Oregon Implementation Plan for NFIP-ESA Integration

FEMA's response and proposed implementation approach for the 2016 Biological Opinion on the National Flood Insurance Program in Oregon

DRAFT, October 2021

FEMA

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List of Preparers

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List of Acronyms

AFCFH	Area of Future Conditions Flood Hazard
BiOp	Biological Opinion
CAC	Community Assistance Contact
CAP-SSSE	Community Assistance Program – State Support Services Element
CAV	Community Assistance Visit
CFR	Code of Federal Regulations
CLOMC	Conditional Letter of Map Change
CMZ	Channel Migration Zone
CRS	Community Rating System
DRRA	Disaster Recovery and Reform Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIMA	Federal Insurance and Mitigation Administration
FIRM	Flood Insurance Rate Map
GTA	General Technical Assistance
HHA	High Hazard Area
LID	Low Impact Development
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
PRA	Paperwork Reduction Act
Risk MAP	Risk Mapping, Assessment, and Planning
RPA	Reasonable and Prudent Alternative
SFHA	Special Flood Hazard Area

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Figures and Tables

I: Background and Intent

FEMA administers the National Flood Insurance Program (NFIP), a nationwide program that reduces future flood damage by requiring minimum floodplain management standards and provides protection for property owners against potential flood losses through insurance. The NFIP was established by the United States Congress in 1968 with the passage of the National Flood Insurance Act (NFIA) (42 United States Code [U.S.C.] §4001 et seq.).[1] This law mandated that FEMA identify the nation's flood-prone areas and make insurance available to participating communities (local, tribal, and state governments) that implement floodplain management requirements that meet or exceed the minimum standards of the program. The NFIP is the primary source of flood insurance coverage for residential properties in the United States.

The NFIP also engages in many "noninsurance" activities to serve the public interest. These include identifying and mapping flood hazards, disseminating flood-risk information through flood maps, and setting minimum floodplain management standards for community participation. The NFIP contributes to community resilience by setting minimum standards and offering incentive programs such as the Community Rating System (CRS). Through the CRS, communities are credited for activities that exceed FEMA's minimum NFIP requirements and further reduce flood risk.

Participation in the NFIP is voluntary but necessary for communities to obtain access to NFIP flood insurance. This insurance is designed to protect against the risk of flood losses, thus reducing the escalating costs of repairing damage to buildings and their contents caused by floods. FEMA sets the minimum standards for participating communities through regulation for participants, although communities may adopt stricter standards. Participating communities are responsible for adoption and enforcement of the floodplain management standards. However, FEMA may place communities on probation or suspend them if they fail to adopt or enforce the minimum standards. If communities do not remedy the issue, they may be removed from the program.

As a federal agency, FEMA must consider whether NFIP activities affect listed threatened or endangered species protected by the Endangered Species Act (ESA). Under Section 7 of the ESA, FEMA is required to consult with the US Fish and Wildlife Service and/or the National Marine Fisheries Service (collectively "the Services") when any action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species or adversely modify the habitat of such species.[2] A lawsuit brought against FEMA in 2009 by Portland Audubon Society et al.[3] sought to highlight the agency's failure to consult with the Services on this action and the impacts of

[1] *National Flood Insurance Act of 1968*, as amended, and the *National Flood Disaster Act of 1973*, as amended. 42 U.S.C. 4001 et. seq

[2] *Endangered Species Act of 1973*. Interagency Cooperation. Sec. 7(a), Federal Agency Actions and Consultations.

[3] *Audubon Society of Portland et. al. v. FEMA.* 2009. D. Ore., Case. No. 3:09-cv-729-HA.

implementing the NFIP in Oregon on listed species present in the state's watersheds. A settlement agreement was reached in 2010,[4] and FEMA initiated informal consultation with NMFS soon after. In July 2011, FEMA initiated formal consultation with the submittal of a Programmatic Biological Assessment[5] on the NFIP for Oregon state listed species and critical habitat.[6]

In addition to consultation on NFIP minimum floodplain management criteria[7] within Oregon, mapping activities[8], and implementation of the Community Rating System (CRS)[9], the settlement agreement also required a change to the Conditional Letters of Map Change (CLOMC) application process.

On April 4, 2016, NMFS completed their analysis of the effects of the NFIP on species listed as threatened or endangered under the ESA and issued a Biological Opinion (BiOp).[10] The BiOp concluded that the current implementation of the NFIP in Oregon is likely to jeopardize the continued existence of 16 anadromous fish species and the Southern Resident Killer Whale, all of which are listed as threatened or endangered under the ESA, and result in the destruction or adverse modification of designated or proposed critical habitat for the 16 anadromous fish species. The Reasonable and Prudent Alternative (RPA) included within the Biological Opinion proposed alternative approaches to NFIP performance standards that, when implemented, would avoid continued jeopardy for the listed species and habitat described in the BiOp.

Based on the BiOp and recommendations made in the RPA, and pursuant to Section 7(a)(2) of the ESA, FEMA must make several significant changes. These are outlined in detail in Section II of this document, and include changes to information provided to communities, mapping products, and reporting requirements for NFIP communities. FEMA must also ensure that NFIP-participating

[4] Letter sent by FEMA on July 29, 2010 to Kim Kratz, Director, NMFS Oregon State Habitat Office from Angela Gladwell, Director, FIMA Office of Environmental Planning and Historic Preservation.

[5] Department of Homeland Security, FEMA Region X. *Program Level Biological Assessment for the National Flood Insurance Program – Oregon State*. (AECOM, 2011); the Biological Assessment submitted by FEMA was developed pursuant to 50 CFR § 402.12 and included information specified in 50 CFR § 402.14(c)(i) through 402.14(c)(vi).

[6] Letter sent by FEMA on July 12, 2011 to Kim Kratz, Director, NMFS Oregon State Habitat Office from Mark Eberlein, FEMA Regional Environmental Officer. The FEMA Region 10 Programmatic Level Biological Assessment for the National Flood Insurance Program in Oregon (July 2011) accompanied the letter.

[7] 42 USC § 4012(c)

[8] 42 USC § 4101(a)(1), (a)(2)

[9] 42 USC § 4022(b)(1)

[10] National Marine Fisheries Service. *Endangered Species Act (ESA) Section 7(a)(2) Jeopardy and Destruction or Adverse Modification of Critical Habitat Biological Opinion and Section 7(a)(2) "Not Likely to Adversely Affect" Determination for the Implementation of the National Flood Insurance Program in the State of Oregon*. (April 14, 2016) NMFS Consultation Number NWR-2011-3197.

communities within the BiOp Action Area (Figure 1)[11] adopt measures needed to avoid continued jeopardy and/or adverse modification and collectively meet a standard of "no net loss" for habitat functions essential to the survival of the ESA-listed species identified in this BiOp. These measures are outlined in greater detail in Section III of this document.

The Oregon NFIP BiOp and its RPA do not directly require any action of state, local, or Tribal governments participating in the NFIP, because the consultation on NFIP impacts to listed species occurred between the two federal agencies, FEMA and NMFS. FEMA does not have authority in local land use decisions. For communities to participate in the NFIP, they must adopt the minimum performance standards for the program in their local land use regulations.

As a result, under the BiOp, FEMA must implement the NFIP such that the individual floodplain development actions permitted by local and Tribal governments participating in the program do not further jeopardize listed species and their critical habitat.[12] FEMA determined the best approach to meeting the intent of the RPA was to develop this Implementation Plan outlining the actions the agency will take to ensure its implementation of the NFIP is consistent with ESA going forward.

[11] see Section II of this document

[12] Code of Federal Regulations. *Title 44 – Emergency Management and Assistance, part 60 – Criteria for Land Management and Use.* 1976.; 44 CFR § 60.3(a)(2), in which a community requesting participation in the NFIP shall "Review proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law…"

II: Proposed approach: meeting the intent of the Oregon RPA

Elements of the RPA

The NMFS RPA included six categories of recommendations for an alternative approach to NFIP implementation in Oregon. These "6 elements" address the various actions required of FEMA to change its implementation of the NFIP and avoid continued jeopardy.

Table 1: Elements of the RPA

RPA Element	Requires FEMA to…
1: Notice, Education, and Outreach	Notify NFIP participating communities about the outcome of FEMA's consultation and develop an education and outreach strategy for RPA implementation
2: Interim Measures	Require or recommend immediate implementation of measures that reduce the loss of floodplain habitat features and functions, as long-term measures in RPA elements 3-6 are phased in
3: Mapping Flood and Flood-Related Hazard Areas	Implement specific program standards to better identify and map flood and flood-related erosion hazard areas
4: Floodplain Management Criteria	Revise FEMA's regulatory floodplain management criteria to avoid, minimize, and mitigate the adverse effects of floodplain development on remaining habitat functions and processes
5: Data Collection and Reporting	Collect and report floodplain development information for all NFIP participating communities
6: Compliance and Enforcement	Ensure that participating communities comply with revised floodplain management criteria

Action Area

The BiOp and RPA cover a specific Action Area within Oregon, which NMFS defined based on the extent of critical habitat and fish species' access to streams within these watersheds. Some basins are excluded due to natural or man-made barriers to fish passage,[13] while other basins may be

[13] NMFS, *Biological Opinion*, 43-47.

included because they are important watersheds for salmon habitat despite having limited mapped regulatory floodplain.

FEMA's jurisdiction for administering the NFIP covers the entirety of the Special Flood Hazard Area (SFHA) where it has been mapped for each community. Within the Action Area are 233 of Oregon's 261 NFIP-participating communities, including the state of Oregon and participating Tribal governments (Figure 1). Communities with jurisdiction within the Action Area will be required to follow the guidance resulting from this Implementation Plan upon official implementation.[14] All communities, both within and outside the BiOp Action Area, are still responsible for any actions they permit or implement that could cause unauthorized "take"[15] of any federally listed species under Section 9 of the ESA.[16]

Other mapped data, such as NMFS's Critical Habitat maps and the State of Oregon Essential Fish Habitat maps are useful resources for communities in making broader planning decisions but are not directly considered under this implementation plan. The action area is *not* limited to areas designated by NMFS as Critical Habitat for the affected species, because development impacts occurring outside of designated Critical Habitat can still significantly affect habitat quality and quantity within Critical Habitat areas.

[14] Final guidance and implementation strategies will be determined through a formal NEPA review.

[15] *Endangered Species Act,* Section 9(a)(1)(B) - Prohibited Acts states, "ESA section 9 prohibits the unauthorized "take" of listed species. The ESA broadly defines "take" to include 'harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.'"

[16] The BiOp's Incidental Take Statement states that "development that would result in take includes removal of vegetation, installation of structures that occupy space or reduce the flood water storage capacity of a floodplain… placement of fill, and other disturbance activities that detrimentally alter the existing value of floodplain habitat to ESA-listed anadromous fish." NMFS, *Biological Opinion*, 318.

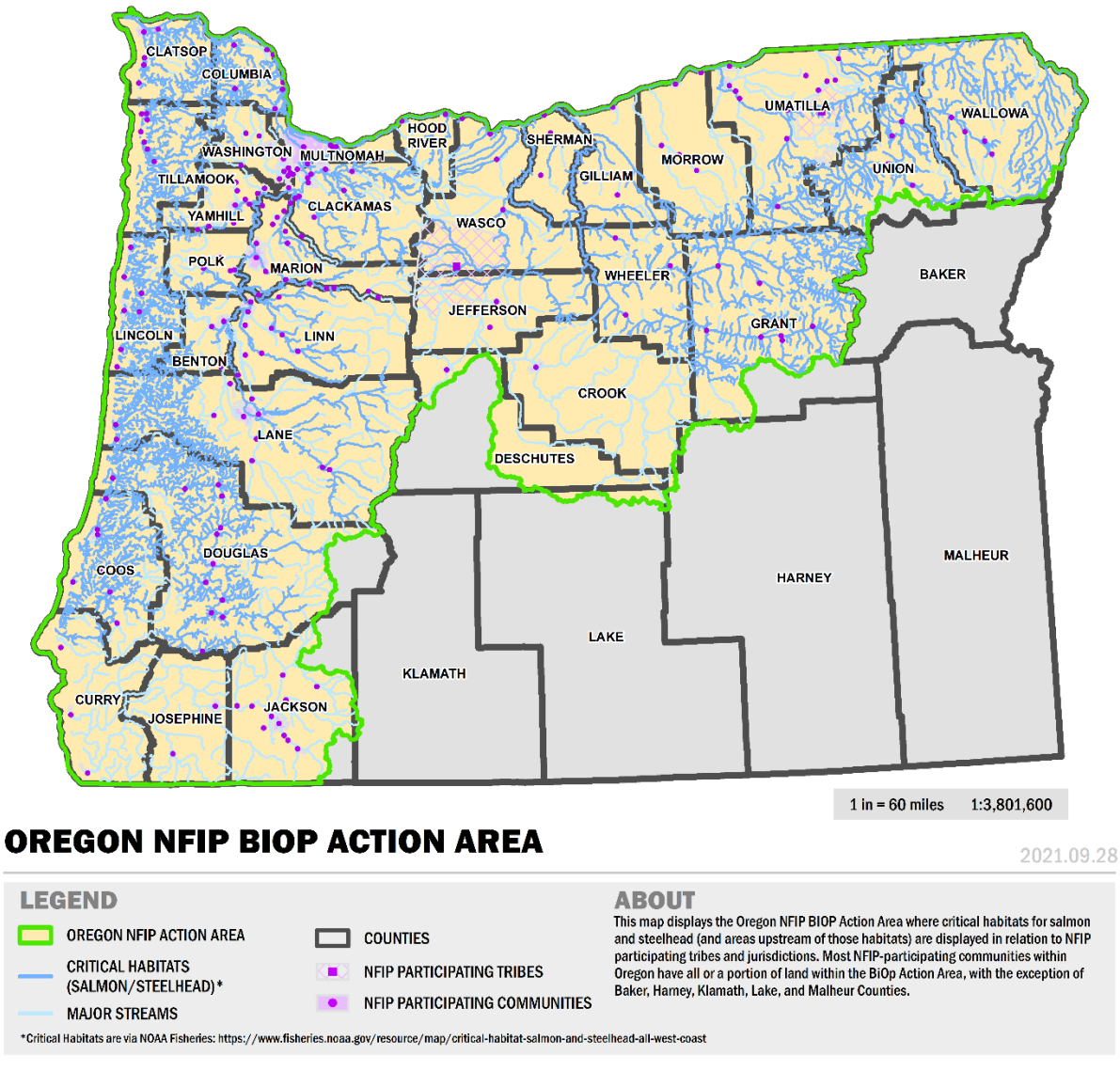

Figure 1. Oregon NFIP Biological Opinion Action Area and Affected NFIP Participating Communities. 233 participating communities, including the state of Oregon, are located within the Action Area.

Implementation Approach

The subsections below describe how FEMA has addressed or intends to address the RPA elements in order to administer the NFIP consistent with Section 7 of the ESA. The goal of these actions is to ensure that FEMA's implementation of the NFIP does not create jeopardy or create adverse impacts to critical habitat for listed species covered in the BiOp within the Action Area.

RPA Element 1: Notice, Education, and Outreach

This element directed FEMA to notify NFIP participating communities about the outcome of FEMA's consultation and develop an education and outreach strategy for RPA implementation.

FEMA and the Oregon Department of Land Conservation and Development (DLCD), with assistance from NMFS, notified all participating NFIP communities via a letter sent on June 13, 2016 regarding the consultation outcomes.[17] This letter provided notice that, as outlined in the RPA, allowing development that degrades natural and beneficial floodplain functions prior to implementation of the measures contained in the RPA may result in a violation of ESA Section 9 and subject the community and/or developer to civil and criminal penalties.

The letter explained that new development or substantial improvements permitted in the floodplain that cause adverse effects must mitigate those adverse effects. Communities were informed that further guidance would be provided as FEMA prepared to support implementation strategies to meet the intent of the RPA measures, such as the strategies included in this Plan, and that a diverse suite of stakeholders would be sought for input in developing FEMA's approach. An overview of the recommendations for NFIP implementation and the associated reporting requirements provided NFIP practitioners with an introduction to the forthcoming policy and guidance changes.

A similar letter was sent to Tribal governments acknowledging FEMA's government-to-government consultation responsibilities. This letter detailed the same anticipated policy and guidance changes that were explained in the letter to local governments. FEMA has since worked with both Tribal and local governments to develop a plan that implements the language and intent of the RPA to the greatest extent possible within existing authorities under the NFIP.

Going forward, FEMA will continue to communicate with participating communities, including outreach conducted whenever a new flood insurance study is being considered. Through this process, and in particular during the Discovery phase of new study development, the community has opportunities to identify new or evolved flood hazards that are present since the previous study. This outreach opportunity can also serve as a means of communicating about listed species habitat with regard to local flood hazard information.

RPA Element 2: Interim Measures (Floodplain Management)

This element directed FEMA to require immediate implementation of measures that reduce the loss of floodplain habitat features and functions, as long-term measures in RPA elements 3-6 are phased

[17] Letter sent by FEMA on June 13, 2016 to unnamed recipients from Mark Carey, FEMA Region 10 Mitigation Division Director.

in. As described below, portions of this element have been integrated into full implementation of RPA due to Congressionally-mandated delays in implementation. These proposed measures included:

For NFIP communities:

- Requiring avoidance, minimization, and/or mitigation of impacts to natural floodplain functions, with mitigation provided at specific ratios
- Limiting development in a 170-foot riparian buffer zone
- Tracking all permitted development and mitigation activities and reporting them to FEMA

For FEMA:

- Declining requests for LOMR-Fs that fail to demonstrate impacts to natural floodplain functions were avoided or mitigated
- Reviewing requests for CLOMRs and CLOMR-Fs to determine whether proposed projects will adversely affect natural floodplain functions, and identifying appropriate mitigation measures as needed
- Recommending the State prioritize multiple repeat-damage buyout opportunities based on presences of high priority salmonid populations.

Establishing strategies for implementing the measures detailed in RPA Element 2 was central to FEMA's initial planning activities with Oregon's Department of Land Conservation and Development (DLCD) in 2016-2017. As the working groups proceeded with stakeholder engagement and planning, it became clear that the burden of adopting interim measures in addition to the permanent measures (RPA Element 4) within a few years would be onerous due to the timescales and administrative burdens associated with Oregon's code amendment processes. Furthermore, it became clear that a NEPA review would be required in order to gain the public input necessary to implement the changes recommended in the interim measures. As a result, FEMA communicated to NMFS that a one-year delay would be necessary.[18]

Within that time frame, FEMA was required to revise its approach to implementation and further adjust its timelines based on the authority granted in Section 1246 of the Disaster Recovery Reform

[18] Letter sent by FEMA on February 1, 2018 to Dr. Kim Kratz, NMFS Assistant Regional Administrator from Michael Grimm, FIMA Assistant Administrator for Mitigation.

Act of 2018 (DRRA).[19] Specifically, FEMA was required to delay implementation of the deadlines in the RPA by up to three years. The combination of community and stakeholder feedback surrounding interim implementation, along with the DRRA delay led FEMA to adapt its approach to implementation. In a letter to NMFS on February 6, 2019, FEMA leadership announced plans to pursue a holistic approach to implementation and use the 3-year delay granted by DRRA Section 1246 to develop a new strategy.[20] This Implementation Plan is the result of that effort.

Element 2.D included changes to the Conditional Letter of Map Revision (CLOMR) and Conditional Letter of Map Revision based on Fill (CLOMR-F) review criteria, which have already been addressed nationally through May 2016 guidance that FEMA published on documenting ESA compliance for Conditional Letters of Map Change (CLOMC).[21]

All CLOMC applications to FEMA must now include documentation from the applicant that no "take" has potential to occur to threatened or endangered species as a result of the project. FEMA then determines whether this documentation is suitable for CLOMC issuance. This change applies at the national level to all CLOMC applications and all ESA-listed species, including, but not limited to, the Action Area and species covered by the Oregon consultation.

FEMA has also amended the national requirements for Letter of Map Revision Based on Fill (LOMR-F) application packages to require communities to provide assurances that a development based on fill was determined to be ESA compliant when fill was placed (changes in effect as of April 2017).[22] Demonstration of mitigation is now required for the adverse effects (e.g. loss of storage; impervious surfaces; stormwater infiltration) for any fill placed after the listing of the species. These changes address the recommendations made in RPA Element 2.C. Similarly, as a condition of issuing Letters of Map Revision (LOMR) for floodway revisions, FEMA now requires documentation of ESA compliance and documentation showing that any adverse effects will be mitigated.

[19] *Disaster Recovery Reform Act of 2018 (DRRA),* 2018; Section 1246 of the DRRA states, "The Administrator shall extend the deadlines to implement the reasonable and prudent alternative outlined in the jeopardy biological opinion dated April 14, 2016, by up to 3 years from the date of enactment of this Act. …"

[20] Letter sent by FEMA on February 6, 2019 to Oregon community officials from Eric Letvin, PE, Esq., CFM, FIMA Deputy Assistant Administrator for Mitigation Directorate.

[21] FEMA. *Guidance for Flood Risk Analysis and Mapping - Documentation of Endangered Species Act Compliance for Conditional Letters of Map Change*. Guidance document 48. (May 2016); This guidance supersedes Procedure Memorandum 64 issued by FEMA on August 18, 2010.

[22] "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill," *FEMA.gov*, *MT-1 Application Forms and Instructions*. Revised April 2017. https://www.fema.gov/flood-maps/change-your-flood-zone/paper-application-forms/mt-1

RPA Element 3: Mapping Special Hazard Areas to Fully Identify Floodplain Resources

This element directed FEMA to implement specific program standards to better identify and map flood and flood-related erosion hazard areas. These measures included:

- Modifying flood hazard mapping protocols, including refined technical approaches to mapping both current and future risk
- Mapping riverine erosion zones
- Depicting a "high hazard area" on FIRMs for areas most impacted by large flood dynamics
- Depicting an "area of future conditions flood hazard" on FIRMs, reflecting impacts of climate change and land use on flood hazards
- Revising map adoption procedures to include shorter timelines for adoption
- Mapping residual flood hazards and risk behind levees

FEMA has developed a pilot study to serve as a feasibility test for integrating the Element 3 mapping recommendations into FEMA's program. By understanding how the recommendations can translate into policy guidance as well as future regulatory, technical, and advisory products, the agency can use this pilot to inform future improvements to the national mapping program.

Specifically, FEMA has partnered with a team of mapping experts to pilot analysis and research in support of Element 3 in multiple project areas throughout the Action Area with distinct watershed characteristics. The study will result in development of supplemental risk assessment products that will provide greater insight into factors that may affect local implementation of the RPA's mapping-related elements.

This study is built upon FEMA's existing Risk MAP program which has been determined to be a technically credible mapping program by the Technical Mapping Advisory Council.[23] Modeling and analysis for the study are technically sound, following the FEMA Policy Standards for Flood Risk Analysis and Mapping.[24] The study is leveraging channel migration zone data, where available, that also follows rigorous technical standards.[25] Details of how the various mapping measures from Element 2 and 3 are being incorporated into the pilot study are provided in Appendix E.

[23] Technical Mapping Advisory Council. *National Flood Mapping Program Review* (June 2016), page 17.

[24] FEMA. *FEMA Policy Standards for Flood Risk Analysis and Mapping Policy*. (FEMA Policy #204-078-1, rev. 11 2021).

[25] Rapp, C.F. and T.B. Abbe. *A Framework for Delineating Channel Migration Zones*. Washington Department of Transportation, Washington Department of Ecology. (Ecology Publication #03-06-027, 2003).

RPA Element 3.G directed FEMA to develop a prioritization schedule for producing updated mapping for communities subject to this RPA. Because the mapping program already has a robust prioritization framework, which directly incorporates needs identified by state, local, and tribal governments for determining project schedules, FEMA intends to use the pilot study to help inform the existing decision-making process for projects within the Action Area.

As a result of congressional appropriations, based on Congressional direction, FEMA Headquarters establishes targets in different study types that affect how Region 10 identifies fiscal year procurement objectives. For example, categories for study production in the past reflected the following: coastal, levee, other engineering needs, and potential partnerships with established Cooperating Technical Partners through FEMA's Risk MAP grant programs.[26] As a part of the risk assessment input, variables related to insurance claims, policies, losses, and disasters were included.

Currently, in order to best align and allocate resources, Region 10 develops and maintains a Five-Year Plan to identify current and potential future study areas for Risk MAP projects. This approach enables Region 10 to collaborate with federal, state, tribal, and local partners and determine where these needs are best aligned with Congressional direction, priorities identified by FEMA Headquarters, program guidance on project planning, and annual program funding allocations.

Project areas are identified and included within the Five-Year Plan are based on input from each of the Region 10 state Risk MAP program partners as well as a variety of factors. These factors, include, but are not limited to:

- Currently scoped work necessary to advance a project to its next step within the Risk MAP Process,
- Community interest and support of new project areas,
- Data availability and/or the need to update data,
- Opportunities to leverage investments from other federal and state agencies; and
- Capacity to manage and provide direction and oversight of each project.

Region 10's Five-Year Plan is evaluated and revised annually to account for changes in funding, revised program guidance, progress on existing Risk MAP projects, inclusion of new projects, and to capitalize on new data or associated work that could further support program implementation. ESA

[26] The Cooperating Technical Partners Program is an innovative approach to create partnerships between FEMA and communities participating in the NFIP. Other partners include regional and state agencies, tribes, territories and universities that have the interest and capability to become more active participants in the FEMA flood hazard mapping program. (*FEMA.gov*)

listed species and habitat will be considered annually as the Region 10 Risk MAP evaluates which studies are funded.

Region 10 also includes additional input from the states regarding factors such as climate change, floodplain development pressure, growth, land use changes, and areas without digitized Flood Insurance Rate Maps (FIRMs), which may be well correlated to areas with ESA-listed species. National guidance also initially placed a strong emphasis on coastal work and then prioritization of riverine areas based on the assessment of risk as well as identified state, local, and tribal needs. At this time, nearly all coastal mapping has been completed and prioritization efforts are primarily focused on riverine areas.

FEMA has also begun incorporating Channel Migration Zone (CMZ) information into Risk MAP portfolios where information is identified and made available by a tribe, community, or state when a Risk MAP study is underway. These are provided for informational use only to help communities make informed land use decisions. There are no current regulatory requirements related to channel migration zones under the NFIP.

As FEMA develops its response to the RPA guidance on mapping, the agency hopes to coordinate with NMFS, if possible, on an as-needed basis to discuss mapping starts, model selection for studies, Risk MAP products to include, methods chosen to complete mapping studies, fish habitat analyses, status of ongoing studies, and will seek opportunities for NMFS to attend Discovery or other relevant meetings. As FEMA prepares communities for implementation, agency staff will offer technical assistance and outreach to communities to ensure they understand the products of the pilot study and how these tools can support their local efforts to integrate multi-benefit mapping data into their hazard mitigation and conservation planning.

RPA Element 4: Floodplain Management Criteria for Special Hazard Areas that Avoid, Minimize, and Mitigate Program Level Impacts

This element directed FEMA to revise its regulatory floodplain management criteria to avoid, minimize, and mitigate the adverse effects of floodplain development on remaining habitat functions and processes.

Section III of this document outlines FEMA's proposed alternative approach to meeting the intent of RPA 4 by providing guidance to communities on multiple routes to achieving a "no net loss" of three key natural floodplain functions (flood storage, water quality, and riparian habitat) for new development actions within the SFHA. Implementation of this guidance by communities will be required as a condition of participation in the NFIP, pending the release of final guidance from FEMA and within the timelines outlined in the section on RPA Element 6 below.

In addition to community-level implementation of RPA 4, Element 4B(ii) directed FEMA to ensure that designated floodways are not redrawn for the purposes of developing new structures. This element

can be more effectively and efficiently implemented by FEMA at the programmatic level (rather than by individual NFIP communities in flood code), and FEMA will incorporate this measure into its final implementation of RPA 3, given the link to mapping and the CLOMC process.

Communities are encouraged to consider taking additional actions beyond those outlined as "no net loss" requirements in Section III, to provide a net gain or benefit that helps ensure the recovery of healthy and sustainable populations of listed species. Appendix B outlines additional actions that communities could take to achieve this more ambitious goal. Many of the actions identified can help contribute to communities' climate action plans and help protect public life and safety, among other benefits. Participants in FEMA's Community Rating System may also qualify for additional credit toward flood insurance policy discounts by adopting these actions into their floodplain management ordinances.

RPA Element 5: Data Collection and Reporting

Permit Reporting

The data collection guidance outlined by the RPA requires FEMA to develop a reporting tool to collect data on floodplain development activities for all NFIP participating communities within the Action Area. Once developed, FEMA will obtain approval from the Office of Personnel Management for its use under the federal Paperwork Reduction Act (PRA). Following the development of the reporting tool, communities will be notified of the data collection requirements and a reasonable amount of time will be provided to allow communities to gather the required information and establish a repeatable process.

Thereafter, FEMA will require that communities submit an annual report to FEMA indicating issuance of each floodplain development permit in the reporting period. The report will include the following metrics for assessing the impacts of floodplain development on species included in the Oregon BiOp (excerpted from RPA Element 5):

i. The amount of fill or structural displacement of flood storage, and the amount of compensatory storage measured by volume and area (both surface area and cross-sectional area). This reporting element effectively describes loss of refugia for rearing fish and indicates factors that increase the BFE and flood velocities.
ii. The amount of new impervious surface (indicates loss of hyporheic function) and any projected change in the timing, velocity, or peak flows of stormwater runoff and the types and amounts (if applicable) of mitigation provided.
iii. The area in which clearing and/or grading occurred (e.g., within the HHA, SFHA, or AFCFH)
iv. The number of trees equal to or greater than 6" dbh removed (dbh = diameter at breast height; indicates loss of riparian function and reduction of source of large wood recruitment) and the number and timing of trees planted to meet mitigation requirements (indicative of the duration of lost functions).

v. If a project disconnects land from the floodplain (e.g., by accreditation of levees or recognition of non-accredited levees), identify the type of project and the amount of land disconnected from the floodplain. This reporting element effectively describes loss of refugia for rearing fish and indicates factors that increase the BFE and flood velocities.
vi. If a project reconnects land to the floodplain (e.g., by the removal or setback of a levee) identify the type of project and amount of land reconnected to the floodplain. This reporting element is indicative of effectiveness of mitigation or of beneficial habitat restoration actions.
vii. The location of the project and of the corresponding mitigation (e.g., within the high hazard area, the SFHA, or AFCFH); for projects in the HHA identify which exception from Element 4.B(iv) applies. This reporting element indicates the quality of mitigation based on the relative role the mitigation area performs in terms of inundation frequency.

FEMA took on the task of developing a reporting tool soon after the release of the RPA. The tool used identical software as that which was developed for the Puget Sound RPA but incorporated the additional detail that NMFS saw as improvements from the former approach.

However, changes in agency software requirements and accessibility since the creation of the reporting tool currently prevent FEMA from pursuing approval through the PRA Information Clearance Request process. Instead, FEMA is pursuing alternative approaches to developing a reporting tool that will remain functional for communities to use over the long term. Use of a Google Form as recommended by NMFS may be a possibility as FEMA considers the adoption of Google Workspace functionality into agency program activities. Finalization of the reporting tool will coincide with final recommendations from the NEPA review of this Plan and submission for PRA approval will immediately follow.

FEMA intends to have a reporting tool approved and available for use when communities are expected to begin local implementation of the floodplain management guidance outlined in Section III.

Annual Reporting

In addition to sharing data collected from annual community permit reporting with NMFS, FEMA will share additional reporting metrics on the remaining RPA elements with NMFS each calendar year. FEMA and NMFS may meet thereafter to discuss overall program compliance and whether re-initiation of the consultation is warranted.

RPA Element 6: Compliance and Enforcement

This element requires FEMA to ensure that participating communities comply with revised floodplain management criteria within a provided timeline. Practical and legislative delays have caused FEMA to revise the proposed timelines for implementation and enforcement, with details outlined below.

Changes to the Community Rating System

Element 6.A suggests a wide range of modifications to FEMA's CRS program to incentivize early community adoptions of measures recommended elsewhere in the RPA.

Rather than adopt modifications related to mapping elements prior to having the completed analysis for the mapping pilot study, FEMA proceeded with updates to the CRS Manual in 2017 that include improved credit opportunities for building prohibitions, coastal open space, other higher standard adoptions, and organizational/terminology updates.[27] Then, after completing a separate pilot study[28] to develop new CRS credit opportunities that incentivize a community to understand their ESA responsibilities and potential impacts to listed species' habitat, an addendum to the 2017 Manual was published in 2021.[29] Under Activity 510, CRS communities are now eligible to receive additional credit for a Natural Functions Plan (CRS Section 512.c, Natural Floodplain Functions Plan) which includes a Floodplain Species Assessment that identifies the listed species with range and/or critical habitat within the community's jurisdiction. Additional credit is available if the community chooses to develop a Floodplain Species Plan that provides recommendations to support the conservation or recovery of the identified species.

Another resource available to communities is the CRS for Habitat Protection Guide that outlines how a community can use the CRS program to incentivize and even prioritize habitat conservation practices in local floodplain management.[30] A revision to the 2018 guide to include the recent ESA-related updates to the CRS program is currently underway.

Compliance Benchmarks

To show that FEMA is moving toward the expected outcomes of the RPA, NMFS has requested that FEMA demonstrate progress toward the goal of RPA implementation based on a set of compliance benchmarks.

FEMA and Oregon DLCD began the initial workgroups to develop an implementation strategy well within the initial 18-month window suggested by NMFS after BiOp publication. Despite the multiple delays impacting FEMA's implementation and the decision to shift toward planning a single-phased full implementation approach, FEMA continues to make substantial progress as is evidenced by this Implementation Plan, the ongoing mapping pilot study, and the planned development of additional guidance materials for community use.

[27] FEMA. National Flood Insurance Program Community Rating System Coordinator's Manual, Appendix D - A history of changes to CRS credits (FIA-15/2017, 2017), D-1 – D-14 (578-591).

[28] FEMA's Community Rating System (CRS) Endangered Species Act (ESA) Section 7(a)(1) Pilot Project - Helping to promote existing incentives and create new incentives. Join project between FEMA and French & Associates (2020).

[29] FEMA. Addendum to the 2017 CRS User's Manual. (2021), A-51 – A-53 (55-57).

[30] FEMA. National Flood Insurance Program Community Rating System - CRS Credit for Habitat Protection. (2018).

Although FEMA is not currently pursuing regulatory revisions specific to Oregon as outlined in the RPA, the national conversation around program changes continues to grow. It was announced in July 2021 that FEMA has begun pre-consultation discussions with the Services regarding the NFIP.[31]

Finally, the BiOp set an initial deadline for all NFIP participating jurisdictions to have adopted and be implementing the requirements of RPA Elements 3 and 4 by September 1, 2024. Given the three-year extension imposed on FEMA by DRRA Section 1246, FEMA's goal is to begin working with communities on implementation as soon as is practicable after the NEPA review and to complete this final milestone of full implementation by all NFIP communities three years beyond NMFS' original date, by September 1, 2027.

Element 6 of the RPA requires FEMA to ensure that communities enact an approach to regulating development in floodplains that avoids a violation of the ESA. FEMA has an established compliance and enforcement strategy[32] that can be extended to ensure communities implement measures required as a result of BiOp implementation, to ensure the continued existence of threatened and endangered species while simultaneously reducing flooding risks to life and property.

FEMA currently monitors communities for compliance with the minimum floodplain management performance standards contained in the federal regulations.[33] Higher standards beyond these minimum regulations are encouraged and FEMA developed the CRS program, described above, to incentivize such local actions.

Once a community adopts a higher regulatory standard than the minimum floodplain management standard, the higher standard takes precedence and must be enforced.[34] FEMA is authorized to carry out investigations with respect to the adequacy of NFIP communities' measures in flood-prone areas in regards to land management and use, flood damage prevention, and other flooding-related activities.[35]

In this existing compliance and enforcement process, FEMA coordinates with NFIP participating communities to obtain additional information and documentation related to compliance with the program through the Community Assistance Contact (CAC) process. This method of engagement normally consists of one or multiple meetings between a FEMA official and the community's floodplain management staff to determine whether any program-related issues exist and to offer assistance as needed. The contact is intended to establish or re-establish communications with a

[31] Bret Gates. "FEMA's New Direction on National Flood Insurance Program (NFIP) Endangered Species Act (ESA) Compliance Planning." Presentation, Association of State Floodplain Managers (ASFPM) Conference, virtual, May 2021.

[32] FEMA. Community Compliance Program Guide. National Flood Insurance Program. FEMA P-1022, 2016.

[33] 44 CFR § 59 through 60.

[34] 44 CFR § 60.1(d).

[35] 42 U.S.C. § 4102.

community to evaluate program performance or areas in which additional technical assistance is needed.

If further in-depth investigation is warranted, FEMA may elevate the level of coordination to a Community Assistance Visit (CAV). A CAV is typically scheduled with a community as a formal audit of the community's program. The primary goal of a CAV is to perform a comprehensive review of the community's program and provide guidance where needed. These visits include field tours of the jurisdiction's regulatory floodplain and generally take several months or more to complete. Both processes are explained in detail in FEMA's Guidance for Conducting Community Assistance Contacts and Community Assistance Visits.[36]

In response to RPA Element 6.B, which references enforcement measures recommended by NMFS for FEMA to incorporate into its community compliance structure, there are several opportunities for FEMA to adapt its existing processes. NMFS identified as highest priority those communities which:

i. FEMA is aware or has reason to believe (e.g., based on permit reporting data) are not fully implementing RPA requirements;
ii. Have mapped floodplains that retain low density characteristics and are subject to possible population growth;
iii. Showcase an increasing number of floodplain development permits; or
iv. Have growth boundaries, comprehensive plans, or zoning that allow development in special hazard areas.

First, FEMA intends to maintain a close relationship with Oregon DLCD, as this is the state agency under which the State NFIP Coordinator is maintained with Community Assistance Program – State Support Services Element (CAP-SSSE) funding. Through this partnership, FEMA and DLCD coordinate a predetermined set of CACs and CAVs on an annual schedule and it is through these CACs and CAVs, as well as other general technical assistance (GTA), that the two agencies will become aware of several of the community planning activities that NMFS has determined to be priorities for investigation.

Generally, FEMA and DLCD have a target of contacting at least 50 percent of the participating communities and Tribes (FEMA leads on contacts with Tribal governments that are enrolled in the NFIP, consistent with federal policy regarding government-to-government communications) in Oregon over a five-year period. Several other factors contribute to annual plans for community contacts via the CAC/CAV process, most of which are identified through FEMA's Community Engagement Prioritization Tool.[37] Additional prioritization refinement with attention to habitat vulnerability, exposure to potential development, and other ecological factors should be informed by NMFS

[36] FEMA. *National Flood Insurance Program (NFIP) Guidance for Conducting Community Assistance Contacts and Community Assistance Visits*. FEMA F-776, 2011.

[37] FEMA. "Community Engagement Prioritization Tool." *FEMA.gov* October 7, 2020. https://www.fema.gov/floodplain-management/manage-risk/community-engagement-prioritization-tool

subject matter experts to ensure FEMA develops an annual prioritization of community contacts that meets the needs of the NFIP as well as the RPA's conservation standard of no net loss. Per the 2013 Programmatic Biological Assessment, FEMA intends to consider the presence of listed species as part of the community prioritization criteria.[38] Once the list is curated in coordination with DLCD, it will be provided for comment each fiscal year before finalization.

FEMA has rigorous enforcement protocols in place for when a community contact or audit reveals violations and the community, for any number of reasons, resists remediation of those violations. Through the CAC and CAV processes, FEMA, and DLCD on FEMA's behalf, works with the communities to resolve potential violations using a progressive approach to enforcement. FEMA will provide technical assistance and help the community gain compliant regulations, permitting procedures, or discussions with property owners.

Should a community be unwilling or unable to gain compliance, FEMA will move towards probation or suspension of the community. Through its probation procedures, FEMA can identify the issues that require remediation and provide the community with a timeline for making the necessary changes in order to avoid being suspended from the NFIP. Probation requires a $50 surcharge to all policyholders in the community for at least a year along with an outreach campaign informing the citizens of the reason for the surcharge. Suspension results in a community not being eligible for the sale of flood insurance and thus making it difficult for property owners to meet the mandatory purchase requirements for loans made in the SFHA. In addition, suspension also means a community is not eligible for most forms of disaster assistance in the SFHA including FEMA grants for Individual Assistance, Public Assistance as well loans such as the Small Business Administration. Probation and suspension can often be avoided if a community is willing to work with FEMA to improve its local floodplain management practices, related regulations, and ensure violations are remediated to the maximum extent practicable.[39]

The BiOp implementation measures incorporated into NFIP community programs in Oregon will be subject to the same level of review as other program activities subject to review for compliance determinations. Communities that fail to implement the requirements of the NFIP, as described in FEMA's final guidance, will be subject to enforcement actions. The process for enforcement under 44 CFR Part 60.3(a)(2) would fall under the criteria of "failure to enforce the local floodplain ordinance" and result in a CAV to determine the circumstances and identify corrections to violations. Violations resulting in the loss of habitat or potential take of a species will result in a notification to NMFS for appropriate ESA enforcement action along with concurrent FEMA enforcement actions.[40]

[38] FEMA Region X. *Biological Assessment.* 2.5.5 - Monitoring and Adaptive Management, 2-45.

[39] FEMA. *Community Compliance Program Guide*. National Flood Insurance Program. FEMA P-1022, 2016.

[40] FEMA Region X. *Biological Assessment.* 2.5.5 - Monitoring and Adaptive Management, 2-45.

The RPA provides suggested metrics[41] for meeting NMFS' compliance goals. Although FEMA is unlikely to be able to meet the specifics of these performance metrics without substantial staffing increases, the agency proposes an approach to community coordination that may even result in greater long-term communications mechanisms for overall NFIP implementation in the state of Oregon.

As written, the RPA recommends that FEMA conduct CAVs or otherwise audit community compliance with the NFIP in 25 communities annually. Recent research supports an alternative approach to this level of community audit, specifically highlighting that an increase in CAC activity as a method of compliance intervention for the NFIP is more significant for predicting compliance improvement than if CAVs were performed in their place.[42] The 2017 study went on to say that the core responsibilities of FEMA's floodplain management program — to ensure that communities adopt and enforce those floodplain management standards adopted by a community — have a positive influence on loss reduction in communities. Performing additional CACs rather than CAVs, where feasible, may also translate to improvements in map adoptions, higher standards adoptions, and CRS enrollments or class increases, further emphasizing the importance of more community contact as a means of building relationships between FEMA and local floodplain management staff. With its current staffing, FEMA is confident that a reorganization of these compliance contacts from the RPA's suggestion to cover on average 15 CACs and 10 CAVs per year, with assistance from Oregon DLCD under the CAP-SSSE program, is a reasonable and achievable metric.

[41] NMFS. *Biological Opinion*. RPA Element 6.B, 296.

[42] FEMA. *Analysis of the value of floodplain management: Findings and recommendations.* Floodplain Management Division (2017) Ch. 4-2, page 31.

III: Implementation Strategies Related to Local Floodplain Management

This section provides additional detail on FEMA's proposed approach to addressing Element 4 of the RPA (RPA 4), which outlined suggested changes to FEMA's implementation of the NFIP at the local level. RPA 4 directed FEMA to ensure that land use decisions and individual actions permitted at the local level by NFIP participating communities do not result in jeopardy to listed species at the programmatic level.

NMFS' recommended approach in RPA 4 was for FEMA to undertake rulemaking at the national level to modify the minimum regulatory standards required of all NFIP communities to address the jeopardy issues raised in the BiOp. These recommended changes to NFIP minimum standards included development prohibitions in a newly-defined high hazard area; a requirement to create vegetated safety buffers in areas affected by flood-related erosion; changes to local stormwater management programs and policies; and compensatory mitigation requirements for all impacts to flood storage, water quality (impervious surface), and riparian habitat.

In interagency conversations and stakeholder workshops hosted by FEMA and DLCD in 2016-2017, significant concerns were raised about the approach outlined in RPA 4. FEMA also responded to NMFS with concerns about the federal rulemaking approach and also concerns about the authority of FEMA to affect local land use decisions.[43] As a result, an interagency team of state and federal agency partners has worked with NFIP communities, tribes, and interested stakeholders from January 2020 to September 2021 to outline an alternative approach to implementing the NFIP at the local level that would not create jeopardy or adverse modification for the species covered by the BiOp.

The approach outlined below is intended to achieve the "no jeopardy, no adverse habitat modification" outcome by ensuring that **NFIP participating communities do not allow new unmitigated impacts to three key natural functions of floodplains from new development in the Special Flood Hazard Area (SFHA)**. This goal could also be described as setting a standard of **"no net loss" of the three natural floodplain functions** that are addressed within RPA Element 4:

1. Flood storage (as impacted by development in the SFHA that involves fill)
2. Water quality (as impacted by addition of impervious surface in the SFHA)

[43] Letter sent by FEMA on May 4, 2016 to Dr. Kim Kratz, NMFS Assistant Regional Administrator from Michael Grimm, FIMA Assistant Administrator for Mitigation.

3. Riparian vegetation (as impacted by development that removes vegetation at or near the edge of rivers and streams)

The "four paths" described in this section aim to provide a menu of actions for NFIP communities to ensure this standard is met both at the local scale and, therefore, at the cumulative scale of the NFIP program as implemented in the Action Area (see map in Section I). FEMA anticipates providing final programmatic guidance for NFIP communities in the action area (see map in Section I) following completion of the NEPA process. Following an implementation window of approximately 18 months for communities to choose a path and determine and implement any actions needed at the local level, consistency with FEMA's guidance to local communities will be required as condition of continued participation in the NFIP (as outlined in the Section II description of RPA 5, above).

The measures outlined in this section aim to provide communities with a pragmatic, implementable set of options for avoiding unacceptable impacts to listed species. These measures are also designed to help reduce flood risk to people and property in the SFHA, consistent with the NFIP's broader mandate. Thus, implementation of these measures can improve outcomes as diverse as community public safety, environmental, social, and economic well-being. Additionally, the ecosystem benefits of protecting and restoring local floodplains and waterways can be far-reaching.[44] Implementing these measures may also help communities meet their climate, environmental justice, and other goals.

Where will these requirements apply, and what kinds of actions are exempt?

The proposed approach outlined here applies to development actions (including both new development and redevelopment that exceeds the "substantial damage/substantial improvement" thresholds outlined in FEMA's minimum standards)[45] that:

(1) Occur in an Oregon NFIP community within the BiOp Action Area (see map in Section I); AND

(2) Are located within the mapped SFHA on a community's FEMA-approved Flood Insurance Rate Map (FIRM);[46] AND

(3) Meet FEMA's current definition of development:

[44] FEMA. The natural and beneficial functions of floodplains: Reducing flood loss by protecting and restoring the floodplain environment. A report for Congress from the task force on the natural and beneficial functions of the floodplain. (June 2002), ch. 1, 1-3.

[45] When the cost of either damages or repairs to a structure equal or exceed 50% of the market value of the pre-existing structure. (44 CFR § 59.1).

[46] "FEMA Flood Map Service Center." *FEMA.gov*, accessed September 29, 2021, https://msc.fema.gov/portal/home; In its technical guidance, FEMA will provide a mechanism for NFIP communities to propose specific areas of their mapped SFHA be excluded from implementation (for example, for a water body or drainage area that is completely hydrologically disconnected from habitat for covered species by a manmade or natural obstacle and thus no potential for direct or indirect effects on floodplain function).

Development – Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials.[47]

For this RPA, mitigation is not required for the maintenance, repair, or remodel of existing buildings, facilities, and utilities within their existing footprints (except for substantial repairs and improvements that would result in new negative impacts to flood storage, water quality (impervious surface), or riparian vegetation); resurfacing or roads; lawn care; gardening; removal of noxious weeds, replacement of non-native vegetation with native vegetation; removal of hazard trees; forest and agricultural practices that do not involve filling, grading, or construction of levees or structures.

These requirements will <u>not</u> apply to:[48]

- Any actions outside a mapped special flood hazard area (SFHA)
- Maintenance, repair, or remodel of existing buildings, facilities, and utilities within their existing footprints (other than those that constitute substantial repairs and improvements)
- Resurfacing of roads
- Lawn care, gardening, removal of noxious weeds, replacement of non-native vegetation with native vegetation, or removal of hazard trees
- Plowing and similar agricultural practices that do not involve filling, grading, or construction of levees or structures
- General agriculture and silviculture practices carried out in compliance with applicable permits and regulations, including removal of vegetation and normal soil disturbances associated with these practices.[49]

FEMA's proposed approach meets the "no net loss" standard through use of a mitigation hierarchy, in which:

1. Actions are first taken to avoid impacts to sensitive species or habitats to the extent possible;
2. Then impacts from unavoidable actions are minimized through careful design and siting; and

[47] 44 CFR § 59.1 – Definitions.

[48] NMFS. *Biological Opinion*, 298; Memo provided to FEMA Region X by NMFS West Coast Regional Office January 24, 2017, *Re: Clarification and Errata to the Reasonable and Prudent Alternative (RPA) issued with the Biological Opinion for the National Flood Insurance Program in Oregon* (NWR-2011-3197).

[49] Katz JVE, Jeffres C, Conrad JL, Sommer TR, Martinez J, Brumbaugh S, et al. *Floodplain farm fields provide novel rearing habitat for Chinook salmon*. (2017) PLoS ONE 12(6): e0177409.

3. Finally, remaining unavoidable impacts are offset through restoration and conservation efforts. [50]

Four Paths Approach

The "four paths" approach outlined below results from a recognition by FEMA and its partner agencies of the diverse needs, capacities, policy contexts, and geographic constraints faced by NFIP communities within the Oregon BiOp Action Area. The four paths are modeled after, but distinct from, the "three doors" approach used in implementation of the similar Puget Sound NFIP biological opinion.[51] Additional detail on each of the paths outlined here is provided in the sections that follow.

The four paths outlined below can be implemented by NFIP communities at multiple scales. While many communities will likely choose a single path to implement for the entirety of their jurisdiction, it is possible, and in some cases may be preferable, for communities to implement different paths within different parts of a jurisdiction – for example, using the model ordinance path in most of a city and the community compliance plan path in a waterfront area that has both significant existing development and restoration potential. Jurisdictions are also encouraged to consider an interjurisdictional approach to balancing development impacts and restoration priorities at the watershed scale.

Paths for Oregon NFIP Communities to Demonstrate Consistency with the Biological Opinion

A. Adopt a **model ordinance** that contains the required elements outlined below

B. Complete and submit to FEMA an **ordinance checklist** to demonstrate that new and/or existing local policies address the required elements

C. Complete and implement an **approved community compliance plan**, developed by the local community and approved prior to implementation by FEMA (in coordination with NMFS) as meeting the "no net loss" goal at the community level

D. Complete and implement a community-level **habitat conservation plan**, as outlined in Section 10 of the Endangered Species Act

The **Model Ordinance (Path A)** option is intended as the "default" option, for communities aiming to limit the staff time and resources needed to demonstrate consistency with the BiOp. FEMA and its state and federal agency partners will work to craft model ordinance language in consultation with NFIP communities and stakeholders, prior to full implementation of this proposed approach.

[50] 40 CFR 1508.20 contains additional steps related to rehabilitation and maintenance actions, which are often collapsed into the 3 steps outlined here.

[51] The name and numbering system is changed from the Puget Sound version in an attempt to avoid confusion.

Oregon's existing model flood hazard ordinance[52] will be used as a starting point, with needed additions specific to the BiOp clearly noted to simplify implementation for the many Oregon communities that have adopted the statewide model.

The **Ordinance Checklist (Path B)** option provides greater flexibility, especially for communities that do not use the existing model flood code, to determine where existing local code covers the required measures outlined below and craft new language as needed to address specific requirements. Communities choosing this path will need to submit a form providing both proposed new and existing code to FEMA for approval to ensure it is substantially equivalent to those of the model ordinance approach.

The **Community Compliance Plan (Path C)** option outlined here is modeled on a simplified and streamlined version of the "Door 2b" Programmatic Habitat Assessment compliance approach available to communities under the Puget Sound BiOp. The intent is to provide an option for a community-designed and locally-appropriate approach that meets the goal of avoiding net loss of the three floodplain functions, but may not include all of the required elements outlined for Paths A and B. These plans could also be developed through cooperation of multiple local jurisdictions, allowing for a more watershed-scale or integrated regional approach to steering development, restoration, and mitigation actions in the floodplain.

Finally, the **Habitat Conservation Plan (Path D)** option recognizes that some communities may choose to pursue compliance with Endangered Species Act (ESA) requirements at the community level through a route completely separate from compliance with the NFIP BiOp.[53] Communities that choose to demonstrate consistency with Sections 9 and 10 of the ESA through development of a NMFS-approved Habitat Conservation Plan (HCP)[54] that covers land use decisions and development actions in the SFHA need not go through a separate NFIP-specific compliance process through Paths A-C. Communities would demonstrate consistency with FEMA's BiOp implementation guidance through the resulting NMFS-issued Section 10 Incidental Take Permit.

Although this option is available to communities who prefer a unique approach, this option will likely involve significant cost, compliance with other environmental laws (i.e., NEPA) and be somewhat dependent on agency staffing. FEMA recognizes that the HCP process can be challenging for communities and suggests close consideration of the other three options before communities

[52] "Natural Hazards – National Flood Insurance Program (NFIP) in Oregon." *Oregon Department of Land Conservation and Development,* August 30, 2021, https://www.oregon.gov/lcd/NH/Documents/DLCD_Final_FEMA_Approved_OregonModelFloodHazardOrdinance_10232020.pdf

[53] Both Path C and D can be used to address the "Alternative Compliance for Special Circumstances" provided for in RPA 4(H) NMFS, *Biological Opinion*, 292-3.

[54] "Habitat Conservation Plans on the West Coast." *National Marine Fisheries Service*, September 27, 2019, https://www.fisheries.noaa.gov/west-coast/habitat-conservation/habitat-conservation-plans-west-coast

contemplate an HCP route. However, a NMFS-approved HCP may provide additional certainty and clarity for some communities.

Enforcement of all of these paths would focus on ensuring required elements or objectives are fully addressed in code and fully implemented in floodplain permitting processes, and would take place through regular Community Assistance Contacts and Community Assistance Visits (CACs and CAVs) as outlined in Section II of this document.

The four paths described here differ from the Puget Sound approach in two key ways:

First, the substance of changes required under any of the above paths differs from that in the Puget Sound BiOp, reflecting differences in both NMFS recommendations (outlined in each BiOp's RPA) and local and state policy environments in the two geographies.

Second, the approach proposed here does not contain a close equivalent of the "Door 3" option offered in implementation of the Puget Sound BiOp. Door 3 allows NFIP communities in the Puget Sound Action area to implement a project-by-project route to compliance, in which new development projects in the Special Flood Hazard Area are required to submit habitat assessments to local governments, in order to determine and address potential impacts to listed species.

Additional resources needed for full implementation

If FEMA chooses to move forward with implementation of this approach following NEPA analysis, full local-level implementation will require FEMA or its partners to develop key analyses, map products, and technical resources, in close coordination with NFIP communities and state, federal, and tribal government partners.

Additional products needed for full implementation of this approach could include:

- Final technical guidance from FEMA to communities on how to demonstrate consistency with the BiOp
- Model ordinance language for communities choosing Path A
- A standardized "ordinance checklist" form for communities choosing Path B
- A glossary of sample policies and programs from Oregon cities and counties that have already implemented some parts of the approach (Appendix A of this document provides a starting point for this potential product)
- A detailed technical guidance on implementing compensatory mitigation requirements to help effective mitigation outcomes, potentially including technical tools for quantifying development impacts and mitigation outcomes. (Appendix D of this document provides a starting point by outlining guiding principles.)

- A technical review of different approaches for determining riparian vegetation corridor widths in order to achieve a no net loss outcomes in areas with different levels of urbanization, stream width, and habitat type
- A sample or template community compliance plan that demonstrates how a community can meet and demonstrate the no net loss bar
- Additional technical guidance or assistance for communities interested in implementing different paths in different parts of their communities, or implementing a multi-jurisdictional or watershed-scale approach
- A refined sample analytical approach for communities taking Path C to calculate potential for new development in the SFHA (Appendix C of this document provides a starting point and draft estimate)
- Updated map products, potentially including mapping of the 10-year floodplain.

Table 2 below outlines the major components of the proposed approach that are common across these paths. The model ordinance and ordinance checklist approaches, described in greater detail after the table, will address each of the "required elements" listed in Table 2. Communities developing a community compliance plan or habitat conservation plan should refer to the "objectives" column to help develop a community-level plan that addresses each of these key objectives reflected in the BiOp.

Table 2: Required Measures for Paths A & B

Objective	Required Measures	Address RPA4 Section(s)
Where possible, avoid new development in areas of greatest flood risk and habitat value for listed species	1. Prohibition of new land divisions that create lots or parcels without buildable area *outside* of the SFHA	C(i), (iv)
	2. Avoidance measure(s) to steer new development[55] away from part or all of the SFHA (3 recommended options)	B(i)
Avoid flood-related erosion and protect habitat values of native vegetation in areas immediately surrounding waterways	3. Creation of a vegetated setback or corridor for all aquatic features with mapped SFHA	B(iii)-(iv)
Limit and/or mitigate new development impacts to flood storage in the SFHA	4. Requirement to use structural elevation rather than fill in the floodplain, where possible, and to mitigate all development impacts to flood storage	B, C, D, and F(iii)d
Limit and/or mitigate new development impacts to water quality in the SFHA through the addition of impervious surface	5. Implementation of binding stormwater policies and/or programs, including a. A quantitative post-construction stormwater performance standard, and b. Prioritization of low-impact development and nonstructural approaches to stormwater management	E; C(iii), (v); F(iii)e
Effectively offset any remaining new development impacts to the 3 floodplain functions	6. Effective compensatory mitigation of all remaining impacts, consistent with principles outlined in Appendix D	F

[55] This measure need not apply to redevelopment of previously developed parcels within the SFHA, where redevelopment has the potential to *decrease* negative impacts to natural floodplain functions over time. FEMA and its agency partners recognize that for parcels that are already highly impacted by past development, redevelopment consistent with modern code and design standards can actually reduce impacts to the three floodplain functions, compared to the existing level of impact. Any new impacts, for example an increase to total impervious area or removal of riparian vegetation, would still be subject to minimization and mitigation requirements.

Required Measures for Model Ordinance (A) and Ordinance Checklist (B) Paths

The Model Ordinance (Path A) and Ordinance Checklist (Path B) options are designed to address the key objectives outlined in RPA 4 (see Section II of this document) and achieve the same goal of **no net loss (or no unmitigated impacts) to flood storage, water quality, and riparian vegetation from new development impacts in the SFHA**. However, specific actions and requirements are structured somewhat differently from those outlined in RPA 4, to help maximize consistency both with FEMA authorities and with the state land use system and other existing policies and programs in Oregon.

Communities that choose the Model Ordinance path would adopt a model ordinance (or potentially one of multiple alternative models) that will be developed by FEMA and its agency partners. FEMA anticipates providing opportunities for NFIP community and stakeholder input, prior to release of its formal guidance to communities. Full model ordinance language will be included as an appendix to that guidance. The final model ordinance language will address each of the required measures outlined above in Table 2 and described in more detail in Appendix A.

Communities that choose the Ordinance Checklist path would complete and submit to FEMA a checklist worksheet showing which elements of local ordinances or other policy and programs address each of the required measures outlined in Table 2.

Additional detail on each of the required elements and potential sample code language are provided in Appendix A.

Outline and Approach for Community Compliance Plan (Path C)

Communities choosing Path C have the opportunity to outline an alternative, locally-driven approach to meeting the "no net loss to 3 floodplain functions" bar *at the community scale* (rather than parcel by parcel) through new and existing local requirements that avoid, minimize, or mitigate impacts of new development to these functions. Communities would submit a Community Compliance Plan to FEMA, outlining existing and proposed actions that create substantially similar outcomes to those outlined above. Formal FEMA approval of a plan is required to ensure consistency with the no net loss standard, and FEMA may request technical input from NMFS as needed to ensure a strong science basis for their approval.

Communities would also need to demonstrate a high likelihood of plan implementation, by focusing wherever possible on legally binding mechanisms (such as new or existing local code or zoning).

It is possible, and may be beneficial, for multiple jurisdictions to work together to develop and implement this plan. Additional credit under FEMA's Community Rating System may be available for CRS-participating communities that develop this kind of interjurisdictional approach.

When restoration actions are used to mitigate development impacts at the community level, these projects need to demonstrate a high likelihood of implementation. Communities that fail to fully implement actions in their compliance plans within FEMA's implementation timeline would be subject to FEMA enforcement action and also potentially vulnerable to third-party litigation under ESA Section 9. Restoration components of these plans should be consistent with the mitigation principles outlined in Appendix D of this document.

Proposed Outline for a Path C Community Compliance Plan

FEMA plans to provide a model or template Community Compliance Plan to support implementation for communities choosing this path. Likely elements would include:

(1) An overview of existing policies (local or other relevant policies) that avoid, minimize, or mitigate impacts to the 3 floodplain functions, based on the objectives outlined in Table 2

(2) Estimate of remaining potential for new development within the SFHA, based on the number of acres within the jurisdiction's SFHA that are zoned for different uses and densities (see Appendix C for a potential methodology)

(3) Proposed new measure(s) for ensuring any new development (including redevelopment) in the SFHA does not result in new impacts to the 3 floodplain functions, including measures that address all of the objectives outlined in Table 2. This may include: new or amended local code (see Appendices A & B for a menu of ideas and examples); zoning changes; community-level investments in open space and restoration (e.g., parks, habitat restoration projects, voluntary buy-outs, transfer of development rights, mitigation banking); and/or effective compensatory mitigation for any and all remaining impacts to the 3 floodplain functions, consistent with mitigation principles outlined in Appendix D

IV: Conclusion

The authorities granted to FEMA and the Region 10 office limit the agency's ability to implement some actions outlined within the RPA. In order to develop this Implementation Plan as the agency's most robust approach to the RPA given these differences, an interagency team of staff from FEMA, NMFS, and DLCD worked diligently from October 2019 through September 2021 with support and input from interested stakeholders to identify an alternative approach to meeting the intent and standards set forth in the RPA.

The implementation strategies presented in Sections II and III present the results of the interagency team's discussions and learning and feedback from each of the partner agencies and Oregon stakeholders that have a role or interest in implementation of the BiOp. This feedback allowed the interagency team to develop implementation strategies that meet the needs and mandates of each of the partner agencies (FEMA, NMFS, DLCD) and can be implemented on the ground in a timely, effective, and enforceable fashion within the bounds of existing state and federal law.

FEMA Region 10 is confident that this Plan will enable the agency and participating NFIP communities to build upon existing efforts to manage floodplains for reduced flood risk as well as maintained, and even improved, floodplain function.

Appendices

A. Additional detail on required measures for model ordinance and ordinance checklist paths
B. Additional suggested community actions
C. Buildout analysis
D. Mitigation principles
E. Details of mapping pilot study
F. Summary of stakeholder feedback and responses
G. Overview of stakeholder outreach and interagency coordination

Appendix A: Additional Detail on Required Measures for Model Ordinance and Ordinance Checklist Paths

This appendix provides additional detail on measures proposed to be included in an eventual model ordinance and ordinance checklist, to help NFIP communities and other partners anticipate and plan for the more detailed guidance FEMA will provide with full implementation of this proposed approach. This material draws from:

- Examples of code and other resources provided by NFIP communities and other partners throughout the stakeholder engagement process
- FEMA Region 10's 2002 "Floodplain Management: Higher Regulatory Standards" document[56]
- Technical resources associated with FEMA's Community Rating System program[57]
- Guidance and resources provided by Oregon state agency partners, including the Department of Land Conservation and Development (DLCD) and Department of Environmental Quality
- Suggestions and feedback provided by partners through the 2016-2017 stakeholder engagement process led by DLCD. [58]

Wherever possible, sample code language is provided for each of the required elements, to more clearly outline the intent of each and to help identify potential approaches to a future model ordinance. Examples are drawn from a diversity of urban and rural, coastal and inland communities in Oregon, and examples are provided for both Metro and non-Metro area communities whenever possible, recognizing the unique combination of technical, capacity, and growth patterns these different kinds of communities face.

[56] FEMA Region 10. *Floodplain Management: Higher Regulatory Standards*. (2nd ed., 2003), available at https://www.oregon.gov/lcd/NH/Documents/floodplain_mgmt_higher_reg_standards.pdf.

[57] FEMA. *2017 CRS User's Manual* and *2021 Addendum*, https://crsresources.org/manual/; FEMA. *CRS for Habitat Protection*, https://crsresources.org/files/guides/crs-credit-for-habitat-protection.pdf.

[58] "Biological Opinion on the NFIP in Oregon." Oregon DLCD, September 1, 2021, https://www.oregon.gov/lcd/NH/Pages/BiOp.aspx.

Table 3: Overview of Required Measures

Required Measures	Address RPA4 Section(s)
1. Prohibition of new land divisions that create lots or parcels without buildable area *outside* of the SFHA	C(i), (iv)
2. Avoidance measure(s) to steer new development away from part or all of the SFHA (3 recommended options)	B(i)
3. Creation of a vegetated setback or corridor for all aquatic features with mapped SFHA	B(iii)-(iv)
4. Requirement to use structural elevation rather than fill in the floodplain, where possible, and to mitigate all development impacts to flood storage	B, C, D, and F(iii))d
5. Implementation of binding stormwater policies and/or programs, including a. A quantitative post-construction stormwater performance standard, and b. Prioritization of low-impact development and nonstructural approaches to stormwater management	E; C(iii), (v); F(iii)e
6. Effective compensatory mitigation of all remaining impacts, consistent with principles outlined in Appendix D	F

1. Prohibition of new land divisions that create lots or parcels without buildable area outside of the SFHA

Overview: The goal of this requirement is to avoid the creation of new lots or parcels on which the only available buildable land is within the SFHA. Land divisions of this type will tend to drive additional development impacts to the three natural floodplain functions within the SFHA.

Considerations: An exception will be needed to allow land divisions that create SFHA-only lots or parcels (or those without sufficient buildable space outside the SFHA) for purposes of protection of green space, restoration, low-intensity recreational uses, or other non-development uses. Zoning, easements, deed restrictions, or other binding limitations should ensure that these designated areas are not later developed for residential, commercial, or industrial use.

Model ordinance language should also include a quantitative definition of "adequate buildable area" if this or similar language is used.

Sample code:

Sample 1 (non-Metro inland city)

"a. All subdivisions and partitions shall be designed based on the need to minimize the risk of flood damage. No new building lots shall be created entirely within the regulatory

floodway.[59] All new lots shall be buildable without requiring development within the floodway (i.e., minimum lot size under base zoning must be provided outside of the floodway) and, where possible, allow building outside of the special flood hazard area.

b. If a parcel has a buildable site outside the special flood hazard area, it shall not be subdivided to create a new lot, tract or parcel for a building that does not have a buildable site outside the special flood hazard area. This provision does not apply to lots set aside from development and preserved as open space."

Sample 2 (Metro-area city)

"All proposed subdivisions or partitions including land within a floodplain zone must establish the boundaries of the base flood by survey and dedicate said land [as protected greenways]…. The balance of the land and development must… provide for each parcel or lot intended for structures, a building site which is at or above the base flood elevation and meets all setback standards of the underlying zoning district."

Sample 3 (coastal county)

Many Oregon communities have a similar prohibition on new land divisions that currently applies only to the floodway but could potentially be expanded to the entirety of the SFHA. For example:

"Residential building lots shall have adequate buildable area outside of floodways."

2. Avoidance measure(s) to steer new development away from part or all of the SFHA

Overview: The goal of this requirement is to reduce new development impacts to the three floodplain functions by steering new development either away from the SFHA entirely, or away from the most sensitive and flood-prone areas of the SFHA.

The implementation planning stakeholder process identified three potential ways of meeting this goal consistent with the state's land use planning system and limitations on local governments' restriction of residential uses (e.g., Oregon's ballot measure 49)[60] and concerns about regulatory takings.[61]

Option 2.1 would prohibit new development in the SFHA where there is a buildable area outside the floodplain. If no buildable area is available outside the floodplain, model code would limit density to 1 unit (with exceptions as needed to address state and local allowances around accessory dwelling units, duplex units, etc.). Commercial and industrial development uses may require additional limits, such as a quantitative limit on new

[59] This code would not fully address the required element unless expanded to the entirety of the SFHA.

[60] Oregon DLCD. *Measure 49, Forest Practices, and Moratoria, Technical Memorandum*. March 30, 2017, https://www.oregon.gov/lcd/NH/Documents/m49_fpa_moratoria_tec_memo_3_%2030_17.pdf.

[61] Oregon DLCD. *Regulatory Takings Technical Memo.* March 28, 2017, https://www.oregon.gov/lcd/NH/Documents/regulatory_takings_tec_memo_3_%2028_17.pdf.

impervious surface within the SFHA. Design, citing, and mitigation requirements outlined in the remaining measures would apply to any new development or redevelopment within the SFHA.

Option 2.2 would prohibit new development in the SFHA that creates a modeled rise in the level of the 100-year flood, with a "minimum assured development area" exception that allows a single unit subject to size and design limitations. Commercial and industrial development uses may require additional limits, such as a quantitative limit on new impervious surface within the SFHA on SFHA-only lots. Design, citing, and mitigation requirements outlined in the remaining measures would apply to any new development or redevelopment within the SFHA. At least one Oregon NFIP community is currently implementing this approach, and an excerpt of relevant code is provided below.

Option 2.3 would prohibit new development in the 10-year floodplain. This requirement has a strong public safety nexus and would limit future development that could significantly increase flood risk, damage to life and property, and economic costs of disaster response and recovery, in addition to helping protect the most significant habitat values. Exemptions would include water-dependent development, restoration uses, etc., but all exempted development other than habitat restoration would require compensatory mitigation consistent with the principles outlined in Appendix D.

During development of model ordinance language and additional guidance, FEMA may develop one or more additional options that could use cluster development, transfer of development rights, form-based zoning transfer, or other tools to steer development density away from the SFHA.

Considerations: As noted in Section III of this document, model ordinance language developed for Options 2.1 and 2.2 need not apply to redevelopment on previously developed parcels within the SFHA that reduce overall impacts to natural floodplain functions as a result of more restrictive siting or design requirements. FEMA and its agency partners recognize that for parcels that are already highly impacted by past development, redevelopment consistent with modern code and design standards can actually reduce impacts to the three floodplain functions. Redevelopment that occurs in the aftermath of natural disasters, such as major floods or fires, may require special attention, as local jurisdictions that exempt rebuilding in post-disaster recovery from local siting and design requirements may unintentionally increase both impacts to natural floodplain functions and risk associated with future disasters. Redevelopment that occurs within flood-prone areas may also result in additional risks to public safety and property, even if it does not negatively impact the three natural floodplain functions.

Agency partners and stakeholders noted that Option 2.2 may be cost-prohibitive for many communities to implement if modelling is required as part of the permitting process.

Option 2.3 requires modelling and mapping of the 10-year floodplain, which would be a high priority for state or federal agency partners if this option is included in implementation. Most communities lack the data, capacity, funding, and/or technical expertise to map this area at the local level. DLCD

developed a 2017 technical memo outlining the feasibility of mapping the 10-year floodplain statewide.[62]

In 2019, Oregon House Bill 2001 required certain local jurisdictions to allow the development of accessory dwelling units, duplexes, and other "middle housing" (as defined in the bill) in areas currently zoned for single-family dwellings within their urban growth boundaries. The measure also addresses the conversion of existing single-family dwellings into middle housing. Model ordinance language should be carefully crafted to ensure consistency with these new requirements.

During implementation, FEMA and its partners and stakeholders may wish to develop model ordinance language crafted around each of these options and refer any potential questions or concerns to DLCD staff, other agency staff, or Oregon's Department of Justice to ensure consistency with relevant state and federal laws.

Sample code:

Sample 1 (non-Metro inland city and county)

"Within High Protection Floodway Fringe areas, the placement of buildings and structures or impervious surfaces, as well as grading, excavation, and the placement of fill, is prohibited except as provided in [several exceptions, including replacement or relocation of existing buildings, additions, water-dependent uses, and an exception for a "minimum assured development area" for properties that don't have buildable sites available outside of the SFHA.]"

Sample 2 (non-Metro inland county)

Several Oregon communities prohibit development in the floodway (with exceptions for restoration and certain kinds of public infrastructure, water-dependent uses, etc.). Others prohibit development that creates a measurable rise in base flood elevation. Either of these approaches could be expanded to address a 10-year floodplain (if mapping becomes available) or other quantitatively-defined and mapped area reflecting very high flood risk.

"The placement or construction of any new building in the floodway, which does not replace an existing building, is prohibited. Replacement, repair, addition to, or reconstruction of any existing building in a floodway must comply with all applicable standards…"

Sample 3 (non-Metro inland city - example of intensification approach)

"Development or redevelopment of a residentially zoned property, or of a group of contiguous residentially zoned properties, may transfer density from portions of the site within the Floodway Fringe to portions of the site outside of the Floodway Fringe to the extent allowed by use of the Development standards in the next most intensive Development zone. However, this intensification is only allowed provided that, in resultant

[62] Oregon DLCD. *Technical Memorandum: 10-Year Flood Zone Mapping Pertaining to NOAA National Marine Fisheries Service's Biological Opinion to FEMA Region 10*. February 23, 2017, https://www.oregon.gov/lcd/NH/Documents/mapping_10-year_flood_tec_memo_2_23_17.pdf.

> Development, no buildings, structures or parking areas are located within the Floodway Fringe portion of the site."

3. Creation of a vegetated setback or corridor for all aquatic features with mapped SFHA

Overview: The intent of the vegetated corridor is to meet the BiOp's requirement "create a safety buffer consisting of a natural vegetative or contour strip."[63] This will help avoid new development impacts to listed fish through removal of native riparian vegetation near streambanks and other water features, thereby both maintaining instream and refugia habitat values and also preventing water quality issues resulting from erosion along these banks. As such, it also significantly protects public safety and property during flood events. RPA 4 identifies "agricultural, forestry, outdoor recreation and wildlife habitat areas, and… other activities using temporary and portable structures only" as allowed uses in the erosion setback area.[64]

RPA 4 anticipated achieving this outcome through comprehensive mapping of an erosion hazard area. The mapping pilot study described in Section II of this document under RPA Element 3 will determine the feasibility of mapping an erosion hazard area or channel migration zone, to which this development limits and vegetation retention/replacement requirements could be applied.

In the absence of a mapped area, the 170-foot "riparian zone buffer" proposed in RPA 2 (which was based on an estimate of potential tree height in forested areas of western Oregon and is measured horizontally from ordinary high water) provides a conservative estimate of a potential width for a vegetated setback or corridor requirement to be included in the final model ordinance.

Narrower buffers may be sufficient to meet the needed species outcomes in more urbanized areas or those with different types of native vegetation (e.g., grasslands and more arid forest types). If this measure needs to be implemented at the local level without a mapped erosion zone or suitable substitute, federal and state partners may develop an alternative science-based and quantitative approach to determining the appropriate width of setbacks to protect habitat values for listed species covered by the BiOp, potentially as part of the model ordinance development process. The State of Washington's tiered approach to determining Riparian Habitat Area widths for different types of streams[65] and/or NMFS's programmatic guidance to the US Department of Housing and Urban Development in Washington may provide a useful starting point.

Considerations: Riparian corridors, setbacks, and buffers have been a source of controversy in Oregon for decades. FEMA recognizes that implementation of this requirement will be difficult for some communities. However, significant benefits to public safety, property, water quality, and fish and wildlife habitat will result from implementation of this measure. The Reasonable and Prudent

[63] 44 CFR 60.5(b)(2), cited in the BiOp at RPA 4B(iii)(c)

[64] 44 CFR 60.5(b)(2), cited in the BiOp at RPA 4B(iii)(c)

[65] "Forest Practices Water Typing." Washington State Department of Natural Resources, accessed August 20, 2021, https://www.dnr.wa.gov/forest-practices-water-typing.

Alternative offered in the BiOp required designation of an erosion zone setback based on criteria that are not currently mapped for Oregon NFIP communities. The approaches and sample language provided here are intended to help explore the potential for development of model ordinance language that could be implemented without additional mapping at either the state or local level. However, this approach could eventually be simplified if state or federal agency partners conducted statewide mapping of sensitive riparian areas, similar to that currently done for the Metro area.

Exemptions may be needed, for example, for lots with significant constraints to residential construction (e.g., in order to maintain at least 10 feet of yard between a structure and the corridor area), as well as allowed uses outlined above and uses such as bridge crossings or water-dependent uses that require direct water access.

Title 3 of Metro code already requires Metro-area communities to limit development impacts within designated "Water Quality and Flood Management Areas," as well as in any area that "may cause temporary or permanent erosion on any property within the Metro Boundary."[66] Local code consistent with this standard may be consistent this required measure; however, impacts from any exemptions or variances to Title 3 requirements must be fully mitigated in order to ensure the no net loss standard is met. Mapping of these features in the Metro area greatly facilitates identification and protection of these features. However, this measure has also been successfully implemented in Oregon communities outside the Metro area where important aquatic features have not been mapped, through use of a setback or overlay (see sample code below).

State agency partners identified a concern that an increasing number of stormwater detention ponds and swales are being built in designated riparian setbacks and corridors, which can preclude the establishment of native trees and shrubs within a sizeable portion of the setback. FEMA's technical guidance and model ordinance products may encourage or require these facilities to be sited outside of the corridor wherever possible.

Sample code:

Sample 1 (coastal county)

(1) The following areas of riparian vegetation are defined:

(a) Fifty (50) feet from lakes and reservoirs of one acre or more, estuaries, and the main stems of the following rivers where the river channel is more than 15 feet in width [list of major local rivers]...

(b) Twenty-five (25) feet from all other rivers and streams where the river or stream channel is greater than 15 feet in width.

[66] Oregon Metro. *Metro Code – Section 3.07: Urban Growth Management Functional Plan, Title 3 – Water Quality and Flood Management*, 3.07.320, April 16, 2018; mapping at "Title 3 Land in the Portland Metro Region, Oregon," DataBasin.org, Katie O'Connor, July 4, 2012, https://databasin.org/datasets/88691cc47cbd4992838864c29dbb147f/.

(c) Fifteen (15) feet from all perennial rivers and streams where the river or stream channel is 15 feet in width or less.

For estuaries, all measurements are horizontal and perpendicular from the mean high water line or the line of non-aquatic vegetation, whichever is most landward. Setbacks for rivers, streams, and coastal lakes shall be measured horizontal and perpendicular from the ordinary high water line.

(2) All development shall be located outside of areas listed in (1) above, unless:

(a) For a bridge crossing; or

(b) Direct water access is required in conjunction with a water dependent use; or

(c) Because of natural features such as topography, a narrower riparian area protects equivalent habitat values; or

(d) A minimal amount of riparian vegetation is present and dense development in the general vicinity significantly degrades riparian habitat values.

[additional conditions for reduced setbacks or exempted use are outlined in following sections]

Sample 2 (non-Metro coastal & inland counties)

In at least two Oregon counties, zones without base flood elevations (un-numbered A zones) have a floodway zone applied even when it is not mapped, equivalent to the width of the stream or 50 feet from ordinary high water, whichever is greater. This area is treated as a floodway and buildings are also specifically prohibited within this area (regardless of potential rise and with some exceptions for water-related development). Revising this requirement to require retention or replacement of native vegetation (and/or prohibiting addition of impervious surface) could provide another route to meeting the intent of this required measures.

Sample 3 (non-Metro inland city)

Riparian Habitat Setbacks. Mature ground cover and trees, wildlife habitats, and the natural contours of identified significant stream banks shall be preserved for distances noted in the following table, measured from the top of the stream bank. Within the required setback area there shall be no structural or physical alteration or development such as clearing, grading parking lots, retaining walls, channel alterations, etc. [exemptions with ODFW approval] [50-foot requirement for specific named waterways].

Sample 4 (Metro city)

A Metro-area city defines a Vegetation Corridor and Slope District, a mapped zoning overlay which establishes a minimum buffer width between development and protected water features. Uses within these overlay areas are limited to, e.g., low-impact outdoor recreation facilities, routine repair and maintenance, restoration activities, etc., and most vegetation removal is prohibited.

4. Requirement to use structural elevation rather than fill in the floodplain, where possible, and to mitigate all development impacts to flood storage

Overview: The intent of this requirement is to limit, disincentivize, and/or mitigate for the use of fill in the floodplain to elevate structures. Fill in the SFHA both increases potential impacts to adjacent properties during flood events, and also negatively affects habitat quantity and quality for listed fish. Many Oregon communities already have removal-fill policies that require compensatory storage on-site when fill is used, either throughout the SFHA or within a portion of the SFHA (floodway or an overlay area reflecting historical flood boundaries or particularly flood-prone areas).

Considerations: Compensatory mitigation for the loss of flood storage function is common in Oregon communities; however, it can be difficult to implement effectively. Effective mitigation must account for factors such as hydrological connection, proximity, elevation, and potential for loss of function of the mitigation site over time (see also Appendix D). Avoiding fill in the SFHA altogether (by using structural elevation rather than fill wherever possible) is preferable and may be easier to both implement and enforce.

Title 3 of Metro code requires all development in designated Flood Management Areas to "maintain or increase flood storage and conveyance capacity and not increase design flood elevations."[67] Local code consistent with this standard may also be consistent with this required measure; however, impacts must be fully mitigated throughout a community's SFHA in order to ensure the no net loss standard is met. Allowing impacts to flood storage to go unmitigated as a result of variances or exemptions undermines this goal and is not consistent with the BiOp or with this measure.[68] Many non-Metro communities also require balanced cut and fill in the floodway and/or throughout the SHFA.

Local compensatory mitigation requirements often only address offsets for fill that is added to the floodplain for elevation of structures. However, other types of development actions that displace or reduce flood storage capacity – such as the foundation of a new building, rip rap, or capping projects in the waterway – would also need to be mitigated.[69]

All NFIP communities with existing or potential mitigation requirements for flood storage are encouraged to review the mitigation principles outlined in Appendix D. FEMA anticipates providing additional guidance on both avoiding and mitigating the impacts of fill, in the form of model

[67] Oregon Metro. Metro Code, 3.07.340 at (a) Flood Management Performance Standards. Also specifies: "(B) All fill placed at or below the design flood elevation in Flood Management Areas shall be balanced with at least an equal amount of soil material removal. (C) Excavation shall not be counted as compensating for fill if such areas will be filled with water in non-storm winter conditions."

[68] NMFS. *Biological Opinion,* 203, footnote 134.

[69] NMFS. *Biological Opinion*, 290.

ordinance language and additional technical details on compensatory mitigation, in addition to the principles outlined in Appendix D.

Sample code:

Sample 1 (coastal city):

"All fill placed at or within any special flood hazard area boundary shall be balanced with at least an equal amount of soil material removal from the same parcel and within the active flood area. The placement of fill in a coastal high hazard area is prohibited. The placement of fill must also meet the following standards:

A. Fill placed within the regulatory floodway shall not result in any increase in flood levels during the occurrence of the base flood discharge.

B. The fill is necessary for an approved use on the property.

C. The fill is the minimum amount necessary to achieve an approved use on the property.

D. No feasible alternative upland locations exist on the property.

E. The fill does not impede or alter drainage or the flow of floodwaters.

F. Be designed and compacted to prevent erosion or scour."

Sample 2 (non-Metro inland county):

"Development or fill may not result in an increase in floodplain area on other properties and will not result in an increase in erosive velocity of the stream that may cause channel sourcing or reduce slope stability downstream of the development or fill."

5. Implementation of binding stormwater policies and/or programs

Overview: The goal of this requirement is to minimize the impacts of new development and redevelopment in the SFHA on water quality due to additions of impervious surfaces. As outlined in the BiOp, increases in impervious surface can result in increased stormwater runoff, which can increase sediment and pollutant loads in fish-bearing streams, rivers, and estuaries.[70]

To meet this requirement, Oregon NFIP communities will need to document legally binding stormwater policies or programs that include:

Measure 5.1: A **quantitative post-construction stormwater performance standard**. Model ordinance language and/or future guidance will identify specific quantitative thresholds for this performance standard, which could utilize a volume-based method, a storm event percentile-based method, and/or an annual average runoff-based method. Phase I and II

[70] NMFS. *Biological Opinion*, 160-162.

MS4 communities should already meet this portion of the required element, at least for portions of their jurisdictions covered by these permits.

Model language could be modeled after:

- A model ordinance previously developed by DEQ for non-MS4 DMAs with TMDL implementation plans (see below)[71]
- Local examples of existing code (see below)
- NMFS's existing stormwater requirements for projects with a federal nexus (SLOPES V)[72]
- Guidance on stormwater management code updates from the Clean Water State Revolving Fund[73]; and/or
- Content from existing local stormwater manuals and other technical resources.[74]

Local implementation may allow for off-site compensatory mitigation where post-construction standards cannot be met on-site.

Measure 5.2: **Prioritization of low-impact development and nonstructural approaches to stormwater management.** Model ordinance language will be provided that establishes a preference for the use of low-impact development, green infrastructure, or other non-structural approaches to meeting stormwater performance standards.

Considerations: Many Oregon NFIP communities already have one or both of these measures in place and should be able to document consistency through Path B, described above. Communities are encouraged to adopt a design manual for nonstructural treatment facilities, such as vegetated

[71] Oregon Department of Environmental Quality. *TMDL Implementation Guidance: Guidance for Including Post-Construction Elements in TMDL Implementation Plans*. September 1, 2021, https://www.oregon.gov/deq/FilterDocs/tmdls-07wq004tmdlimplplan.pdf.

[72] NMFS. *Reinitiation of the Endangered Species Act Section 7 Programmatic Conference and Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Revisions to Standard Local Operating Procedures for Endangered Species to Administer Maintenance or Improvement of Stormwater, Transportation or Utility Actions Authorized or Carried Out by the U.S. Army Corps of Engineers in Oregon (SLOPES for Stormwater, Transportation or Utilities).* (March 14, 2014) NMFS Consultation Number NWR-2013-10411, https://www.nwp.usace.army.mil/Portals/24/docs/regulatory/NMFS/2014_03-14_SLOPES_STU_Transportation_NWR-2013-10411.pdf.

[73] Oregon DEQ, Clean Water State Revolving Fund. *Guide 2: Stormwater Management Code Updates*. https://www.oregon.gov/deq/wq/Documents/CWSRFCodeUpdates.pdf.

[74] For example, see stormwater facility information from Eugene, Oregon: *Stormwater Management Manual, Appendix B – Typical Facility Details.* (2014), https://www.eugene-or.gov/DocumentCenter/View/17165/2014-Stormwater-Management-Manual-Appendix-B?bidId=.

swales and infiltration planters. DEQ and other partners developed and published "Low Impact Development in Western Oregon: A Practical Guide for Watershed Health."[75] This template (specific to western Oregon and may require adaptation for use east of the Cascades) carefully walks the user through a process of inputting local data to create output of specific design standards for various SW controls/ treatment facilities. The template was developed with small city input and testing; however smaller communities may still require consultant support to successfully use this template.

Extending these stormwater management requirements beyond the SFHA is outside the scope of the BiOp but can help significantly protect both property and environmental values.

Sample code:

Sample 1 (smaller, non-Metro inland city):

[short excerpt… code refers to Design and Construction Standards for implementation]

"ON-SITE STORMWATER DRAINAGE PLAN. The on-site stormwater drainage plan must be submitted by the applicant and approved by the director prior to the commencement of work at the construction site.

a. The plan must contain protection techniques that will eliminate runoff siltation created after the completion of the development.

b. Site-specific considerations shall be incorporated into the plan.

c. If landscaping is part of the stormwater treatment facilities, then the applicant must prepared and submit for approval a detailed plan for management of vegetation at the site after construction, which shall be attached to the draft maintenance agreement and operations and maintenance manual. The plan shall include a description of what practices will be employed to ensure that adequate vegetation cover is preserved."

Sample 2 (mid-sized non-Metro inland city):

"Low impact development.

A. Low impact development (LID) is a term used to describe a land planning and engineering design approach to manage stormwater runoff as part of green infrastructure. LID emphasizes conservation and use of on-site natural features to protect water quality.

B. Post-Construction Stormwater Development/Management Guidelines. Refer to most current version of the "Rogue Valley Stormwater Quality Design Manual."

C. Maintenance Agreement. Stormwater treatment practices shall have an enforceable operation and maintenance agreement to ensure the system functions as designed. This agreement will include:

[75] "Template for LID Stormwater Manual for Western Oregon." Oregon Department of Environmental Quality, *Oregon.gov*, September 1, 2021, https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-LID.aspx.

a. Access to stormwater treatment facilities at the site by the city for the purpose of inspection and repair.

b. A legally binding document specifying the parties responsible for the proper maintenance of the stormwater treatment facilities. The agreement will be recorded and run with the land.

c. For stormwater controls that include vegetation and/or soil permeability, the operation and maintenance manual must include maintenance of these elements to maintain the functionality of the feature.

d. The person responsible for the operation and maintenance of the stormwater facility shall have the operation and maintenance manual on site and available at all times. Records of the maintenance and repairs shall be retained and available for the last five years and available for inspection by the city.

D. Violation of this section shall be subject to the provisions of…"

Sample 3: Oregon TMDL Model Ordinance

Appendix B of Oregon DEQ's TMDL Implementation Plan Guidance provides a model ordinance that could adapted to meet this requirement.

A short excerpt:

IV. General Requirements

A. All development shall be planned, designed, constructed and maintained to:

(1) Provide a system by which storm/surface water within the development will be managed without causing damage or harm to the natural environment, or to property or persons.

(2) Protect property from flood hazards.

(3) Removal of 80% of suspended solids from stormwater.

…..

VI. Pollution Reduction and Flow Control Standards

A. Applicability

(1) […The minimum project threshold used to determine applicability of the pollution reduction and flow controls standards should target a goal that ensures that 90% of all new or replaced impervious surfaces within a jurisdiction area, based on current land use and future land use needs, are required to meet the performance standard.]

[Detailed sections follow on infiltration, treatment and detention]

Sample 4: Green Stormwater Infrastructure (non-Metro inland city)

A mid-sized city's stormwater design standards require green stormwater infrastructure to be used to the maximum extent feasible. The city provides two alternative approaches for

meeting the "maximum extent feasible" threshold, as well as detailed design standards and technical guidance for using green infrastructure in both small/household scale and larger development projects.

6. Effective compensatory mitigation of all remaining impacts

Overview: The intent of this requirement is to ensure that communities meet the no net loss goal by ensuring that, in addition to implementation of the avoidance and minimization measures above, any remaining impacts to flood storage, water quality, and/or riparian vegetation are effectively offset by compensatory mitigation measures, either on- or off-site.

To meet this requirement, communities will need to demonstrate a programmatic, effective, and enforceable method for offsetting all new development impacts to flood storage, stormwater, and riparian vegetation. Options for meeting this requirement include one or more of the following options:

Option 6.1: Requiring project-level compensatory mitigation consistent with the ratios outlined in the BiOp RPA 2 interim measures.[76] These ratios represent NOAA's best assessment of how to achieve a "no net loss" outcome in that absence of detailed guidance on ensuring offsets are effective, timely, and durable.

Option 6.2: Requiring project-level mitigation consistent with a future technical guidance on mitigation, anticipated to be developed as part of FEMA's technical resources for implementation. This guidance will outline best practices for ensuring mitigation projects achieve the no net loss standard. It should provide for a more function-based approach that reflects the specific habitat functions provided by or impacted on both development and mitigation sites.

Option 6.3: Communities may develop their own guidance on ensuring project-level mitigation outcomes are effective, timely, and durable, consistent with Appendix D of this document. These may include options for mitigation banking, in-lieu fee, impacts fees, or other programmatic approaches. FEMA will review and may approve community mitigation approaches, with technical review or guidance from NMFS on request.

Option 6.4: As part of community compliance plans (path C), communities may commit to restoration actions that can be demonstrated to offset impacts of potential development in the SFHA at the community scale, rather than at the project scale. Communities would need to demonstrate a very high likelihood that these actions would actually take place. Appendix D of this document provides additional detail on, for example, use of public conservation funds to achieve these outcomes.

Considerations: Many Oregon NFIP communities have compensatory mitigation requirements for impacts to some or all of the 3 floodplain functions. However, it can be challenging to ensure that mitigation projects are effective in replacing key ecological functions; that benefits are near enough

[76] NMFS. *Biological Opinion*, 279

in time to impacts to avoid temporal loss of habitat function; and that the benefits of mitigation projects last at least as long as the impacts of development actions.

A function-based approach to mitigation can help ensure that mitigation projects match the scale of impact, usually by using a standardized quantification methodology to compare both the impact of a development action on ecological functions and the uplift to those functions provided by a mitigation project. Using this approach, for example, a redevelopment action on an already-impacted site might require little or no mitigation, while a new "greenfield" development involving new floodplain fill, impervious surface, and vegetation removal (if permissible under the other avoidance and minimization measures above) would likely require significant mitigation.

Programmatic and function-based mitigation approaches hold significant promise for achieving better mitigation outcomes; however, development of appropriate technical guidance and quantification tools can be time- and resource-intensive. This effort may be best undertaken at the state or regional level, in order to avoid duplicative efforts at the local level.

Appendix D provides additional detail on mitigation principles and best practices that would be used in developing a technical guidance.

Appendix B: Additional suggested actions

This appendix provides additional ideas for actions that NFIP communities could implement that both reduce flood-related risks to life and property and help maintain or enhance fish and wildlife populations and habitat. These actions could be considered as additional, optional actions by communities implementing the BiOp through Paths A (model ordinance) and B (checklist), allowing communities to provide a net benefit to listed species or achieve other environmental, social, or economic goals. They could also be implemented by communities using Paths C (community compliance plan) or D (habitat conservation plan) to demonstrate that the totality of development, protection, and restoration actions taking place in the SFHA add up to no net loss of the three natural floodplain functions at the community level. Community Rating System (CRS) references included for participating communities, as CRS credit would be available for many of these actions.

Table 4. Additional suggested actions

Categories	Options
Mapping Additional Hazards (CRS Activity 320)	Risk-based floodway
	Historical flood
	Erosion hazards
	Channel migration zone
	500-year floodplain
Open Space Preservation in Floodplain (CRS Activity 420)	Transfer flood-prone properties into public ownership (willing seller)
	Conservation easement/deed restriction
	Restoration of floodplain habitat
	Low-density zoning in SFHA
	Incentivize cluster development or other approaches that protect open space within SFHA
	Density transfers/transfer of development rights
	Greenway/setback rules
	Acquisition and relocation (CRS activity 520)
	Open space requirement for planned unit developments

Categories	Options
Higher Regulatory Standards (CRS Activity 430)	Prohibit fill in part or all of floodplain
	Prohibit new development in floodways
	Prohibit any construction or grading changes in floodway
	Prohibit new buildings in part or all of floodplain
	Require compensatory storage ("balanced cut-fill")
	Prohibit critical facilities in SFHA or 500-year floodplain
	Apply V-Zone standards in coastal A Zone
	Apply floodway standards to part or all of SFHA
	Apply SFHA standards to broader area (e.g., historical flood or 500-year floodplain)
	Require setback from edge of channel or floodway
	Require shoreline setbacks based on average erosion rate
	Prohibit new shoreline or channel stabilization projects
	Prohibit new development that will have a significant negative impact on floodplain functions that cannot be mitigated
	Environmental protection overlay zone
	Require mitigation of impacts to natural floodplain functions at a "net benefit" standard
Stormwater Management (CRS Activity 450)	Regulate post-construction runoff from new development or redevelopment (no increase in peak flow or volume of stormwater run-off for 10-year or greater storm)
	Development and implementation of watershed master plan
	Require or incentivize use of low-impact development or green stormwater management practices to maximum extent feasible
	Offsite management fee for stormwater that can't meet standards on site
	Impervious surface limitations in part or all of SFHA
Floodplain Management Planning (CRS Activity 510)	Development and implementation of floodplain management plan or natural hazard mitigation plan
	Adoption of plans that protect ESA listed species or other natural functions

Appendix C: Buildout Analysis

Introduction

The intent of this analysis is to provide a high-level, "first draft" estimate of the potential for future development within the SFHA in individual NFIP participating communities in Oregon. This information can help NFIP communities understand the scope of development potential within the SFHA and how it might influence the path and specific actions they choose in response to FEMA's implementation guidance.

Oregon communities participating in the NFIP vary in many ways: size, impact, patterns of growth, political environment, overlap with SFHA, and physical landscape. These factors influence how a community develops and the constraints they make land use decisions under.

The information provided in this analysis can inform, but is unlikely to completely determine, which path and actions an individual community takes to demonstrate consistency with the BiOp. For example, a community with little or no development potential in the SFHA may find it quite easy to demonstrate, through the community compliance plan path, that the impacts of future development can easily be limited and mitigated without full implementation of the ordinance measures contemplated in paths A and B. However, a community with low development potential might also prefer the less resource-intensive path to implementation provided by adoption of a model ordinance.

For communities choosing paths C (community compliance plan) or D (habitat conservation plan), conducting a more detailed and locally-specific version of this analysis will likely be an important first step in determining what avoidance, minimization, and mitigation measures will be needed to achieve the goal of no net loss of the three natural floodplain functions. This buildout analysis can provide a model to follow for performing their own buildout analysis at higher resolution to allow more accurate analysis of development within the SFHA, break results out by zones or districts, or identify areas for conservation or concentration of development.

Application to the BiOp

In the 2016 BiOp, NMFS included a standard for the maximum amount of development, with included compensatory mitigation, that could occur within the flood plain without jeopardizing ESA listed species. To comply with that standard, mapping of the existing development and development potential for communities is needed.

FEMA anticipates that communities that follow Path A or B will not require detailed mapping of development potential to meet the standards of the Implementation Plan based on implementation of the required measures of those paths.

Some communities may also have small enough areas of SFHA within their community to avoid requiring prohibitions on development at all (e.g., less than 10 ac or less than 1% of total land area). For these communities, existing flood mapping and community maps are likely to be sufficient to demonstrate that they can opt out of many of the Path requirements for compliance with the Implementation Plan. This information, and any additional measures, would be presented to FEMA as a simplified version of the Path C Community Compliance Plan.

However, other communities choosing Path C or D will need to demonstrate how they will prevent development from surpassing the development threshold established by NMFS in the Opinion. For communities with larger areas or proportions of developable land within the SFHA, this should be supported by a geospatial analysis of those developable lands and their overlap with the SFHA. The buildout analysis may also assist communities with identifying locations and current zoning with high-development potential in the SFHA. This information can support efforts to undertake zoning revisions or other ordinance-based methods of reducing the potential for development within the SFHA.

State-wide Buildout Analysis

Measuring Development

The state-wide buildout analysis contained in this document is based on community specific zoning and the measured impervious surface data throughout Oregon. Zoning is a primary determining factor in the level of development potential of lands in Oregon and heavily impacts the conversion of land to impervious surface. However, research shows that impervious surface has effects on water quality, flood storage, and flooding characteristics.[77] Impervious surface also removes and replaces riparian vegetation that provides nutrients to support riverine ecosystems and provides prey for many ESA-listed species. Impervious surfaces prevent absorption and storage of precipitation as groundwater, increasing the intensity and speed of flood events.[78]

The use of impervious surface as a proxy for overall development impacts is supported because it has been shown to be strongly correlated with effects to flood management and ongoing impacts to riparian and riverine habitats[79] and an effective proxy for multiple, difficult to measure ecological

[77] Arnold, C. L., and C. J. Gibbons. “Impervious Surface Coverage: The Emergence of a Key Environmental Indicator,” *Journal of the American Planning Association* 62, no. 2 (1996): 243-258.

[78] James F. Coles, G. M., A.H. Bell, L.R. Brown, F.A. Fitzpatrick, B.C. Scudder Eikenberry, M.D. Woodside, T.F. Cuffney, and W.L. Bryant. “Effects of urban development on stream ecosystems in nine metropolitan study areas across the United States,” National Water Quality Assessment Program, *U.S. Geological Survey*, Circular 1373 (2012).

[79] Arnold and Gibbons, “Impervious Surface”, 245.

impacts.[80] Impervious surface can also be used to identify historical conversion of riparian habitat and rates of development within the SFHA over time when time series data are available.

Data Preparation

All data layers use for this analysis are publicly available at the linked locations included in table 1.

The SFHA map was derived from the Oregon Statewide Flood Hazards map. The statewide flood hazard map was edited to remove all features coded for flood categories not considered part of the SFHA.

Impervious surface in Oregon was estimated using land cover and impervious surface data from the National Land Cover Database from 2016 to map the percent of impervious surface at a 30m raster cell size. [81]

Open water areas were also removed from the SFHA using Oregon Water Bodies data. This includes all bays and embayments, as well as the mainstem Columbia River and Willamette River (Columbia and Willamette Ordinary High-Water Map, from the Columbia to Lake Oswego).

[80] Sutton, P. C., S. J. Anderson, C. D. Elvidge, B. T. Tuttle, and T. Ghosh. "Paving the planet: impervious surface as proxy measure of the human ecological footprint." *Progress in Physical Geography: Earth and Environment* 33, no. 4 (2009):510-527.

[81] National Land Cover Database 2016 - Landcover & Imperviousness (NLCD2016). Multi-Resolution Land Characteristics Consortium, accessed on November 13,2020 at https://www.mrlc.gov/data?f%5B0%5D=category%3AUrban%20Imperviousness&f%5B1%5D=category%3Aland%20cover&f%5B2%5D=year%3A2016.

Table 5. Data layers used in Analysis

Oregon Statewide Flood Hazards[82]
Impervious Surface[83]
Oregon City Limits 2019[84]
Oregon Urban Growth Boundaries 2019[85]
Oregon County Map[86]
Oregon Zoning Map 2017[87]
Columbia and Willamette Ordinary High-Water Map[88]
Oregon Water Bodies[89]
National Land Cover Data 2016[90]

Zoning data from Oregon was clipped by the city limits and UGB layers to identify available zoning information for each NFIP participating city/town. The zoning layer for the cities and UGB was then edited to remove zone types that are considered undevelopable. In areas with no available zoning data, it was assumed that those area were available for development. Standardized Oregon zone types that were considered undevelopable land are listed in Table 6.

[82] "Oregon HazVu: Statewide Geohazards Viewer." Oregon Statewide Flood Hazards, accessed October 1, 2021, https://gis.dogami.oregon.gov/maps/hazvu/.

[83] Urban Imperviousness, 2016. Multi-Resolution Land Characteristics Consortium, accessed October 1, 2021, https://www.mrlc.gov/data?f%5B0%5D=category%3AUrban%20Imperviousness&f%5B1%5D=category%3Aland%20cover&f%5B2%5D=year%3A2016.

[84] Oregon City Limits 2019. Oregon Spatial Data Library, accessed October 1, 2021, https://spatialdata.oregonexplorer.info/geoportal/.

[85] Oregon Urban Growth Boundaries 2019. Oregon Spatial Data Library.

[86] Oregon County Map. Oregon Spatial Data Library.

[87] Oregon Zoning Map 2017. Oregon Spatial Data Library.

[88] "Portland Maps – Open Data." Columbia and Willamette Ordinary High Water Map, January 29, 2019, https://gis-pdx.opendata.arcgis.com/datasets/willamette-columbia-river-ordinary-high-water/explore?location=45.539950%2C-122.661700%2C11.13.

[89] Oregon Water Bodies. Oregon Spatial Data Library.

[90] National Land Cover Data 2016. Multi-Resolution Land Characteristics Consortium.

Table 6. Zones considered undevelopable based on Oregon standardized zone code.

Zone Type	
Beaches and Dunes	Coastal Estuary
Coastal Shorelands	Exclusive Farm Use
Federal Forest	Federal Range
Forest	Mixed Farm-Forest
Open Space/Conservation	Parks and Open Space
Prime Forest	Public and Semi-public Uses
Secondary Forest	

The zoning data were then clipped by the SFHA layer to obtain all layer with all the developable land within each community or their UGB to create a Community-SFHA layer.

Data Analysis

The area of the developable lands was compared to each community's total SFHA area to estimate the relative percent of developed versus undeveloped lands. This was completed by running a zonal statistics analysis on the unionized developable land layer over the impervious surface raster layer. The zonal statistics analysis returned the number of cells at each impervious level (0% to 100%) that overlapped each polygon of the Community-SFHA layer. This data was then exported to a spreadsheet to estimate the developable area within the SFHA for each community. The analysis was done at three different impervious surface levels (3%, 5%, and 10%) to test different potential thresholds for defining developed land.

Statewide Results

Results of the data analysis are contained in the table below for the state-wide analysis performed at the 30m raster cell size, Communities with either a small total developable area of the SFHA (<10ac) or that have less than 1.25% of the SFHA remaining that could be developed are highlighted in orange. Some communities are not included in the results for various reasons; some communities did not have any feature data in the Oregon zoning layer (Dundee and Spray), and at least one community had small areas of SFHA land that fell outside of the analyzable scale associated with the impervious surface data (Sodaville).

Table 7. Statewide Buildout Analysis Results by Community.

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
		Assuming 3% Impervious Surface = Developed		Assuming 5% Impervious Surface = Developed		Assuming 10% Impervious Surface = Developed	
Adams	73.61	31.36	57%	29.58	60%	20.02	73%
Albany	874.46	527.96	40%	525.07	40%	508.17	42%
Amity	45.81	25.13	45%	24.46	47%	19.13	58%
Antelope	46.70	31.14	33%	28.47	39%	24.24	48%
Arlington	48.04	26.91	44%	26.02	46%	22.91	52%
Ashland	230.18	82.06	64%	78.73	66%	69.61	70%
Astoria	91.63	39.59	57%	39.14	57%	38.03	58%
Athena	83.84	58.49	30%	54.71	35%	46.48	45%
Aumsville	87.18	52.71	40%	52.71	40%	50.04	43%
Aurora	36.92	7.34	80%	7.34	80%	5.56	85%
Bandon	227.73	109.64	52%	104.97	54%	88.07	61%
Banks	3.78	1.56	59%	1.56	59%	1.56	59%
Barlow	0.22	0.00	100%	0.00	100%	0.00	100%
Bay City	64.49	19.79	69%	18.90	71%	14.23	78%
Beaverton	634.27	484.15	24%	483.71	24%	472.81	25%
Boardman	69.16	49.37	29%	48.48	30%	45.81	34%
Brookings	148.11	47.37	68%	46.04	69%	42.48	71%
Brownsville	230.40	65.61	72%	64.72	72%	61.16	73%
Butte Falls	5.56	0.89	84%	0.67	88%	0.44	92%
Canby	92.29	27.35	70%	26.46	71%	20.91	77%
Cannon Beach	74.06	62.49	16%	62.05	16%	61.83	17%
Canyon City	28.02	23.35	17%	23.35	17%	23.35	17%
Canyonville	22.24	16.68	25%	15.35	31%	12.01	46%
Carlton	24.24	9.56	61%	9.12	62%	6.23	74%
Cascade Locks	16.01	2.00	88%	2.00	88%	2.00	88%
Cave Junction	114.53	18.01	84%	11.79	90%	7.34	94%
Central Point	234.18	170.58	27%	166.35	29%	157.23	33%
Clatskanie	271.32	115.65	57%	111.64	59%	92.74	66%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
Coburg	41.81	41.59	1%	41.59	1%	41.14	2%
Columbia City	7.34	1.78	76%	1.56	79%	1.56	79%
Condon	20.02	3.78	81%	3.34	83%	2.22	89%
Coos Bay	328.03	259.98	21%	256.64	22%	243.52	26%
Coquille	144.56	99.63	31%	84.95	41%	45.81	68%
Cornelius	34.47	21.79	37%	21.13	39%	18.01	48%
Corvallis	1068.16	470.59	56%	466.14	56%	453.68	58%
Cottage Grove	92.07	54.49	41%	46.26	50%	33.36	64%
Creswell	134.33	79.39	41%	69.16	49%	53.60	60%
Culver	46.26	37.36	19%	36.92	20%	36.25	22%
Dallas	335.15	225.95	33%	223.28	33%	202.38	40%
Dayton	61.16	23.80	61%	23.35	62%	19.13	69%
Dayville	54.04	5.78	89%	5.34	90%	5.12	91%
Depoe Bay	39.36	13.34	66%	13.12	67%	12.90	67%
Detroit	16.46	2.67	84%	1.78	89%	1.56	91%
Drain	105.64	87.18	17%	83.84	21%	75.84	28%
Dufur	32.02	20.02	38%	18.90	41%	18.24	43%
Dunes City	85.18	5.78	93%	5.78	93%	5.34	94%
Durham	5.34	1.33	75%	1.33	75%	1.33	75%
Eagle Point	56.49	43.81	22%	43.37	23%	42.03	26%
Echo	6.67	6.45	3%	6.45	3%	5.56	17%
Elgin	92.96	29.36	68%	28.69	69%	27.13	71%
Elkton	33.36	18.90	43%	17.35	48%	14.68	56%
Enterprise	158.34	87.85	45%	86.51	45%	81.62	48%
Eugene	2239.07	1575.00	30%	1554.76	31%	1474.25	34%
Fairview	78.73	57.82	27%	57.82	27%	57.16	27%
Falls City	26.24	4.00	85%	3.56	86%	1.33	95%
Florence	69.39	34.25	51%	33.36	52%	31.80	54%
Forest Grove	131.66	21.35	84%	20.91	84%	20.02	85%
Fossil	83.84	35.58	58%	35.14	58%	30.91	63%
Garibaldi	12.23	8.67	29%	8.67	29%	8.67	29%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
Gaston	33.80	11.12	67%	10.90	68%	8.90	74%
Gates	3.11	0.44	86%	0.44	86%	0.00	100%
Gearhart	166.57	73.17	56%	70.72	58%	52.71	68%
Gladstone	103.41	52.71	49%	49.37	52%	38.47	63%
Glendale	30.02	9.12	70%	7.56	75%	6.00	80%
Gold Beach	227.73	94.07	59%	93.18	59%	86.96	62%
Gold Hill	3.56	2.89	19%	2.67	25%	2.22	38%
Grants Pass	272.43	215.06	21%	209.27	23%	185.92	32%
Grass Valley	34.47	6.45	81%	5.56	84%	3.34	90%
Gresham	338.26	166.80	51%	160.79	52%	145.45	57%
Halsey	3.11	0.00	100%	0.00	100%	0.00	100%
Happy Valley	62.05	27.58	56%	27.58	56%	23.13	63%
Harrisburg	53.60	17.12	68%	17.12	68%	17.12	68%
Helix	55.38	50.26	9%	48.93	12%	43.81	21%
Heppner	120.98	74.28	39%	73.61	39%	70.05	42%
Hermiston	5.34	0.89	83%	0.67	88%	0.44	92%
Hillsboro	1138.88	497.27	56%	491.27	57%	451.68	60%
Hood River	32.02	5.34	83%	5.34	83%	4.89	85%
Hubbard	14.46	3.78	74%	3.34	77%	2.00	86%
Idanha	38.25	3.34	91%	3.34	91%	2.89	92%
Independence	183.03	88.07	52%	87.18	52%	79.84	56%
Ione	162.13	54.04	67%	52.04	68%	48.93	70%
Irrigon	0.67	0.67	0%	0.67	0%	0.44	33%
Island City	80.73	24.69	69%	21.13	74%	11.79	85%
Jacksonville	19.13	15.57	19%	15.35	20%	12.90	33%
Jefferson	44.92	16.01	64%	16.01	64%	15.12	66%
John Day	366.95	184.37	50%	182.36	50%	179.03	51%
Joseph	9.56	0.00	100%	0.00	100%	0.00	100%
Junction City	443.23	246.64	44%	245.52	45%	244.19	45%
Keizer	576.89	515.73	11%	508.17	12%	470.14	19%
King City	8.67	8.01	8%	7.78	10%	7.34	15%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
La Grande	237.07	93.63	61%	92.29	61%	87.18	63%
Lafayette	18.01	9.56	47%	9.56	47%	7.12	60%
Lake Oswego	107.86	82.95	23%	82.51	24%	77.84	28%
Lakeside	268.43	134.99	50%	133.21	50%	122.09	55%
Lebanon	275.77	24.02	91%	23.35	92%	19.57	93%
Lexington	65.83	23.35	65%	22.91	65%	21.57	67%
Lincoln City	330.70	175.02	47%	171.47	48%	159.23	52%
Lonerock	627.15	15.57	98%	13.34	98%	5.34	99%
Long Creek	53.60	5.56	90%	4.00	93%	3.56	93%
Lostine	35.58	3.78	89%	3.34	91%	1.78	95%
Lowell	1.56	0.44	71%	0.44	71%	0.44	71%
Lyons	32.02	2.89	91%	1.56	95%	1.33	96%
Madras	174.80	120.54	31%	120.09	31%	118.54	32%
Manzanita	14.46	12.68	12%	12.68	12%	12.68	12%
Maupin	15.57	12.90	17%	11.56	26%	9.12	41%
McMinnville	350.27	98.97	72%	94.30	73%	60.71	83%
Medford	773.27	529.52	32%	509.28	34%	463.03	40%
Metro	1482.48	810.63	45%	802.84	46%	764.15	48%
Mill City	4.00	0.00	100%	0.00	100%	0.00	100%
Millersburg	213.50	59.16	72%	59.16	72%	58.04	73%
Milton-Freewater	787.28	632.05	20%	623.15	21%	604.69	23%
Milwaukie	100.30	88.29	12%	88.29	12%	82.95	17%
Mitchell	8.45	2.67	68%	2.67	68%	2.45	71%
Monmouth	194.15	20.46	89%	19.79	90%	16.90	91%
Monroe	38.03	27.58	27%	27.58	27%	26.24	31%
Monument	77.39	4.45	94%	4.23	95%	3.11	96%
Moro	112.31	57.38	49%	54.26	52%	46.93	58%
Mosier	0.67	0.44	33%	0.44	33%	0.44	33%
Mt Vernon	93.41	1.78	98%	1.78	98%	1.78	98%
Mt. Vernon	109.86	22.91	79%	22.68	79%	21.13	81%
Myrtle Creek	341.60	124.99	63%	120.32	65%	110.31	68%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
Myrtle Point	222.62	82.95	63%	75.17	66%	57.60	74%
Nehalem	80.51	24.46	70%	24.02	70%	23.13	71%
Newberg	105.19	33.14	68%	32.25	69%	27.80	74%
Newport	188.81	79.84	58%	79.17	58%	75.17	60%
North Bend	236.41	207.49	12%	207.05	12%	192.15	19%
North Plains	67.39	45.37	33%	45.15	33%	43.14	36%
Oakland	24.46	0.44	98%	0.44	98%	0.22	99%
Oakridge	104.08	38.70	63%	38.03	63%	35.14	66%
Oregon City	318.25	277.55	13%	277.55	13%	275.99	13%
Pendleton	157.46	96.30	39%	92.96	41%	84.73	46%
Philomath	216.39	127.43	41%	126.10	42%	114.31	47%
Phoenix	94.30	48.70	48%	47.81	49%	45.81	51%
Pilot Rock	61.38	44.70	27%	43.81	29%	41.59	32%
Port Orford	143.89	8.23	94%	7.56	95%	5.34	96%
Portland	2333.36	1914.37	18%	1910.37	18%	1883.46	19%
Powers	12.01	4.00	67%	3.34	72%	1.78	85%
Prairie City	68.72	14.90	78%	14.01	80%	13.57	80%
Prescott	6.00	2.45	59%	2.45	59%	2.00	67%
Prineville	422.10	259.53	39%	256.20	39%	243.08	42%
Rainier	157.23	65.38	58%	65.16	59%	64.72	59%
Reedsport	175.02	52.49	70%	52.49	70%	50.71	71%
Riddle	11.12	9.12	18%	7.34	34%	4.23	62%
Rivergrove	37.81	20.02	47%	19.57	48%	17.12	55%
Rockaway Beach	366.73	234.40	36%	233.74	36%	228.18	38%
Rogue River	108.53	65.38	40%	60.49	44%	52.26	52%
Roseburg	589.57	400.09	32%	376.51	36%	308.68	48%
Rufus	24.91	24.02	4%	23.35	6%	22.02	12%
Salem	1721.33	1232.73	28%	1226.51	29%	1186.03	31%
Salem/Keizer	868.67	139.66	84%	134.99	84%	121.65	86%
Sandy	26.02	2.00	92%	1.78	93%	1.56	94%
Scappoose	391.64	235.52	40%	225.06	43%	181.03	54%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
Scio	173.69	44.26	75%	42.70	75%	40.03	77%
Scotts Mills	6.23	0.44	93%	0.22	96%	0.22	96%
Seaside	469.03	328.25	30%	325.36	31%	307.13	35%
Shady Cove	203.49	81.40	60%	80.06	61%	70.94	65%
Shaniko	170.80	16.90	90%	14.01	92%	10.01	94%
Sheridan	378.96	330.48	13%	327.36	14%	306.24	19%
Sherwood	130.77	47.81	63%	44.70	66%	41.37	68%
Siletz	40.92	25.80	37%	24.91	39%	20.68	49%
Silverton	28.69	24.91	13%	24.69	14%	23.35	19%
Sisters	22.02	3.56	84%	3.34	85%	1.78	92%
Springfield	656.73	379.85	42%	376.74	43%	368.51	44%
St. Helens	387.86	129.43	67%	124.99	68%	111.20	71%
Stanfield	38.25	19.13	50%	18.01	53%	16.23	58%
Stayton	280.44	64.72	77%	63.60	77%	52.49	81%
Summerville	19.13	1.33	93%	0.89	95%	0.89	95%
Sweet Home	200.82	38.70	81%	37.81	81%	35.81	82%
Talent	168.13	110.09	35%	108.31	36%	100.52	40%
Tangent	70.05	46.04	34%	45.59	35%	44.26	37%
The Dalles	141.67	74.72	47%	70.05	51%	60.94	57%
Tigard	272.88	221.95	19%	221.28	19%	214.83	21%
Tillamook	290.67	221.51	24%	220.84	24%	217.72	25%
Toledo	365.62	193.93	47%	190.37	48%	175.91	52%
Troutdale	163.90	79.62	51%	78.73	52%	73.61	55%
Tualatin	585.34	459.69	21%	456.35	22%	436.12	25%
Turner	133.66	96.52	28%	95.41	29%	91.85	31%
Ukiah	20.24	6.23	69%	6.23	69%	5.56	73%
Umatilla	77.39	35.14	55%	33.58	57%	28.69	63%
Union	113.20	47.81	58%	47.37	58%	42.92	62%
Veneta	97.41	33.58	66%	32.47	67%	25.80	74%
Vernonia	181.03	111.20	39%	104.08	43%	87.40	52%
Waldport	111.20	72.50	35%	72.28	35%	70.72	36%

Communities with less than 10 acres or less than 1.25% of the SFHA as developable land are highlighted in orange.

Community	Total Developable Area in SFHA (Acres)	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA	Acres of Developed SFHA	Undeveloped Percent of SFHA
Wallowa	55.82	14.68	74%	13.34	76%	10.67	81%
Warrenton	1836.31	507.28	72%	500.17	73%	456.58	75%
Wasco	2.67	0.22	92%	0.22	92%	0.22	92%
Waterloo	0.44	0.22	50%	0.22	50%	0.22	50%
West Linn	268.65	145.00	46%	143.44	47%	127.65	52%
Westfir	6.45	0.00	100%	0.00	100%	0.00	100%
Weston	17.12	15.79	8%	15.35	10%	13.34	22%
Wheeler	20.46	7.78	62%	7.34	64%	6.89	66%
Willamina	20.24	13.34	34%	13.34	34%	12.23	40%
Wilsonville	200.60	46.93	77%	45.37	77%	41.59	79%
Winston	286.44	76.06	73%	72.72	75%	68.05	76%
Woodburn	79.39	62.94	21%	62.49	21%	52.93	33%
Yachats	65.16	42.70	34%	42.48	35%	40.92	37%
Yamhill	20.46	7.34	64%	6.89	66%	5.78	72%
Yoncalla	36.47	11.34	69%	9.12	75%	5.56	85%

Caveats

There is a limit to the applicability of this analysis from actions that fall outside of the scope of existing zoning and regulations. For example, the Port of Portland has long sought to develop an approximately 300-acre port facility on Hayden Island, a large portion of which would fall within the SFHA. This development potential is not captured in the current zoning information, which has the western portion of the island zoned as exclusive farm use and undevelopable.

Communities are advised to consider anticipated changes to zoning or major developments in their community specific buildout analysis. If future zoning decisions significantly change the potential for new development in the SFHA, the assessment will need to be re-run, and communities may need to take a different path or implement different individual measures to meet the no net loss goal. Failure to consider such future actions could impact participation in the NFIP, creating delays and costs for both individuals and the communities.

Appendix D: Mitigation Principles

Introduction

The implementation paths outlined in Section III of this document rely on effective compensatory mitigation to ensure that new development impacts do not create a net loss to the three natural floodplain functions, where impacts cannot be avoided or minimized through the other measures outlined in this document. Full and effective compensatory mitigation for development impacts to the key natural functions– flood storage, water quality, and native riparian vegetation – will be required within the SFHA for all implementation paths.

In implementing mitigation components of the four paths, communities may choose from several approaches:

- Use of the mitigation standards and ratios outlined in the BiOp
- Application of a more detailed mitigation framework, program, or approach that may be developed by federal and state agency partners during the implantation process at the state or regional level
- Development of a community-level approach that is consistent with the principles outlined here and ensures effective, reliable, and transparent mitigation outcomes.

Compensatory mitigation instruments shall be approved by FEMA or NMFS, and final mitigation plans and any included mitigation ratios must be based on the best available science. As described below, mitigation programs must include a plan for durability (legal protection and long-term financial support) as well as ensuring compliance and enforceability.

Providing detailed technical guidance on how to ensure effective mitigation is outside of the scope of this implementation plan. However, FEMA anticipates developing a more detailed guidance document prior to full implementation of the BiOp. This appendix outlines general principles that FEMA and its state and federal agency partners will use to develop that more detailed future guidance, along with input and feedback from NFIP communities and other stakeholders.

This document draws from mitigation principles outlined in existing policies and analyses, including the 2016 BiOp, 2016 Mitigation Policy of the U.S. Fish and Wildlife Service,[91] and NMFS's Draft

[91] U.S. Fish and Wildlife Service. *Final Environmental Assessment of the U.S. Fish and Wildlife Service Revised Service-wide Mitigation Policy.* November 9, 2016. Document ID: FWS-HQ-ES-2015-0126-0194.

Mitigation Policy for Trust Resources.[92] The principles contained herein align with the principles and approaches adopted by FWS and NMFS for the conservation of trust resources. Addressing these principles in a future guidance document is critical ensuring an effective applications of the mitigation sequence: impacts to SFHA natural functions must be avoided to the extent practicable, followed by the minimization of impacts where they cannot be avoided. Only after avoidance and minimization have been determined to be impractical should compensatory mitigation be implemented.

A separate technical process may be convened during the NEPA process to review the best available information to guide mitigation planning for Oregon communities participating in the NFIP. FEMA anticipates inviting NMFS, ODFW, OWEB, and other relevant technical experts to participate in development of this document.

Prior to development of a more detailed guidance document, mitigation standards and ratios contained in the BiOp can serve as an interim approach to implementing mitigation. NMFS has determined that these standards reasonably certain to meet the no net loss goal without having identify or develop further supporting information for lower ratios or supporting broader use of out of kind mitigation ,or mitigation not within the same hydraulic reach.

The 2016 Mitigation Policy of the U.S. Fish and Wildlife Service[93] also provides a broad mitigation framework that can be used to inform mitigation strategies for communities setting up programs.

Mitigation Principles

No Net Loss

No net loss is the minimum standard required by the ESA and 2016 BiOp. To ensure no net loss, interim losses (impacts incurred prior to mitigation) and risks associated with compensatory mitigation projects must be accounted and compensated for. FEMA's statutory authority to require communities to adopt standards for the protection of species listed under the ESA only extends to ensuring no net loss from the implementation of the NFIP. However, where possible, FEMA will seek to encourage protection, restoration, and mitigation actions that provide a net benefit to species.

Communities may also consider requiring mitigation to a "net benefit" standard to help contribute to recovery of listed fish populations and their habitat. This approach will likely also benefit other community goals, including climate change mitigation and adaptation, resilience to natural hazards, and public health and safety.

[92] National Oceanic and Atmospheric Administration. *Draft NOAA Mitigation Policy for Trust Resources*. Accessed May 10, 2021, https://www.fisheries.noaa.gov/feature-story/noaas-draft-mitigation-policy-trust-resources-available-public-comment.

[93] USFWS, *Mitigation Policy*, 11.

Apply the Mitigation Sequence

As discussed in the Implementation Plan, as well as principles developed by FWS and NMFS, the sequence that must be followed is applying the following hierarchy: avoidance, minimization, then compensatory mitigation.

Landscape Approach

Applying a landscape approach provides the potential for improved outcomes for the conservation and recovery of listed species. Wherever possible, multiple public and private partners should work together to identify compensatory mitigation mechanisms and opportunities that provide the most effective and lowest risk programs to conserve species and their habitats. Often the opportunity within a developed community to provide meaningful mitigation is hampered by existing development, high costs, lack of space, or some combination of related factors.

Communities able to work beyond their borders may find mitigation opportunities that are more effective, affordable, and easier to balance with economic development goals than efforts to provide for compensatory mitigation within their borders. Ideally, coordinated with an appropriate lead entity, these efforts would align with existing recovery plans to support species conservation and recovery. The landscape approach provides better support for off-site and out of kind mitigation through contextual evaluation of the relative impacts and benefits to species. This approach can lead to the beneficial concentration of development in already impacted areas while preserving or restoring habitats in areas with lower impact from human land uses.

Transparent and Verifiable Implementation

Mitigation projects must have clear monitoring and reporting requirements to demonstrate that they are meeting their objectives. Additionally, mitigation projects must have a mechanism for enforcement, accountability, and replacement of credits in the case of project failure.

Clear and Uniform Metrics

The use of clear and consistent metrics can help ensure that the no net loss goal is met for the three natural floodplain functions. These metrics can be used to track and account for the balance between development impacts to the three floodplain functions and uplift provided by mitigation projects. These metrics should be quantitative and based on the best available science and account for risk. These metrics must be applied uniformly between debit and credit projects. Additionally, these metrics should be applicable throughout the NFIP program and consistent throughout the state. Unless or until clear and consistent standards and metrics are available for a quantitative accounting of the functional outcomes of development and mitigation actions, the mitigation ratios provided in the BiOp may provide a suitable alternative for function-based accounting

Durability

Projects must be designed so that the mitigation offsets last for at least as long as the impacts. For most projects, this will effectively require permanent mitigation. To support this, legal mechanisms such as permanent and enforceable conservation easement must be used. Additionally, project proponents must also provide evidence of appropriate financial support for the life of the project.

Cooperative Approach

Communities may be able to use compensatory mitigation mechanisms to help balance economic development and environmental goals across jurisdictional boundaries, concentrating development within already impacted areas and steering restoration efforts toward less impacted ones.

Limiting Use of Public Funding for Mitigation

Compensatory mitigation used as part of a BiOp implementation strategy cannot use public conservation funds – including those intended to support the recovery of species or habitats – to fund offsets for development actions. A 2008 interagency agreement documents the consensus of several key state and federal agencies on this issue.[94]

Recovery funds, in particular, are intended for federal agencies to meet their legal requirements under the ESA to provide for the recovery of listed species. Use of those funds to provide compensatory mitigation for communities would undermine the conservation and recovery of listed species. A potential exception is the use of recovery funds to develop a mitigation instrument that supports both recovery and provides compensatory mitigation credits (those credits must be clearly tracked and verified separately).

[94] U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, Oregon Department of State Lands, Oregon Watershed Enhancement Board, Oregon Department of Fish and Wildlife. *Public Funds to Restore, Enhance, and Protect Wetland and At-Risk, Threatened, and Endangered Species Habitats: Appropriate Uses of these Funds in Species and Wetland Mitigation Projects.* Oregon Interagency Recommendations, January 4, 2008. Accessed September 1, 2021, https://www.fws.gov/oregonfwo/LandAndWater/Documents/PublicFunding-final.pdf.

Appendix E: Details of pilot study to address RPA mapping elements

FEMA is working with a team of mapping experts to develop a pilot study that will serve as a feasibility analysis of the mapping-related actions included in RPA Elements 2 and 3. After extensive review of potential geographic areas to use for the pilot study based on hydrologic, topographic, and geologic features, as well as availability of data sets, a subset of Oregon watersheds were chosen in which to develop modeling for the depiction of how the RPA mapping actions would be applied as non-regulatory products. The products of this pilot study, when completed, will serve as examples of products that a community could incorporate into their floodplain mapping program for greater protection of floodplain habitat as well as greater awareness of local flood hazards. Further details on the methodologies used and final products will be provided upon completion of the study, expected in late 2022.

Once completed, FEMA will evaluate the pilot study products with respect to mapping guidance and technical standards.[95] This study will be used to inform any future revisions to the floodplain mapping program connected with the BiOp.

Table 8. Mapping Pilot Study Scope

Watersheds (or reaches therein) included in study: **Upper Sandy, Tualatin, Upper Rogue, Lower Umpqua, Johnson Creek**	
Hydrology	
RPA 3.A(ii) – 160 Acre Watersheds	Estimate multi-frequency discharges for watersheds greater than 160 acres. Analysis to include regression gage and rainfall runoff analysis. Leverage effective data from prior studies.
RPA 3.A(ii) – 90th Percentile	Enhance hydrology by estimating the upper 90th percentile confidence limit.
Hydraulics	
RPA 3.A(i)(b) – Maximum Roughness	Models to be adjusted to apply full maturity coefficients to 200' outside the banks

[95] Pilot study evaluation will follow FEMA's guidance for risk mapping, assessment and planning provided in guidance resources available online – "Guidance for FEMA's Risk Mapping, Assessment, and Planning," *FEMA.gov*, accessed September 20, 2021, https://www.fema.gov/media-collection/guidance-femas-risk-mapping-assessment-and-planning.

Watersheds (or reaches therein) included in study: **Upper Sandy, Tualatin, Upper Rogue, Lower Umpqua, Johnson Creek**	
RPA 3.A(iii) – 90th Percentile	Models to be modified to include the 90th percentile discharge from Hydrologic analysis.
RPA 3.A(iv) – Expanded floodway	Study will prepare a 0.5 ft-surcharge floodway. Also, expand floodway to include depth greater than 3 feet and velocity greater than 3 fps.
Mapping	
RPA 2.A (i) – 10 Year Floodplain Mapping	Map the 10-year event.
RPA 2.B / 4.B – Riparian Buffer Zone	Leverage OHWM data where available. Where unavailable, map 170 ft bank offset to define the riparian buffer zone.
RPA 3.B – Erosion Hazard	Leverage CMZ mapping from DOGAMI. Where leverage data is unavailable use the "Proxy Method" to define the erosion hazard.
RPA 3.C – High Hazard Areas	Map the BFEs, 100-yr, 500-yr and floodway, based on BiOp enhancements. Combine the erosion hazard and expanded floodway to map the High Hazard Zone.
RPA 3.D – Future Conditions Hazard	Leverage future conditions analysis as of 2050. Where leverage data is unavailable map 100-yr plus 2ft freeboard and 500-yr floodplain to represent future conditions.

Appendix F: Summary of stakeholder feedback and responses

Comment	Notes	Addressed on page #
Prioritize funding for local watersheds - Oregon Watershed Enhancement Board funding is not enough	Additional funding and technical resources needed to implement	NA
Provide resources for implementation	Additional funding and technical resources needed to implement	NA
Provide training for any new requirements	Additional funding and technical resources needed to implement	NA
Need lots of additional communications tools explaining science	Additional funding and technical resources needed to implement	NA
Suggest restarting the advisory committees that were started by DLCD in 2016	Additional funding and technical resources needed to implement	NA
Need national or at least statewide outreach to public to give landowners an understanding of goals	Additional funding and technical resources needed to implement	NA
Analyze impacts on housing affordability	Additional funding and technical resources needed to implement	NA
Fund participation in this process by local stakeholders and governments	Additional funding and technical resources needed to implement	NA
Fund intergovernmental collaboration within watersheds	Additional funding and technical resources needed to implement	NA
Fund hydrologic studies, equity studies, climate flood modelling	Additional funding and technical resources needed to implement	NA
Need interagency and stakeholder watershed planning and data synthesis	Additional funding and technical resources needed to implement	NA
Clarify intersection of BiOp with contaminated sites	Additional funding and technical resources needed to implement	NA

Comment	Notes	Addressed on page #
Need updated maps with digital elevation models, frequencies, development impacts, stormwater impacts, etc.	Additional funding and technical resources needed to implement	NA
Consider providing a white paper analysis of consistency with state land use goals and policies	Additional funding and technical resources needed to implement	NA
The implementation plan should include a draft model ordinance, checklist, and draft community compliance plan, to allow for substantive feedback	Additional funding and technical resources needed to implement	NA
Habitat impacts that have occurred since 2016 due to delayed implementation of the BiOp need to be mitigated	Additional funding and technical resources needed to implement	NA
Suggest an analysis to see how much developable land will be taken off the table, and how that will impact other policy priorities and housing supply	Additional funding and technical resources needed to implement	NA
Please provide technical assistance and/or funding to communities that need to implement new measures	Additional funding and technical resources needed to implement	NA
Recommend NOAA and FEMA work together to explore whether an ESA 4(d) limit could be developed as a mechanism for communities implementing Path C	Additional funding and technical resources needed to implement	NA
Clearly define areas of application - definitions and mapping	Addressed in final draft	21-22
Clearly define how requirements will be implemented in previously developed areas, including non-residential uses	Addressed in final draft	35, 46
Clearly define development	Addressed in final draft	22

Comment	Notes	Addressed on page #
Consider using a subset of the floodplain for at least some of the actions taken - focus on areas with greatest benefit to species and least impact to housing and economic development	Addressed in final draft	35
Clarify exceptions to compliance for things like non-structural development, restoration, mitigation	Addressed in final draft	21-22
Need strong and consistent enforcement mechanisms	Addressed in final draft	14-19
Use mitigation hierarchy/sequence - avoid first, but mitigate what can't be avoided	Addressed in final draft	63
Restrictions should not be needed where there are no listed fish, including margins of SFHA and watershed where salmon are not present	Addressed in final draft	4-5
Implementation should be integrated into the model flood hazard ordinance	Addressed in final draft	23-24
Clearly map applicable streams	Addressed in final draft	6
Provide both a prescriptive and a discretionary review path	Addressed in final draft	23-24
Local jurisdictions are still struggling to address interim measures	Addressed in final draft	7-9
Suggest that CRS communities be given a good amount of CRS points for prohibiting new development in the floodplain	Addressed in final draft	15
Clarify why local governments are being asked to implement a federal BiOp	Addressed in final draft	3, 20-21

Comment	Notes	Addressed on page #
Add a list of technical products that still need to be developed	Addressed in final draft	25
Need to clarify whether mitigation ratios in BiOp are still required	Addressed in final draft	45-46
Unclear whether interim measures still need to be implemented	Addressed in final draft	15
Clearly reflect FEMA Region X commitment to prioritize species in map updates	Addressed in final draft	12
Specifically allow different paths in different parts of a jurisdiction	Addressed in final draft	23
Need to clarify whether impacts to flood storage other than fill need to be mitigated	Addressed in final draft	40
NMFS has stated that it does not have capacity to entertain HCPs, so that does not provide a good option	Addressed in final draft	24-25
Please provide updates on mapping and other BiOp requirements outside of RPA 4	Addressed in final draft	7-19
It is unclear whether FEMA actually intends to comply with the BiOp	Addressed in final draft	2-3
Riparian buffer zone is not included in the draft strategy	Addressed in final draft	27, 37-39
It is not clear that MS4 permits alone meet BiOp stormwater requirements - an earlier crosswalk identified some gaps	Addressed in final draft	41-45
FEMA needs to clarify what their authority is to require these changes, before getting this deep into details	Addressed in final draft	3 (footnote 12)

Comment	Notes	Addressed on page #
Clarify whether any of these required actions extend beyond the SFHA	Addressed in final draft	21-22
Please clearly identify what elements of the BiOp that FEMA is not proposing, and whether you anticipate including those later or not	Addressed in final draft	7-19, 27 (Table 2)
Consider avoiding implementation routes that require project-level assessment of species & habitat impacts - often exceeds local capacity and expertise	Addressed in final draft - a project-level assessment path is not included	23-24
Provide ideas for a menu of actions that go beyond no net loss - optional but would benefit fish, habitat, climate resiliency, and public safety. Includes net benefit mitigation standard.	Addressed in final draft	47-48 (Appendix B)
Please provide a summary of state agency engagement	Addressed in final draft	92 (footnote 96)
Clarify whether communities can receive credit in the Community Rating System for actions that are required under the BiOp	Addressed in final draft - they can, where there is overlap	16, 28, 47
Need to set clear objectives and then allow flexibility in how communities get there	Addressed in final draft (Path C and "objectives" in Table 2)	27-28
The criteria for triggering an "off ramp" exception to the process is very vague in the draft - unclear how these would be evaluated	Addressed in final draft by removing this concept and replacing it with Paths C and D	24-25
Consider both beneficial and harmful impacts of stormwater detention projects in the SFHA	Addressed in final draft, but also consider in development of model ordinance and other technical resources	38

Comment	Notes	Addressed on page #
Please ensure that it remains practical for existing development near streams to improve properties (additions, accessory buildings, etc.)	Addressed in final draft, but projects exceeding the "substantial improvement" threshold are still subject to avoidance, minimization, and mitigation requirements	21-22
Need flexibility to make mitigation work (off-site)	Addressed in final draft, more detail needed in technical guidance	61-64 (Appendix D)
Fill in the floodplain is not currently well regulated by floodplain managers other than construction of a structure	Addressed in final draft; BiOp requires mitigation of all impacts to flood storage in the SFHA	40
Provide flexibility to accommodate differences in communities - urban vs. rural, coastal vs. riverine, different ecosystems	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	23-24
Please ensure standards are clear for infrastructure and utility projects	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	21-22, 36
Consider using a function-based approach to mitigation rather than acre-for-acre	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	45-46, 63
Consider how climate change will affect outcomes of implementation actions	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	10, 12
Clarify how communities can help meet climate change goals through BiOp implementation actions	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	13, 21, 62
Don't invent new terms - use the existing language of the NFIP wherever possible, and clearly define and map where new terms are used	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g., 34-35

Comment	Notes	Addressed on page #
Try to consider indirect impacts or unintended consequences that might push people to impact fish in a different way	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	NA
Keep it simple!	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	NA
Put yourself in the place of people impacted by implementation - property owners, local government staff who have to implement	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	NA
Required actions need to be pragmatic to implement at the local level	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 “considerations”
Planners need help figuring out how to synthesize all the different regulations	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 “considerations”
FEMA should try to consolidate the NFIP guidance and mandates that require code amendments for the local jurisdiction due to the time and cost associated	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	23-24
Communities will need political support from state and federal agencies to implement standards that are unpopular locally. Need clear justification	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	NA
Include ODOT and transportation departments in outreach, as they have unique issues	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	92
Clarify intersection with clear and objective standards and Needing Housing statutes	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	36

Comment	Notes	Addressed on page #
Clarify intersection with state removal/fill requirements - small fill projects are not covered by permitting requirements	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	40-41
Agencies need to coordinate on natural hazards - combination of flood and wildfire limitations could shut down development across most of the state	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g., 34-36
Clarify intersections with other regulatory programs	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 “considerations”
Clarify intersections with land use planning goals	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 “considerations”
Need clarification around whether common agricultural practices like ditch clearing are development actions	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	21-22
170-foot riparian buffer zone is too specific and arbitrary. Communities should be able to develop locally-adapted standards	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	37-39
Be clear about what current regulations and policies already provide on the ground, in thinking through a no-action alternative	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 “considerations”
Focus on factors that are most important to mitigation in light of climate change, especially stream temperature and impervious surface	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	41-43
Connect to state and federal executive orders on climate change	Consider in development of model ordinance and other technical resources	NA

Comment	Notes	Addressed on page #
Provide additional description of when and how FEMA will engage NMFS in review of Path C proposals	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	24, 28-29
Provide information on how climate-related flood risks will be captured in FEMA maps or implementation guidance	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	12, 65-66 (Appendix E)
Metro Title 3 requirements have significant exemptions and compliance issues, so they are not a good model for BiOp requirements	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	38, 40
Approach replicates the flaws of the 3 doors approach from Puget Sound, including a lack of consistency and enforceability	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	14-19, 25
Need clarity around intersection with national consultation	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	16
More details is needed on RPA elements 3, 5, and 6	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	10-12, 13-19, 65-66
Clarify any exceptions to requirements, and what criteria would be used	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	throughout
Please review and consider potential intersections with new mercury TMDL for Willamette Basin communities	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	42
Need to consider ports and other water-dependent uses	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	35-36, 38

Comment	Notes	Addressed on page #
FEMA should provide clear timelines and deadlines for all aspects of the BiOp	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	16
The BiOp does not allow net increase of impervious surface in the SFHA. This is not addressed in draft	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	42-44
Need to clarify potential exceptions for flood compatible, water dependent, water related, or other public uses	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	21-22, 35-36, 38
Please describe proposed review process and submittal packages for FEMA approval	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	13, 15-16, 20-26
Proposed approach seems to assume residential development focus, need to think more about commercial and industrial development implications	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	34
Proposed buffer requirements tend to result in fierce public and political opposition	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	37-38
The only approach to restoration that is effective is one that is community driven, voluntary, well-funded and that brings all interests to the table.	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources	28-29 (Path C)
The BiOp contains detailed information about how floodplain impacts are to be mitigated (ratios, location, etc.). Does FEMA plan to adhere to these specific requirements?	Addressed where possible in final draft, but also consider in development of model ordinance and other technical resources; specific mitigation requirements in the BiOp are intended to provide a simplified approach to ensuring no net loss until a more programmatic guidance is available	45-46

Comment	Notes	Addressed on page #
Please make every effort to provide updates on implementation planning process and points of engagement - it has been difficult to track given long timelines	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	NA
Work to bring together reps from local/regional groups together to help provide coordinated feedback to this process	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	86-94
Transparency is key	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Start public outreach early	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Include other state agencies and utilities in outreach	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Please keep this moving forward quickly. The BiOp is defensible, and delays put communities and fish in jeopardy	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Tie requirements back to science	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	throughout
Need more positive framing around implementation, highlight economic and ecological benefits. These actions make our communities better and healthier.	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	e.g., 13

Comment	Notes	Addressed on page #
Avoid conflicting information between federal agencies - need a more streamlined process between agencies	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	NA
Provide as much outreach as possible and as much lead time as possible	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	86-94
Reach out to developers and building associations to get their input and feedback	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Use past DLCD workgroup advice	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	e.g., 20, throughout
Stakeholder meetings should be held throughout the state, consistently	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	86-94
Written comment periods should be included	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	"
Keep congressional delegation staff up to date and in the loop	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	NA
Figure out more ways to engage stakeholders beyond 3 workshops	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	86-94
Coordinate among state agencies, including DEQ and ODFW permitting requirements	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	e.g,, 32-48 "considerations"

Comment	Notes	Addressed on page #
Clarify intersection with Risk Rating 2.0 and other FEMA mapping efforts	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	10-12
Not enough time is being provided for comments	Addressed where possible in implementation planning process, but also consider in development of model ordinance and other technical resources	86-94
Consider mapping of channel mitigation zones	Being explored in RPA 3 mapping pilots; consider in development of technical resources	10, 12, 37
Consider giving credit for actions communities take outside the SFHA that have a beneficial impact on species	Can be included through Path C or D, but also consider in development of model ordinance and other technical resources	NA
Consider state/federal regulatory changes that would maximize the species benefits of wetland connections	Consider in development of model ordinance and other technical resources	NA
Outreach and education materials are needed from FEMA on topics like on-site stormwater retention, compensatory storage, etc.	Consider in development of model ordinance and other technical resources	NA
Consider multiple model ordinance for different regions	Consider in development of model ordinance and other technical resources	NA
Provide 1-page handout for local government staff to use at permit counter in engaging with public	Consider in development of model ordinance and other technical resources	NA
Would be helpful to have outreach from FEMA directly to elected officials	Consider in development of model ordinance and other technical resources	NA
Clarify intersection with the Land Use Compatibility Statement process for regulatory permit applications	Consider in development of model ordinance and other technical resources	NA

Comment	Notes	Addressed on page #
Need to clarify at next level of detailed guidance what vegetation replacement in the riparian corridor needs to look like	Consider in development of model ordinance and other technical resources	NA
Allow mitigation to occur outside the SFHA when it makes sense	Consider in development of model ordinance and other technical resources	NA
Need to clarify what an alternative to the 170-foot buffer looks like	Consider in development of model ordinance and other technical resources	NA
Please provide guidance on how communities should review LOMR-F applications	Consider in development of model ordinance and other technical resources	NA
Guidance on stormwater improvements should establish appropriate minimum quantitative performance standards, whether volume, storm event percentile, or average runoff	Consider in development of model ordinance and other technical resources	NA
Encourage FEMA and NOAA to incorporate a climate risk factor into the stormwater performance standards, and throughout the guidance. University of Washington has modeled the entire Pacific Northwest for climate projections for use in stormwater planning	Consider in development of model ordinance and other technical resources	NA
FEMA should go through federal rulemaking to clarify authority for these requirements	Consider in development of model ordinance and other technical resources	NA
For stormwater requirements, do as much as you reasonably can to favor treatment of traffic surfaces, particularly high volume traffic surfaces	Consider in development of model ordinance and other technical resources	NA
Refer to existing stormwater BMP manuals for small communities	Consider in development of model ordinance and other technical resources	NA
While restoration doesn't require mitigation in the BiOp, there is a spatial limit in the Incidental Take Statement	Consider in development of model ordinance and other technical resources	NA

Comment	Notes	Addressed on page #
Please consider developing boilerplate "Purpose" language for communities to use in code changes	Consider in development of model ordinance and other technical resources	NA
Identify potential interactions with Natural Hazard Mitigation Plans	Consider in development of model ordinance and other technical resources	NA
Not hard to do a 10-year water surface profile if you have good topographic information - see ODOT bridge program	Consider in development of model ordinance and other technical resources	NA
Please include in final guidance revised instructions and guidance for what evidence is required to demonstrate compliance for CLOMR and LOMR forms	Consider in development of model ordinance and other technical resources	NA
Clearly define fill so that communities can consistently and confidently identify, measure, and mitigate	Consider in development of model ordinance and other technical resources	NA
Request that FEMA continue to closely engage with stakeholders during development of remaining components and details	Consider in development of model ordinance and other technical resources	NA
Concern that NMFS has not approved approach and is reviewing concurrently, so there may still be substantial changes	Consider in development of model ordinance and other technical resources	NA
Road resurfacing is noted as an exemption but could significantly displace flood storage if road surface grinding isn't completed before resurfacing	Consider in development of model ordinance and other technical resources	NA
Make sure not to unintentionally preclude currently allowed uses within conservation areas such as moving a bike path (which is a public facility). An activity such as moving a bike path does not seem excluded from mitigation requirements.	Consider in development of model ordinance and other technical resources	NA

Comment	Notes	Addressed on page #
Need to clarify whether flood storage mitigation is calculated based on volume of fill or flood volume displaced. Communities generally use former approach, but BiOp indicated the latter.	Consider in development of model ordinance and other technical resources	NA
Please provide resources for local governments looking at whether Measure 49's public health exemption would apply here	Consider in development of model ordinance and other technical resources - requires input from state agencies	NA
Even if redevelopment in the floodplain doesn't impact 3 natural functions, it still creates public safety issues	Consider in development of model ordinance and other technical resources; additional actions outlined in Appendix B help address this concern	47-48
Need coordinated mitigation approach at state level	Consider in development of model ordinance and other technical resources; additional funding and technical resources needed to implement	NA
Find a way of tracking what communities are doing to implement and share so that others can learn	Consider in development of model ordinance and other technical resources; additional funding and technical resources needed to implement	NA
Need to clarify how to deal with urban areas of low habitat value within AH shallow flooding zones, where there's a minimal impact to both habitat and life safety	Consider in development of model ordinance and other technical resources; also, an alternative approach for these areas could be developed under Path C	NA
Consider a mitigation-based approach for communities that use less than a 170-foot buffer in part of their SFHA	Consider in development of model ordinance and other technical resources; also, this kind of approach could be developed under Path C	NA
Education and monitoring approach, rather than hard buffer limits, seem to be working in some communities	Consider in development of model ordinance and other technical resources; also, this kind of approach could be developed under Path C or D	NA

Comment	Notes	Addressed on page #
The proposed implementation strategy sites ballot measures 37 and 49 as impediments to implementing the BiOp. We disagree with this analysis	Consider in development of model ordinance and other technical resources; FEMA is seeking additional guidance from state agencies	NA
Mitigation opportunities both on and near development sites can be very limited in highly developed areas - need flexibility in mitigation	Consider in development of technical resources	NA
Focus mitigation funds on most strategic/beneficial locations	Consider in development of technical resources	NA
Appendix 2.8C of the BiOp indicates the need to mitigate for impacts to habitat functions beyond the 3 functions addressed in the final draft	FEMA proposes the three noted floodplain functions as an effective proxy for broader habitat functions, which can be extremely difficult to quantify and mitigate effectively. For example, the use of impervious surface as a proxy for hyporheic function is supported in the BiOp on p. 293. Jurisdictions are encouraged to provide greater protection for fish habitat functions as capacity and technical resources allow.	NA
FEMA should provide a streamlined process for fish habitat restoration projects	Final draft clarifies that fish habitat restoration projects are exempt from most BiOp requirements; habitat restoration projects in the floodway that result in rise still require a rise analysis and letter of map revision as per FEMA's existing minimum standards	NA
FEMA should consider changing the community acknowledgement form process for LOMR-Fs	Implementation of FEMA's anticipated technical guidance, resulting from this implementation plan, should provide communities with greater certainty about whether projects being permitted are consistent with ESA	NA

Comment	Notes	Addressed on page #
FEMA and NOAA should revisit the decision to exclude farm and forest lands from complying with the BiOp	Implementation requirements apply to development actions on farm and forest lands, but not to agricultural and forestry practices that do not meet FEMA's definition of development actions.	NA
Consider a total prohibition of development within the floodway, with rare exceptions	Included as a potential "additional action" in Appendix B	48
For areas where floodplain is largely built out, need resources focused on redevelopment and property acquisitions and easements	Included as a potential "additional action" in Appendix B; additional funding and technical resources needed for broad implementation	47
Consider giving credit (either BiOp implementation or CRS or both) for acquiring and restoring previously-developed areas of the floodplain	Included as a potential "additional action" in Appendix B; additional funding and technical resources needed for broad implementation	47
Develop a fund for property buyouts	Included as a potential "additional action" in Appendix B; additional funding and technical resources needed for broad implementation	47
Consider including a prohibition of fill in the SFHA, with specific exceptions	“No rise” version included as implementation option in final draft	35
Consider use of a greenway code in BiOp implementation	Included as implementation option in final draft	37-39
Allow for use of in-lieu fee programs	Included as implementation option in final draft	61-64
Allow for use of system development charges	Included as implementation option in final draft	61-64
Need best practices for how to protect affordable housing that is within the floodplain	Partially addressed by "additional actions" in Appendix B; additional funding and technical resources needed for broad implementation	47-48

Comment	Notes	Addressed on page #
Provide a schedule identifying the expected approach to the NEPA process and key milestones	Public notice of NEPA procedures will be handled through FEMA's Office of Environmental and Historic Preservation.	NA
FEMA needs to meet a recovery standard, not just survival of the species	Recovery Standard is being addressed at the national level. Consider in development of model ordinance and other technical resources.	NA

Appendix G: Overview of stakeholder outreach and interagency coordination

Q1

Initial Project Plan

Final framework for the project completed on **November 1, 2019**, understood to be a living document and flexible approach based on changing information throughout the project.

Communication and Outreach

FEMA meets with NMFS to discuss plans for the implementation planning project, **December 12, 2019**

Willamette Partnership and FEMA participate in Tillamook County meeting and tour to discuss the NFIP and other issues, **December 13, 2019**

Q2

Interagency Working Group Meetings

Core team meeting prep call, **January 22, 2020**

First Core team meeting, **January 31, 2020**

Pre-stakeholder engagement meeting with Core team conducted, **February 19, 2020**.

Communication and Outreach

Developed extended working group mailing list

Website developed to provide ability to upload and share resources for meetings and open to stakeholder use, **February 9, 2020**

First stakeholder kick-off meeting conducted, **February 21, 2020**, >50 participants

March 4, 2020: Provided website updates to allow participant feedback, set up events, and event registration

Documents Drafted During This Period

Stakeholder meeting PowerPoint presentation

Outreach materials for the February stakeholder meeting – Oregon BiOp FAQ and Summary Document

Stakeholder meeting summary and notes

Q3

Interagency Working Group Meeting

Core Team Meeting, **April 10, 2020**

Core Team Meeting, **May 1, 2020**

Communication and Outreach

NFIP Webinar Prep, **March 18, 2020**

Stakeholder Webinar, **March 20, 2020**

NMFS Outreach Call, **April 9, 2020**

Oregon Association of Counties Meeting Presentation, **May 15, 2020**

Documents Drafted During This Period

Stakeholder meeting PowerPoint presentation

Stakeholder meeting summary and notes

Q4

Interagency Working Group Meeting

Core Team Meeting, **July 30, 2020**

Communication and Outreach – Partial, Ongoing

Opportunity for Input Webinar, **June 26, 2020**

Virtual Flipchart Webinar, **July 7, 2020**

Flipchart Review Webinar, **August 10, 2020**

Oregon Home Builders Association Meeting, **August 12, 2020**

Focused Feedback Session – Local Government 1, **September 1, 2020**

NFIP/FEMA-NMFS Check-in, **September 2, 2020**

Focused Feedback Session – Local Government 2, **September 3, 2020**

Documents Drafted During This Period

Stakeholder meeting PowerPoint presentation

Virtual flipchart summary and results

Q5

Interagency Working Group Meeting

Core Team Meeting, **September 25, 2020**

Core Team Meeting, **October 21, 2020**

Core Team Meeting, **November 13, 2020**

Communication and Outreach – Partial, Ongoing

NORFMA Presentation, **September 21, 2020**

Focused Feedback Session – Ag, Forestry, Irrigation and Resources, **October 6, 2020**

FEMA BiOp Discussion with Ports, **October 16, 2020**

Focused Feedback Session – Local Governments 3, **October 21, 2020**

Focused Feedback Session – Tribal Governments, **November 5, 2020**

Ports Association Meeting, **November 19, 2020**

Focused Feedback Session – Coastal Communities, **November 20, 2020**

Focused Feedback Session – Conservation Community, **December 3, 2020**

Documents Drafted During This Period

Draft framework and initial drafting of implementation plan.

Q6

Interagency Working Group Meeting

Core Team Meeting, **January 22, 2021**

Agency Outreach and Coordination

NMFS Leadership Briefing, **February 9, 2021**

FEMA Leadership Briefing, **February 17, 2021**

NMFS Leadership Briefing, Follow Up meeting, **February 23, 2021**

Oregon State Agency Briefing, **March 10, 2021**[96]

Documents Drafted During This Period

Buildout analysis and preliminary results

Preliminary Draft Implementation Plan

[96] State agency briefing invitation and requests for document review feedback include a full list of state government partners, including the Governor's Natural Resource Office, Oregon Department of Environmental Quality, Department of State Lands, Department of Land Conservation and Development, Oregon Watershed Enhancement Board, Oregon Department of Fish and Wildlife, representatives from Oregon's Regional Solutions team, Oregon Department of Forestry, Oregon Department of Agricultural, Oregon Office of Emergency Management, Oregon Insurance Commissioner's Office, Oregon Department of Geology and Mineral Industries, Oregon Department of Transportation, Oregon Department of Water Resources, Building Codes Division, and Oregon State Marine Board.

Q7 (March 16 – June 15, 2021)

Interagency Working Group Meetings

Core Team Meeting, **March 19, 2021**

Communication and Outreach

Stakeholder Meeting, **April 16, 2021**

Stakeholder Office Hours, **May 14, 2021**

Documents Drafted During This Period

Draft Implementation Plan

Q8 (June 16 – September 30, 2021)

Communication and Outreach

Stormwater Next Steps Discussion with DEQ, July 26, 2021

NFIP Stakeholder meeting, September 10, 2021

NFIP Stakeholder meeting, September 15, 2021