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REPORT TO COUNCIL

TO: MAYOR CHARLIE HALES
FROM: CARMEN MERLO, PBEM DIRECTOR
SUBJECT: 2012 ANNUAL EVALUATION REPORT ON FLOOD HAZARD MITIGATION ACTIONS, IN CONFORMANCE WITH NATIONAL FLOOD INSURANCE PROGRAM COMMUNITY RATING SYSTEM RULES
DATE: 1/17/2013

INTRODUCTION

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates are discounted in CRS-participating communities to reflect the reduced flood risk resulting from the community actions. The City of Portland participates in CRS.

The City's 2010 Natural Hazard Mitigation Plan (NHMP) helps the City meet standards for participation in CRS. Within the NHMP, Section 5: Mitigation Strategy identifies and analyzes a comprehensive range of actions and projects to mitigate the effects of natural hazards that can threaten life, the economy, public infrastructure, or the City's ability to operate. It is this section that addresses floodplain management and participation in the NFIP and CRS program.

In addition to having an up-to-date plan, a requirement of participation in the CRS program is that the program administrator present an annual report to its governing body on actions to implement the floodplain management plan. This report is presented in fulfillment of that requirement.

The body of the report is the table on the following pages, which list the actions in Section 5 of the NHMP (Table 5-6-1a) that address NFIP compliance or specifically address flooding hazards. For this annual report, the original table of action items was reproduced and the status of each item was added, along with suggestions for new projects or revised recommendations where appropriate.

This report was prepared collaboratively by PBEM and the Bureau of Environmental Services. PBEM anticipates issuing a complete update to the NHMP in 2015. Information from the annual progress reports will be incorporated into the new plan.

I recommend that Council accept this report in fulfillment of requirements of participation in the National Flood Insurance Program Community Rating System.

Interpreting this table. Table 5-6-1a (following pages) includes this information:

- **Action ID number:**

LT = Long-Term, ST = Short-term; MH = Multi-hazard

- **NHMP goals addressed,** identified by their goal number:

1. Update the risk assessment and vulnerability analysis every five years
2. Implement actions to prepare, protect, preserve and restore life, property and natural systems
3. Promote public outreach to a variety of City populations
4. Improve City of Portland's economic resilience through inclusion of the private sector into mitigation action implementation
5. Commit to continuously reducing the City's natural hazards vulnerability
6. Maximize mitigation effectiveness by taking a comprehensive approach to natural resource management via city plans, codes and programs that increase mitigation efforts
7. Coordinate mitigation activities with regional communities and agencies

- **Narrative description of the action**

- **Priority of the action**

High = address hazards that occur annually or nearly annually and impact people or critical facilities

Medium = address hazards that impact the community less frequently and don't typically impact people or critical facilities

Low = address hazards that occur rarely and rarely generate impacts to people or critical facilities

- **Responsible and coordinating agencies**

- **Potential funding agencies**

- **Timeframe for the action**

ST = short-term, 1-2 years; LT = long-term, more than 2 years

- **Narrative description of the benefit/cost and technical feasibility of the action.**

- **Project status (NEW / UPDATED for 2012)**

Project status information was gathered from city staff with the best knowledge of each action item; that person's name appears in a footnote for future reference.

Table 5-6-1a Benefit Vs. Cost Analysis

ACTION ID	GOALS	DESCRIPTION	PRIORITIZATION (HIGH, MEDIUM, LOW)	RESPONSIBLE & COORDINATING BUREAUS & AGENCIES	POTENTIAL FUNDING AGENCIES	TIMEFRAME	(B/C) BENEFIT-COSTS (TF) TECHNICAL FEASIBILITY	Status as of September 2012
ST MH #5	1-7	Acquire Light Detection and Ranging (LiDAR) images of the Portland Metro area to facilitate natural hazard area risk assessment and vulnerability analysis. (mapping) (NFIP Compliance)	High	PBEM, CGIS, BES, PF&R, Water, PBOT	City of Portland, FEMA HMA, FEMA AFG, FP&S, SAFER, DHS	ST Ongoing	B/C: Pre-identification of hazard areas ensures that structures are not placed within hazard areas. Developing a mapping committee ensures a comprehensive approach to determining the City's mapping needs. TF: This is feasible as financial resources become available. LiDAR will greatly enhance the City's risk and vulnerability analysis through expanded mapping capability.	Complete ¹
ST MH #7	1,2,6	Create a mitigation mapping committee to index and maintain GIS mapped inventory and develop prioritized list of critical facilities, residential and commercial buildings within known hazard areas such as earthquake, erosion, the 100-year and 500-year floodplains, invasive plant species, landslide and wildfire areas. (NFIP Compliance) Identify parameters and methods for new maps as needed to meet multi-hazard mitigation goals and to improve communication with the public.	High	PBEM, CGIS, BES, PBOT, BDS, PF&R, Water, BPS	City of Portland	ST Ongoing	B/C: Coordinated mapping ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. It also ensures bureau coordination which expedites understanding as it applies to asset management as related to hazards. TF: This is feasible using existing resources. The City's possesses GIS infrastructure to easily accomplish these tasks.	In process; Bureau of Planning and Sustainability is leading an effort to create a Risk Map; They are working with FEMA Region 10. ²
ST MH #11	2,5,6,7	Implement actions in the 2005 Portland watershed management Plan (PWMP) (planning) (NFIP Compliance)	High	BES	City of Portland	ST Ongoing	B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and City residents. Watershed management reduces flooding, landslides, the impact of severe weather and erosion. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	Ongoing; Since 2010 BES completed the 5-Year Implementation Action Strategy. Key implementation successes since 2010 include: Grey to Green Program, Willing Seller Program, Tabor to the River Program and Crystal Springs Restoration. ³

¹ Portland CGIS

² Maggie Skenderian, BES

³ <http://www.portlandonline.com/bes/index.cfm?c=38965&a=394563>

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LT MH #1	2,5,6,7	Revise Portland's Comprehensive Plan to address and implement Citywide policies, land use improvements and mapping changes to natural hazards including, but not limited to, earthquakes, erosion, floods, invasive plants, landslides, volcano, severe weather and wildfires. (mapping, planning) (NFIP Compliance)		BPS	City of Portland	LT Ongoing	B/C: Land use planning that considers hazards as an integral component, policies can be established that will ensure reduction of loss and damage to structures. TF: This activity is feasible and currently being implemented through the background reports of the Portland Plan which will inform the 25 year long range Comprehensive Plan.	Ongoing; Estimated completion summer 2014. ⁴
LT MH #8	1,2,5,6,7	Review and amend City Code and other compliance documentation to require that all facilities that store or handle hazardous materials (including large tanks) and which are located in the 500-year floodplain, landslide, or other hazard areas, develop a hazardous materials inventory statement. This statement will be made available for Fire Bureau review. Require that these storage tanks are either adequately protected or relocated outside of the 500 year floodplain, landslide, or other hazard areas. (asset management) (NFIP Compliance)	High	PF&R, PBEM, BDS	City of Portland, DHS	LT Ongoing	B/C: Implementing this mitigation activity will potentially reduce ancillary HAZMAT damages from earthquakes, floods, landslides and other potential hazards. TF: This type activity is technically feasible within the community typically using existing labor, equipment and materials.	The State Fire Marshal requires an inventory of hazardous materials within the 100-year floodplain; this information is available for Fire Bureau review. PBEM and the Fire bureau are exploring the feasibility of expanding this inventory to the 500-year flood plain as a local requirement. Any additional requirements for protection of tanks in the 500-year floodplain will be based on this assessment. ⁵
New MH 2	1,2,3,5,6	Identify and list repetitively flooded structures and infrastructures, analyze the threat to these facilities and prioritize mitigation actions to protect the threatened population. (NFIP Compliance)	High	BPS, PBOT, BES, PBEM; State Floodplain Manager	City of Portland, FEMA HMA, NRCS	New LT Ongoing	B/C: Flood hazard mitigation is among FEMA's highest national priorities. FEMA desires communities focus on repetitive flood loss properties. This activity will ensure the City Council focuses on priority flood locations and projects. TF: This project is feasible as funding becomes available using effective communication, staff resources and existing facilities. This activity is feasible for the City to complete and is ongoing demonstrating its feasibility.	Ongoing; The Willing Seller Program is an ongoing effort to purchase property and remove structures in the floodplain ⁶

⁴ Marie Walkiewitz, BES

⁵ Jonna Papaefthimiou, PBEM

⁶ Ali Young, BES

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New Reworded MH 3	1,2,4,5	Acquire (buy-out), demolish, or relocate structures from hazard prone area. Property deeds shall be restricted for open space uses in perpetuity to keep people from rebuilding in hazard areas. (planning) (NFIP Compliance)	High	BPS, PBOT, BES, PBEM; State Floodplain Manager, BGS, PARKS, BDS, BES, Risk Management	City of Portland, FEMA HMA, FEMA AFG, FP&S, SAFER, DHS, NRCS,	New LT Ongoing	B/C: Flood hazard mitigation is among FEMA's highest national priorities. F This activity will ensure the City Council focuses on priority flood locations and projects to remove threatened structures from the floodplain and other hazard areas, eliminating future damage while keeping land clear for perpetuity. 7TF: This project is feasible as funding becomes available using existing staff skills, equipment and materials.	Ongoing; 7.3 acres of floodplain purchased and 13 buildings demolished since January 2010 ⁷
New MH 4	2,5,6	Develop and incorporate building ordinances commensurate with building codes to reflect survivability from all hazards to ensure occupant safety. (NFIP Compliance)	High	PBEM, BDS, BPS	City of Portland	New LT Ongoing	B/C: Coordinated planning through building codes and ordinances can reveal how one action by a developer or a construction technique to cost less and provide more protection to the property owner or the community. TF: This activity involves effective communication and staff resources; this activity is ongoing demonstrating its feasibility.	Ongoing; City Code Chapter 24.50 Flood Hazard Areas applies local standards (beyond state building codes) to structures in the 100-year floodplain. In 2010, DLCD reviewed Portland Title 24.50 Floodplain Requirements and recommended changes, which were adopted in 2010. Updates to Chapter 24.50 will continue to occur as needed, at a minimum whenever FEMA flood maps are revised. ⁸
ST FL #1	2,5	A covenant is recorded with the deed of new development in the floodplain to ensure that space below the BFE is not converted to habitable space. This should be codified to improve compliance. (NFIP Compliance)	High	BDS	City of Portland	ST Ongoing	B/C: Coordinated planning ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	In process; requirement not yet codified. ⁹

⁷ Eli Callison, BES

⁸ Doug Morgan, BDS

⁹ Doug Morgan, BDS

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ST FL #2	2,4,5,6	Continue to co-fund improvements to river and stream gauges in the Portland metropolitan area with the United Geological Survey.	Low	BDS	City of Portland, NOAA/NWS	ST Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. This joint effort strengthens County and City warning capabilities. TF: Fund acquisition is a continuous ongoing activity demonstrating its feasibility.	Ongoing and funded ¹⁰
ST FL #4	5,6,7	Secure the agreements necessary to design and implement the redevelopment of Freeway Land Company site. (within the Lents Urban Renewal Area)	High	BES, PDC; BPS, PBOT, PARKS	City of Portland	ST Ongoing	B/C: Coordinated planning effort ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	Ongoing. Multiple City Agencies coordinating to determine long-term land use goals for Foster Corridor area ¹¹
ST FL #5	2,3,4,5,6	Acquire outside funding to hire a consultant to lead the application process to maintain a Class 5 rating when the City seeks Community Rating System re-certification.	High	BES, BDS, BPS; Parks, PBEM, PBOT	City of Portland	ST Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. TF: This activity is ongoing demonstrating its feasibility.	Funding will be sought for next Cycle Reverification ¹²
ST FL #6	5,6,7	Support Multnomah County Drainage District (MCDD) in the continued calibration and update of hydraulic models for conveyance and internal flood impacts to the four floodplains managed by MCDD #1.	Medium	PBEM, BES, BPS	City of Portland, NOAA/NWS	ST Ongoing	B/C: Coordinated planning, mapping and modeling ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This project is feasible using existing staff skills, equipment and materials.	All of the districts continue to calibrate their H&H model using XP SWIMM. All of the models use full build out for impervious area at 85% based on present zoning for each City. Areas of concern for flooding have been identified in the model. Documentation for the XP SWMM model is available from MCDD. ¹³
ST FL #8	5,7	Identify funding for the design and construction of the Springwater Wetlands Complex, a 30-acre floodplain wetland restoration project in the Lents area of Johnson Creek.	High	BES,BPS, Parks and Recreation	City of Portland, FEMA HMA, NOAA/NWS, NRCS, USACE	ST Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. TF: This activity is ongoing demonstrating its feasibility.	This project is on hold for the next year to determine how it fits in with other planning efforts in the surrounding floodplain ¹⁴

¹⁰ Maggie Skenderian, BES

¹¹ Ali Young, BES

¹² Maggie Skenderian, BES

¹³ Nancy Hendrickson, BES

¹⁴ Ali Young, BES

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ST FL #9	3,4,5,6,7	Secure funding to implement the passive flood management projects that are recommended in the Johnson Creek Restoration Plan & other watershed management plans. Coordinate with Portland Development Commission's urban renewal efforts in Lents and with other partners in other parts of the watershed.	High	BES, PARKS, PDC	City of Portland, FEMA HMA, NOAA/NWS, NRCS, USACE	ST Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. TF: This activity supports project options and is an ongoing initiative demonstrating its feasibility.	Since January 2010 90 acre feet of flood storage added ¹⁵
ST FL #10	4,6	Improve definitions and refine standards for stormwater retention in the Storm water Management Manual.	High	BES, BDS, BPS	City of Portland	ST Ongoing	B/C: Coordinated planning ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	Since January 2010 there have been no updates to the Portland Stormwater Management Manual ¹⁶
LT FL #1	4,5,6,7	Increase funding for the Johnson Creek Willing Seller Program; establish willing seller programs in other watersheds where flood hazard and priority restoration areas coexist. (NFIP Compliance)	High	BES, PARKS, BPS, Water	City of Portland, FEMA HMA, NRCS	LT Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. This program has proved very successful at removing structures from the floodplain. TF: This activity has removed structures from hazard areas and is an ongoing initiative demonstrating its feasibility.	Since January 2010 the Johnson Creek Willing Seller Program has received yearly funding of about \$500,000. The Gray to Green Land Acquisition program has about 8 million for acquisition throughout the City in significant natural resource areas, including uplands and headwater areas. Acquisition of these areas will help mitigate flooding by protecting tree canopy, protecting groundwater recharge areas and preventing the introduction of impervious surfaces. ¹⁷

¹⁵ Maggie Skenderian, BES

¹⁶ Dawn Uchiyama, BES

¹⁷ Ali Young, BES

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LT FL #3	2,3,5,6	Develop a plan for addressing flooding in the Holgate Lake area. (planning) (NFIP Compliance)	High	BES,BDS, PARKS, BPS	City of Portland, FEMA HMA, USACE	LT Ongoing	B/C: Coordinated planning ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	This work has not begun yet. ¹⁸
LT FL #4	2,5	Improve hydraulic bottleneck that prevents discharge of chlorinated effluent to the Willamette River during high river levels. (NFIP Compliance)	High	BES	City of Portland, USACE	LT	B/C: Hydraulic bottlenecks develop excess pressure which eliminates water force control due to excessive water volumes beyond facility capacity. This project will effectively mitigate chlorinated effluent discharge in to the Willamette River during high water flow flood events. The City relies heavy on the numerous bridge trestles that span the river systems ensuring access and resource transportation. Upgrading the trestles ensures efficient access and reduces delays in goods and passenger delivery. TF: This project is technically feasible using existing staff skills, equipment, materials and resources as funding becomes available.	This issue has been tabled because the benefit does not justify the cost of the project. BES is currently working on a new facilities plan update with projections for next 10-30 years. This topic will be included in the update but nothing has been decided at this point. ¹⁹
LT FL #5	2,3,5,6	As Waterfront Park remodeling is designed, ensure that Portland's downtown property and critical facilities remain protected from floodwaters. (asset management)	High	PARKS, PF&R BPS, BDS	City of Portland	LT Ongoing	B/C: This project is essential for sustainability and operations continuity ensuring City infrastructure and the population's remain protected from potential flood impacts during reconstruction ensuring their health and safety. TF: This activity is technically feasible within the community through partnership agreements or memoranda to maximize existing utility infrastructure availability.	The master plan for Waterfront Park will be revisited as part of the West Side Central City 2035 planning process. Flooding will be address through this process. The planning process for the west side is just underway and will be ongoing for a number of years. ²⁰

¹⁸ Ali Young, BES

¹⁹ Tuong Nguyen, BES

²⁰ Kevin Kilduff, BES

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LT FL #6/#7	2,5,6,7	Partner with Army Corps of Engineers to conduct modeling of the Willamette River upstream of Portland to identify areas that, if acquired or restored, would contribute to mitigate of peak flows in Portland or result in significant reduction of flood damages. (NFIP Compliance)	High	BES	City of Portland, NOAA/NWS, USACE	LT Deferred	B/C: Coordinated planning, mapping and modeling ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	Recommendation is to rewrite this action for the 2015 Hazard Mitigation Plan update to reflect that USACE and the City of Portland are not available to model the Willamette River. Rather, the City can work off the floodplain restoration strategies listed in the ODFW Oregon Conservation Strategy for the Willamette Valley EcoRegion. The City can partner with organizations such as OWEB, OSU, Willamette Riverkeepers, and McKenzie River Trust that are acquiring floodplain and restoring the floodplain. ²¹ Additionally, the City should consider working with the USACE to analyze how control of the dams upstream along the Willamette may influence flood control downstream in the Portland area. ²²

²¹ Paul Ketchem, BES

²² Mark Liebe, BES

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LT FL #8	2,5,6,7	Develop goals, policies and implementation measures to manage the amount of new impervious surface and remove existing impervious surfaces where appropriate. These goals, policies and measures may be at the citywide, watershed, or sub-watershed level. (planning) (NFIP Compliance)	High	BPS, BES, BDS, PBOT	City of Portland, FEMA HMA, FEMA AFG, FP&S, SAFER, NOAA/NWS, NRCS, USACE	LT Ongoing	B/C: Coordinated planning ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity involves effective communication and staff resources; this activity is feasible for the City to complete. This activity is ongoing demonstrating its feasibility.	<p><u>Willamette Watershed:</u> Group has identified strategies and actions to reduce impervious surface runoff to both combined and separated stormwater systems in about ¼ of subwatersheds in Willamette watershed. Group will develop strategies and actions for remaining ¾ of subwatersheds in future.</p> <p><u>Tryon/Fanno Watershed:</u> 2005 Fanno/Tryon Watershed plan includes the following "Approach to Improve Watershed Health": Implementation of programs and stormwater retrofit actions in highly developed areas of the watershed (impervious cover exceeds 40%) to manage stormwater runoff from impervious areas on-site. These projects will help reduce stormwater runoff volumes and velocities to protect in-stream habitat and improve water quality by reducing channel erosion and resulting concentrations of total suspended solids (TSS). In addition, efforts will be undertaken to expand and strengthen existing programs, policies, and requirements to reduce effective impervious area (EIA). Implementation schedule: projects (1-10 years) and programs (on-going).</p> <p><u>Johnson Creek and Columbia Slough:</u> Watershed Plans are not yet complete for Johnson Creek and Columbia Slough. Both watersheds default to the goals of the Portland Watershed Management Plan (PWMP): "Move toward normative stream flow conditions to protect and improve watershed and stream health, channel functions, and public health and safety." Both watersheds are implementing actions to modify the storm drain system to increase infiltration.</p>

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LT FL #9	2,5	Upgrade trestles that carry the main conduits of the water delivery system. (Sandy River Crossing interties completed) (asset management)	High	Water	City of Portland, FEMA HMA, USACE	LT Deferred	B/C: The City relies heavy on the numerous bridge trestles that span the river systems ensuring access and resource transportation. Upgrading the trestles ensures efficient access and reduces delays in goods and passenger delivery. TF: This project is technically feasible using existing staff skills, equipment, materials and resources as funding becomes available.	Half of the trestles in the system have been upgraded or replaced with buried sections of conduit ²³
FL #10	2,5	Create redundancy in the water delivery system at the three Sandy River crossings by burying conduits under the river (in progress).	Medium	Water	City of Portland	LT Ongoing	B/C: Redundant capability is essential for sustainability and operations continuity ensuring City water utility sustainability and the population's health and safety. TF: This activity is technically feasible within the community through partnership agreements or memoranda to maximize existing utility infrastructure availability.	Two of the three conduits at the Sandy River Crossing have been routed into a tunnel beneath the river and hardened by encasing them in concrete. The third remains on a steel frame bridge, and there are no plans to put the third conduit into a tunnel ²⁴
LT FL #11	2,5,6,7	Provide funding for and participate in development of a flood inundation model for the managed floodplains and downtown sea wall. (mapping) (NFIP Compliance)	Medium	PBEM, BES, Water	City of Portland, FEMA HMA, NOAA/NWS, NRCS, USACE	LT Ongoing	B/C: This ongoing activity is essential for the City as there are limited funds available to accomplish effective mitigation actions. TF: This activity supports project options and is an ongoing initiative demonstrating its feasibility.	MCDD has developed a 3D flood inundation for MCDD and portions of Pen 1 and Pen 2 to identify inundation caused by a levee breach. The Model has not been fully developed and utilized because of lack of funding to continue modeling. ²⁵
LT FL #12	2,5	Install a river gauge in the vicinity of the bridge over Johnson Creek at 108 th . The gauge should be able to send data to remote monitoring sites.	Medium	PBEM, PBOT, Police, Water	City of Portland, NOAA/NWS	LT Ongoing	B/C: The river gauge is essential to provide the City with essential early water level fluctuation warning. TF: This project is feasible using existing staff skills, equipment and materials.	In process; currently being considered. ²⁶
LT FL #13	2,5	Install one-way valves on the outlet pipes of the storm inlets on SE Foster Road between 101 st and 112 th .	Low	PBOT, BES	City of Portland, FEMA HMA, NRCS, USACE	LT Ongoing	B/C: The one-way valve will protect the system from reverse flow forces minimizing or eliminating damage impacts. TF: This project is feasible using existing staff skills, equipment and materials.	No longer relevant. Inlets are now directed to a stormwater swale. ²⁷

²³ Cherri Warnke, Water Bureau

²⁴ Cherri Warnke, Water Bureau

²⁵ Nancy Hendrickson, BES

²⁶ Maggie Skenderian, BES

²⁷ Maggie Skenderian, BES

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FL		Complete update to the Johnson Creek Restoration Plan. Develop individual plans for each subwatershed to address the sources of excess stormwater runoff that exacerbates flooding. (NFIP Compliance)	High	PBEM	City of Portland, USACE	LT	B/C: Coordinated planning ensures effective damage avoidance or reduction and ensures proper attention is assigned to reduce losses and damage to structures and City residents. TF: This activity is technically feasible and involves effective communication and staff resources; this activity is feasible for the City to complete.	Ongoing. Process began in 2011 and will continue over next 5-years. ²⁸
FL	2,5	Establish flood mitigation priorities for critical facilities and residential and commercial buildings located within the 100- year floodplain using survey elevation data. (NFIP Compliance)	Low	PBEM, All bureaus	City of Portland, FEMA HMA, USACE	LT	B/C: This project would reduce risk to infrastructure and residential properties by elevating, relocation, or providing location appropriate measures to reduce flood damage to threatened structures within the floodplain. TF: This activity is technically feasible and involves effective communication and staff resources; this activity is feasible for the City to complete.	Ongoing effort as part of the Risk Map and resiliency planning ²⁹

²⁸ Ali Young, BES

²⁹ Maggie Skenderian, BES