issues, Wastewater Services personnel for sewer problems. Record of the site visit shall be retained in the City's Permitting system, AMANDA, and should include: the date and type of assistance given, the property address, the details of the findings, contact information, and the recommendations provided to the inquirer after the site visit is completed.
- FAA—CFMs will provide advice on potential sources of financial help for undertaking property protection measures, including local sources of financing through stormwater rates or Watershed Protection and Preservation Grant funds from the City. CFMs will also provide information about the potential to reduce flood insurance premiums for qualifying mitigation projects such as building elevation and providing additional flood vents and options for FEMA mitigation grants when they are available.

The target audiences who benefit from these services generally include property owners and contractors. These services are promoted in annual outreach projects OP1, OP3, and OP4.

### **Activity 370—Flood Insurance Promotion**

Community Rating System activities Flood Insurance Coverage Assessment (FIA), Coverage Improvement Plan (CP), and Coverage Improvement Plan Implementation (CPI) are included in **Appendix G**. Technical Assistance (TA) credit is advertised in project OP1 and explained to specific audiences in projects OP3, OP4, and OP12.

### **Activity 540—Drainage System Maintenance**

Information related to Community Rating System activity Stream Dumping Regulations (SDR) and other drainage system maintenance is included in the annual outreach letter described in project OP1. outreach letter described in project OP1. The target audience for this outreach project is property owners in the floodplain and those abutting natural waterways in order to protect natural resources and reduce debris and contamination within the City's drainage system.

## Plan Implementation

In order to be implemented effectively, the Flood Information and Outreach Plan will be regularly monitored and evaluated. The Public Works Director will oversee the implementation and evaluation of the plan with assistance of a citizen advisory committee. The advisory committee will hold annual meetings at a minimum but may meet more frequently, as warranted, to effectively monitor progress of the plan implementation. An annual evaluation report will be submitted to City Council, made available to the media, and posted on the City of Salem website.

| Activity | Description                            | Project   | Audience   |
|----------|--|---|--|
| 310      | Elevation certificates                 | OP1, OP3, OP4, OP8, OP9, OP11, OP12, OP13, OP14 | Owners, insurance agents, real estate agents                     |
| 320      | Map information service                | OP1, OP2, OP3, OP4, OP8, OP9, OP11, OP12, OP13  | Owners, residents, lenders, insurance agents, real estate agents |
| 330      | Flood response preparations            | OP1, OP2, OP3                                   | Owners, residents, insurance agents                              |
| 340      | Disclosure of flood hazard             | OP11, OP12                                      | Real estate agents   |
| 340      | Real estate brochure                   | OP11, OP12                                      | Real estate agents   |
| 350      | Library                                | OP1   | All  |
| 350      | Website                                | OP1, OP2, OP3                                   | All  |
| 360      | Property protection advice             | OP1, OP3, OP4,                                  | Owners, residents, contractors                                   |
| 360      | Property protection advice after visit | OP1, OP3, OP4                                   | Owners, residents, contractors                                   |
| 360      | Financial assistance advice            | OP1, OP3, OP4                                   | Owners, residents, lenders                                       |
| 370      | Coverage improvement plan              | All CP  | Owners, residents, insurance agents                              |
| 420      | Natural functions open space           | OP1, OP2, OP15                                  | Educators, parks, natural resource groups                        |
| 430      | Regulatory standards                   | OP1, OP3  | Owners, contractors, developers                                  |
| 450      | Water quality/erosion control          | OP1, OP3  | Owners, contractors, developers                                  |
| 500      | Repetitive loss                        | OP10  | Repetitive loss properties                                       |
| 510      | Floodplain management                  | OP1   | All  |
| 540      | Stream dumping                         | OP1, OP2  | Owners, residents  |
| 610      | Flood threat recognition               | OP1, OP2, OP4                                   | All  |
| 610      | Early warning dissemination            | OP1, OP2, OP4                                   | All  |
| 610      | Flood response operations              | OP1, OP2, OP4                                   | All  |

Table 24: Community Rating System Activities

# APPENDIX G:

# Flood Insurance Coverage Improvement Plan

## Introduction

This Flood Insurance Coverage Improvement Plan Update meets the criteria as a Flood Insurance Assessment and a Coverage Improvement Plan under FEMA's Community Rating System. This plan update assesses the community's current level of flood insurance coverage, identifies where coverage needs to be improved, establishes desired outcomes for improving insurance coverage, and creates specific outreach projects intended to meet those desired outcomes for certain target areas and audiences. This plan update has been prepared in conjunction with the Flood Information and Outreach Plan in order to coordinate outreach to common target areas and audiences.

## Flood Insurance Assessment

This element of the plan update assesses the community's current level of flood insurance coverage and identifies where coverage needs to be improved as specified in FEMA's Community Rating System Coordinator's Manual. This updated assessment revisits target areas and audiences within the community, documents current levels of flood insurance coverage, and recommends where coverage levels need to be improved.

## Target Areas

Target areas in the 2018 plan update modified the target areas to be delineated based on flood zone and occupancy type. This modification is consistent with the format in which flood insurance data is published by FEMA, which makes ongoing flood insurance assessments more effective. The target areas are explained below:

- **High Risk Zones/Special Flood Hazard Area (A, AE, AO)**—High Risk zones are identified on the FEMA Flood Insurance Rate Maps for Salem as A, AE, or AO zone properties. These areas are high-risk flood zones within the Special Flood Hazard Area where mandatory purchase of flood insurance applies.
- **Low-Moderate Risk Zones (Zone X preferred and Zone X standard)**—The Preferred Risk area includes properties citywide that are outside regulatory floodplains but potentially subject to flooding, which are defined as buildings within flood zone X5 or within 100 feet of mapped waterways.
- **Residential and Multi-family Buildings**—This building occupancy type is identified as a target area because these buildings are at higher risk of life safety concerns in the event of a flood.
- **Non-residential Buildings**—This building type makes up a smaller percentage of buildings in the floodplain in Salem, but it is more prone to costly structural and contents damage in the event of a flood.

Evaluation of flood hazards within all target areas is included in the **Hazard Assessment** and **Problem Evaluation** chapters. In summary, flood hazards common to all areas include transportation safety, public health, critical and non-critical facilities, economy, and natural areas. Flood hazards from land development vary based on the amount of developable land within each target area. Based on the broad zone categories shown in Salem Revised Code Table 110-1, a tabulation of the building types within each target area is shown in **Table 7**.

### Flood Insurance Policies

Each target area was analyzed to identify the number of buildings subject to flooding and the number of flood insurance policies of insured buildings. Because of privacy restrictions, information regarding the amount of structural coverage and contents coverage for each building is not available, but only the number of existing policies and total coverage amounts citywide. Results are summarized in **Table 25 and 26**.

| Flood Zone   | Policies in Force | Premium          | Insurance in Force   |
|--------------|-------------------|------------------|----------------------|
| AE Zones     | 390               | \$377,106        | \$107,820,300        |
| A Zones      | 8                 | \$13,046         | \$2,591,000          |
| AO Zones     | 37                | \$27,462         | \$8,343,200          |
| X Standard   | 143               | \$96,305         | \$44,423,600         |
| X Preferred  | 55                | \$39,739         | \$19,268,000         |
| <b>Total</b> | <b>633</b>        | <b>\$553,658</b> | <b>\$182,445,100</b> |

Table 25: Insurance Policies by Flood Zone as of 12/2/2022

| Occupancy Type        | Policies in Force | Premium          | Insurance in Force   |
|-----------------------|-------------------|------------------|----------------------|
| Single Family         | 381               | \$208,357        | \$89,796,500         |
| 2-4 Family            | 78                | \$32,942         | \$9,135,800          |
| All Other Residential | 44                | \$63,485         | \$17,167,200         |
| Non-residential       | 137               | \$557,131        | \$69,140,600         |
| <b>Total</b>          | <b>640</b>        | <b>\$557,131</b> | <b>\$185,240,100</b> |

Table 26: Insurance Policies by Occupancy as of 12/2/2022

## Flood Insurance Coverage

Buildings were analyzed to determine the level of flood insurance coverage based on the zone designation and occupancy type. There are currently 2,958 buildings located within the FEMA-mapped Special Flood Hazard Area. Based on this

information, approximately 22% of the buildings located in the SFHA are covered by flood insurance. Of the 2,958 buildings located in the SFHA, 2,417 are residential.

**Table 26** indicates that 17% of the residential and multi-family properties in Salem are covered by flood insurance. There were 986 flood insurance policies in force in May of 2017 when the Coverage Improvement Plan was updated in 2018. Those policies have decreased 640 policies in force as of December 2, 2022.

## Conclusions

Analysis of the flood insurance assessment update leads to the following conclusions:

- Flood insurance coverage significantly improved after the initial adoption of the 2014 Flood Insurance Plan and saw continue improvements at the 2018 update. Assessment data shows the first decrease of 12% in policies between 2021 and 2021.
- Coverage improvement projects implemented since adoption of the 2014 plan appear to be successfully encouraging property owners to obtain flood insurance.
- Despite the initial increase in flood insurance coverage, a significant majority of flood-prone structures are still not covered by flood insurance and the coverage has recently started to decline.
- Staff reviewed a Congressional Research Service study titled *Private Flood Insurance and the National Flood Insurance Program*. This study states private insurers are often able to offer less expensive flood insurance policies that are more closely tied to individual risks when compared to NFIP policies. More lenders are now accepting private flood insurance policies and policy data for private insurance is not available to communities.
- Feedback from the Coverage Improvement Plan committee points to an increase of private insurance policies as the primary factor for a decline in NFIP flood policies.
- Committee members discussed other contributing factors and suggested the historically low interest rates in 2021 led many owners with Federal Housing Administration (FHA) loans to refinance to conventional loans that do not mandate the purchase of flood insurance.
- The total number of Preferred Risk policies has shown increases, which indicates messaging about flood risks outside of the regulatory flood zones may be helpful.

## Recommendations

- Based on the effectiveness of the 2018 Coverage Improvement Plan and evaluation by the committee that insurance declines are likely related to the inability to track the number of private insurance policies, major adjustments to the previous coverage improvement projects are not warranted.
- Outreach to Zone X areas should emphasize the discounted insurance rates for Preferred Risk policies.
- Because coverage is lacking citywide, certain outreach efforts may be more effective if delivered

to the entire community.

- Messaging about the benefits of federally back flood insurance and CRS discounts have been added to this plan and will be included in future outreach projects.

## Coverage Improvement Plan

### Floodplain Management Advisory Committee

In August 2023, a notice of solicitation for committee members was delivered to key stakeholders who have been involved in floodplain management, stormwater, and emergency management-related committees in recent years. Solicitation for committee members continued through the end of August 2023.

Three committee meetings were held in September and October 2023. Agendas and minutes of those committee meetings are included in **Appendix B**.

The committee participated in the development of four related but separate work products as defined in the CRS Coordinator's Manual: (1) Flood Insurance Assessment; (2) Coverage Improvement Plan; (3) Program for Public Information; and (4) Flood Response Preparations. Action items and outreach projects for each of the plans were coordinated to optimize outreach efforts to each target area and audience.

### Current Level of Flood Insurance Promotion

FEMA promotes flood insurance through its website, [fema.gov](https://www.fema.gov). This website includes information about the National Flood Insurance Program, resources for finding insurance agents, and other assistance for citizens inquiring about flood insurance. FEMA offers an extensive nationwide flood insurance training program for lenders, insurance agents, and adjusters.

The Department of Land Conservation and Development (DLCDC) coordinates the National Flood Insurance Program in Oregon. The DLCDC website states:

*DLCDC Natural Hazards program serves as the state's coordinating agency for the National Flood Insurance Program (NFIP) through an agreement with the Federal Emergency Management Agency (FEMA). Oregon has 258 cities and counties that are subject to flooding, and all participate in the NFIP thereby making flood insurance available to their residents and businesses.*

The DLCDC website includes links to FEMA's website and provides instructions to property owners who are interested in flood insurance.

Salem initially adopted a Flood Insurance Plan in 2014 and has performed coverage improvement projects as specified in the plan. The City of Salem also promotes flood insurance through its floodplain information website and several annual outreach letters that are sent to all owners of property within the floodplain and along waterways. The City has also performed a variety of targeted outreach projects at community events and neighborhood associations.

### Desired Outcomes

A coverage improvement plan must establish desired outcomes for each target area. In order to better identify these outcomes, specific audiences were created in conjunction with the Program for Public Information. The audiences in **Table 27** include those that the committee felt would most benefit from outreach related to flood insurance. Outreach efforts targeted to each specific audience will assist in meeting citywide goals. Additional outreach addressed to specific target areas will further help meet outcomes in each target area. Desired outcomes and priorities are identified by target areas and audiences in **Table 27**.

| Target Areas   | Outcome  | Priority |
|--|--|----------|
| High Risk Zones/Special Flood Hazard Area (A, AE, AO)          | Increase number of flood insurance policies or owners without mortgages  | High     |
| Low-Moderate Risk Zones (Zone X preferred and Zone X standard) | Increase awareness of preferred risk flood insurance policy rates and the number of policies in preferred risk areas | High     |
| Residential and Multi-family Buildings                         | Increase contents coverage for renters   | Medium   |
| Non-residential Buildings                                      | Increase policies and contents coverage for lessees  | Low      |
| Preferred Risk   | Increase number of flood insurance policies along waterways  | High     |
| Flash flood potential  | Increase contents coverage because of limited time for relocation  | Low      |
| Floodplain properties  | Increase awareness of benefits of flood insurance and risks of being under-covered                                   | High     |
| Insurance agents   | Improve coordination between insurance industry and City staff   | Medium   |
| Lenders  | Increase awareness of flood insurance requirements and options   | Low      |
| Non-residential buildings                                      | Increase contents coverage for lessees   | Medium   |
| Owner-occupied residences                                      | Increase number of flood insurance policies for owners without mortgages   | Medium   |
| Real estate agents   | Increase awareness of real estate agents to inform potential buyers of flood insurance                               | Medium   |
| Rental residences  | Increase contents coverage for renters   | Medium   |

Table 27: Coverage Improvement Desired Plan Outcomes

### Coverage Improvement Projects

Coverage improvement projects are intended to increase flood insurance coverage in targeted areas. These projects have been selected based on the following criteria: (1) reach key audiences who need better information about the benefits of flood insurance; (2) utilize existing community resources who are personally or professionally involved in issues related to flood insurance; (3) accomplish desired outcomes within each target area; and (4) coordinate with other outreach endeavors included in the Flood Information and Outreach Plan.



| Code | Outreach Project                                   | Target Area | Audience  | Responsibility | Timing    |
|------|--|-------------|---|----------------|-----------|
| CP1  | City newsletter article                            | All         | All   | City (PW)      | Bi-annual |
| CP2  | Stakeholder training session                       | All         | Real estate agents<br>Lenders<br>Insurance agents<br>Restoration Companies<br>Property Managers | Stakeholder    | Bi-annual |
| CP3  | Presentations to neighborhood associations         | All         | All   | City (PW)      | Bi-annual |
| CP4  | Real estate and property management flier          | All         | Rental residences<br>Real estate agents   | Stakeholder    | Annual    |
| CP5  | Project involving mayor/council per CRS guidelines | All         | All   | City Council   | Annual    |
| CP6  | Social media messages                              | All         | All   | City (PW)      | Annual    |

Table 28: Coverage Improvement Projects

### Responsibility

The Public Works Department is the City’s lead department in administrating the Floodplain Management Plan and the National Flood Insurance Program. As a result, all outreach project efforts will be coordinated by City of Salem Public Works staff. In compliance with Community Rating System requirements for a coverage improvement plan, one outreach project (CP5) was selected that includes direct involvement by City elected officials.

Specific outreach projects target key audiences within the community involved in flood insurance, such as insurance agents, lenders, real estate agents, and property managers. Each of these target audiences is represented by one or more professional organizations that could potentially participate as external stakeholders in the City’s public information efforts. As a result, projects CP2 and CP4 are identified for implementation by community stakeholders consistent with the Stakeholder Delivery element of the Community Rating System.

### Plan Implementation

In order to be implemented effectively, the Flood Insurance Plan will be regularly monitored and evaluated. The Public Works Director will oversee the implementation and evaluation of the plan with assistance of a citizen advisory committee. The advisory committee will hold annual meetings at a minimum but may meet more frequently, as warranted, to effectively monitor progress of the plan implementation. An annual evaluation report will be submitted to City Council, made available to the media, and posted on the City of Salem website.