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DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DEVELOPMENT SERVICES BUILDING  
150 BEAVERCREEK ROAD OREGON CITY, OR 97045

CLACKAMAS COUNTY BOARD OF COMMISSIONERS  
2051 Kaen Road, Oregon City  
BCC Hearing Room - 4th Floor

**LAND USE HEARING**  
**January 9, 2019**  
**9:30 AM**

The item will not begin before time noted. Interested parties may appear and be heard during the testimony phase of any hearing at the above address. If a hearing is set for decision only, the evidence phase has been completed, so interested parties may no longer be heard. Applications or comments may be inspected, and calls or correspondence directed to: Planning & Zoning Division, 150 Beaver Creek Road, Oregon City, OR 97045, (503) 742-4500.

**HEARING**

**File No.:** ZDO-275: Floodplain Management District Updates

**Applicants:** Clackamas County

**Proposal:** ZDO-275 proposes legislative text amendments to Section 703 of the Clackamas County Zoning and Development Ordinance (ZDO) to adopt new floodplain maps for the Sandy River Basin, produced by the Federal Emergency Management Agency (FEMA), and to amend the standards that apply to new development in the 1-percent annual chance floodplain (i.e., the 100-year floodplain) countywide.

**Staff Contact:** Steve Hanschka, Senior Planner, 503-742-4512, [SteveHan@clackamas.us](mailto:SteveHan@clackamas.us) and Melissa Ahrens, Senior Planner, 503-742-4519, [MAhrens@clackamas.us](mailto:MAhrens@clackamas.us).



## Planning & Zoning

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### Land Use Hearing Item Staff Report to the Board of County Commissioners

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**File Number:** ZDO-275, Proposed Zoning and Development Ordinance Amendments—  
Floodplain Management District Update

**Staff Contact:** Steve Hanschka, Sr. Planner, CFM and Melissa Ahrens, Sr. Planner

**Board of County Commissioners Hearing Date:** January 9, 2019

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#### PROPOSAL:

ZDO-275 proposes legislative text amendments to Section 703 of the Clackamas County Zoning and Development Ordinance (ZDO) to adopt new floodplain maps for the Sandy River Basin, produced by the Federal Emergency Management Agency (FEMA), and to amend the standards that apply to new development in the 1-percent annual chance floodplain (i.e., the 100-year floodplain) countywide. As a result of the new maps, some properties that are in the floodplain will move out of the floodplain, some properties that are not in the floodplain will move into the floodplain, and many properties that are currently in the floodplain will stay in the floodplain. The new floodplain maps will also result in some changes to the elevation of the 100-year flood and the configuration of the regulatory floodway.

**Background:** The substantive amendments proposed to ZDO Section 703 are either required or recommended by FEMA and the Oregon Department of Land Conservation and Development (DLCD). With the exception of the addition of new standards for siting critical facilities in the floodplain, adoption of the substantive amendments is necessary to ensure continuation of the County's participation in FEMA's National Flood Insurance Program (NFIP). The NFIP makes federally backed flood insurance available for existing development and new construction and is required for nearly all mortgages that apply to property located in the floodplain.

In addition, DLCD has recommended the addition of provisions that limit the siting of critical facilities in the floodplain. County land use planning staff have been actively coordinating with DLCD and FEMA on the proposed text changes to ensure clarity, compliance with NFIP requirements and successful code implementation. Although the new mapping applies only in the Sandy River Basin, the remainder of the proposed amendments would apply to all of the more than 6,000 properties in the County's 100-year floodplain.

**Proposed Amendments:** Amendments are proposed to ZDO Section 703, *Floodplain Management District*. The amendments recommended by the Planning Commission, as further amended based on direction from FEMA and DLCD, are shown in the attached draft of ZDO

Section 703. Summarized below are those proposed changes that staff has identified as most significant:

1. Revision to the reference date of FEMA's Flood Insurance Study and FIRMs to reflect the updated floodplain mapping for the Sandy River Basin
2. Definition modifications to incorporate the exact language of FEMA's NFIP regulations
3. Addition of regulations requiring specific standards for siting and design of "critical facilities," which include such developments as schools, nursing homes, hospitals and police and fire stations.
4. Removal of the fish enhancement project exemption from the general prohibition on development in the floodway
5. Updates to the construction requirements for manufactured dwellings.
6. Clarification that determination of an exempt use requires review as a Type 1 land use application.
7. Updates to standards for wet-floodproofing certain non-residential structures.

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**RELATED PRIOR BCC ACTION:**

On December 11, 2018, a summary of ZDO-275 was provided to the Board as part of a policy session on flood policy programs and hazard mitigation.

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**PLANNING COMMISSION ACTION:**

A public hearing was held on December 10th, 2018, for Planning Commission consideration of the proposed amendments.

The Planning Commission voted unanimously to recommend approval to the BCC of staff's proposal.

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**CPO AND HAMLET RECOMMENDATIONS:**

On November 5, 2018, all CPOs and Hamlets were provided with notice of public hearing on ZDO-275 and a web link to the text of the proposed amendments. To date, no recommendations or comments have been received from any CPO or Hamlet.

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**SIGNIFICANT ISSUES:**

As a result of testimony during the Planning Commission hearing, and corresponding written testimony that is included in the record, two significant issues emerged:

- Interest in the adoption of a channel migration zone (CMZ) for the Sandy River
- Interest in regulating floodplains for their contribution to wildlife habitat and water quality

The county is currently engaged in efforts that may ultimately address both of these issues; however, neither is within the scope of ZDO-275. The purpose of ZDO Section 703 and the proposal under ZDO-275 is to comply with federal performance standards to manage risk for floodplain development and ensure that the County maintains its membership in the National Flood Insurance Program, thereby securing access to flood insurance for County residents.

Regarding CMZs for the Sandy River, these were first mapped by the Oregon Department of Geology & Mineral Industries (DOGAMI) in 2011 and then refined by Natural Systems Design in 2015. The county's Disaster Management Department is working with PSU-based Oregon Solutions to evaluate the creation of CMZs at the state level. In addition, the U.S. Army Corps of Engineers Silver Jackets are developing a public engagement plan for the Sandy River area regarding CMZs.

Urban floodplains are protected under the Habitat Conservation Area overlay zone, which applies in addition to the provisions of ZDO Section 703. Water quality standards apply to buffer areas near rivers and streams countywide but do not necessarily apply to the entire floodplain of a particular river or stream. Contemplated County projects, such as the Performance Clackamas Strategic Goal of establishing a masterplan for surface water could enhance water quality countywide. In addition, pending the outcome of federal litigation, additional habitat protections for floodplains may be required in the future.

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#### **STAFF RECOMMENDATION:**

Staff recommends adoption of ZDO-275 as shown in the attached draft of ZDO Section 703 dated December 27, 2018. In response to additional direction provided by FEMA/DLCD, this draft includes amendments to the Planning Commission recommended draft, which are summarized below:

- Additional edits to the purpose statement
- Deletion of a phrase from Subsection 703.04
- Revision of the definition of critical facilities
- Replacement of the categories of flood fringe, flood hazard and flood prone area with corresponding flood zone references from the FIRMs
- Repeal of inapplicable building code references from the definitions of substantial damage and substantial improvement
- Revision of a proposed new definition of water-dependent use
- Additional reference to the required "no-rise" certification for stream crossings in the floodway
- Explicit authority for the Planning Director to delegate implementation of ZDO Section 703
- Clarification that floodplain development permits are required for development that is laterally within the Floodplain Management District (rather than based on elevation)
- Addition of clarifying text to the anchoring provision
- Clarification of the standards for utilities in the floodplain
- Revision of the exception provisions to cite relevant building code provisions
- Modification of one of the variance criteria and the written record requirement for variances



ZDO-275:

MAP AND TEXT AMENDMENTS TO THE  
FLOODPLAIN MANAGEMENT DISTRICT (FMD)

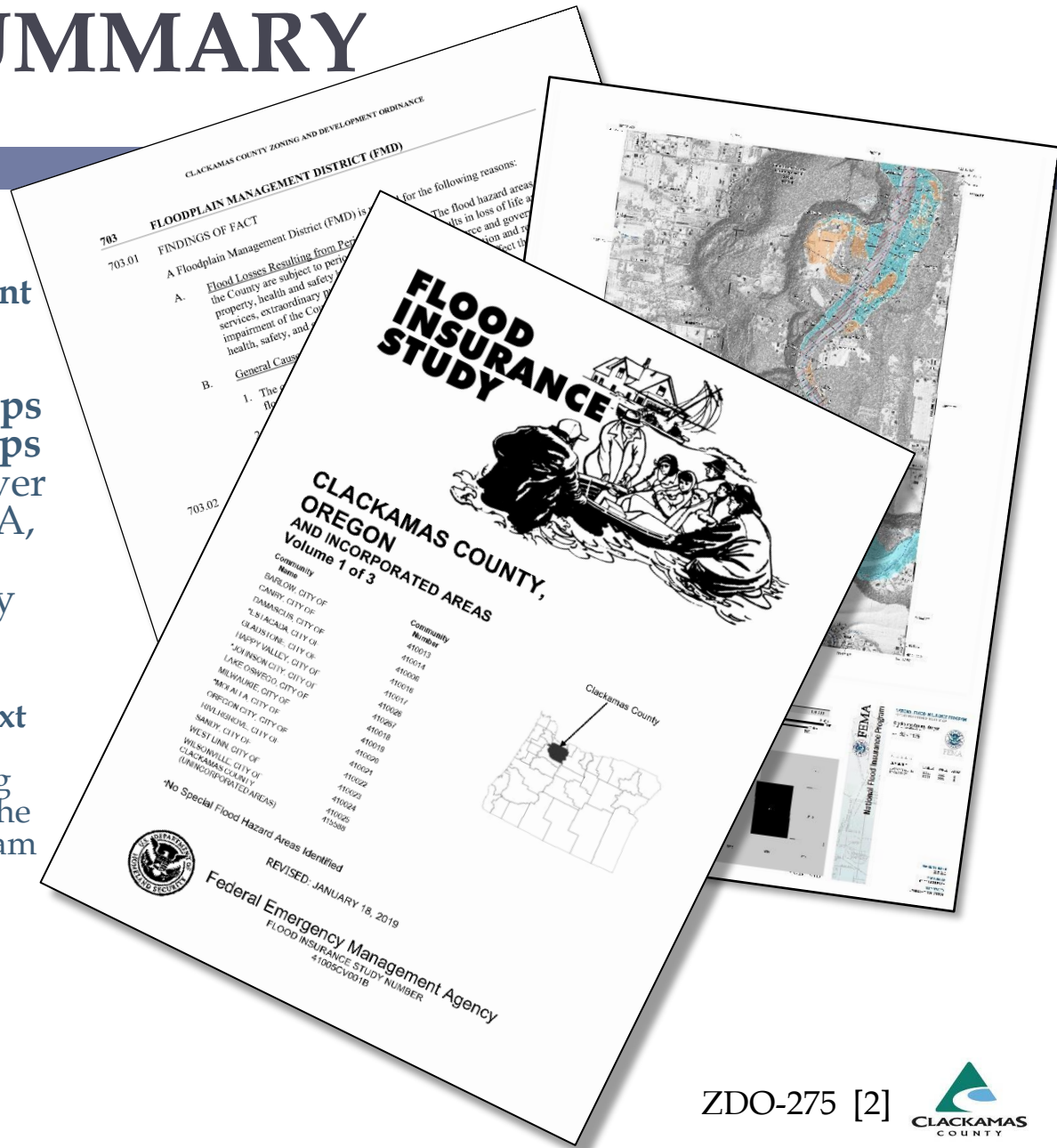


Board of County Commissioners Hearing  
January 9, 2019

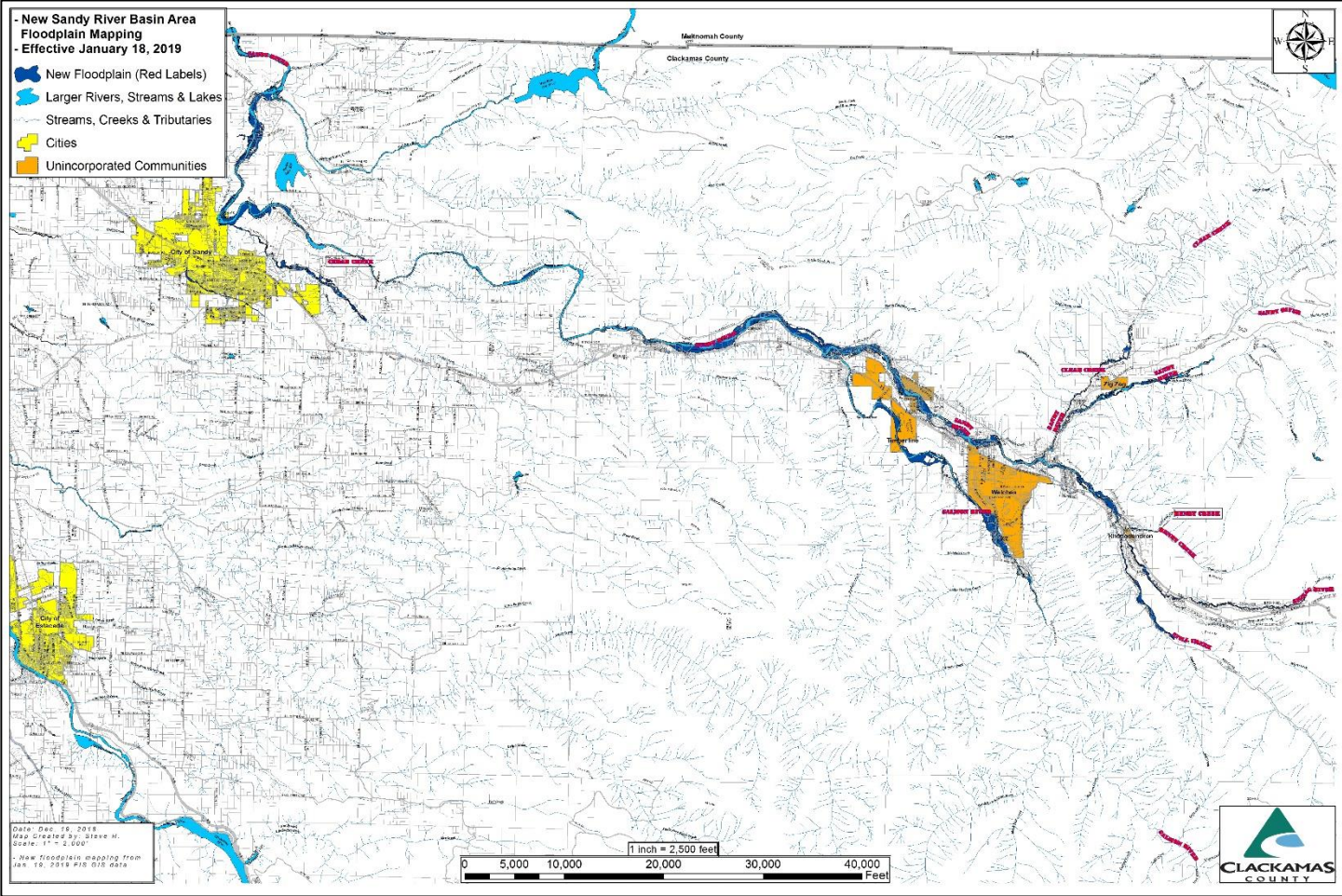
# ZDO-275 SUMMARY

Legislative amendments to ZDO Section 703, Floodplain Management District (FMD) to:

1. Adopt **new floodplain maps (Flood Insurance Rate Maps [FIRMs])** for the Sandy River Basin, as required by FEMA, along with the associated new Flood Insurance Study (FIS).
2. Adopt **Floodplain Ordinance text amendments** required or recommended by FEMA to bring ZDO 703 into compliance with the National Flood Insurance Program (NFIP) regulations countywide.



# AREA OVERVIEW OF NEW SANDY RIVER BASIN FLOODPLAIN MAPS



# ZDO-275 PURPOSE

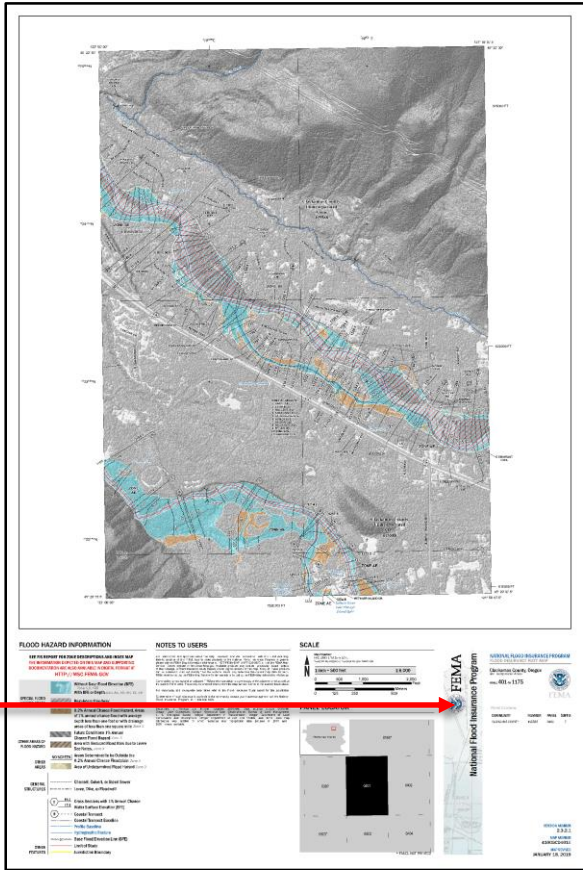
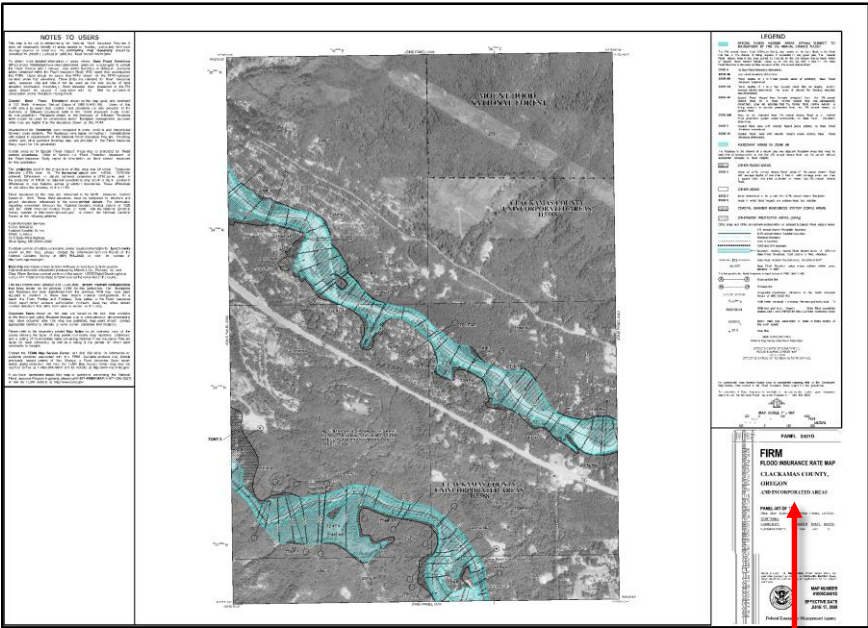
- ❖ Amends ZDO Section 703.
- ❖ ZDO Section 703:
  - Regulates development in floodplain.
  - Maintains County's membership in the NFIP.
  - Updates to ZDO Section 703 include reference to new FIS and associated new Sandy River Basin Area FIRMs.
  - FIRMs are used to identify properties in the floodplain.



Above: Elevated home under construction in floodplain of Clackamas River.



# MAPPING FORMAT UPGRADE



Besides changes to floodplains, current 2008 Digital FIRMs upgraded to new Risk MAP FIRMs, with LIDAR basemap.

# NFIP BACKGROUND

- ❖ FEMA administers the NFIP, and membership in the NFIP is optional for local governments, referred to as “communities” by FEMA. However, most communities with floodplain participate in the NFIP.
- ❖ Benefits of participating in the NFIP:
  - **Federal government flood insurance available** for County floodplain property owners, required for all federally backed mortgages.
  - **Federal disaster assistance** in an emergency
  - **Other federal grants and loans** are available
  - **Voluntary purchase of flood insurance** available to all County residents, regardless of proximity to floodplain.



Above: Flood-damaged home along Abernethy Creek undergoing process of being elevated through FEMA Hazard Mitigation Grant funds.

# NFIP PARTICIPATION

- ❖ Clackamas County has been participating in the NFIP since March 1<sup>st</sup>, 1978.
- ❖ There are more than 6,000 properties located in County floodplains. Of those, more than 3,000 contain stick-built residences.
- ❖ The NFIP makes federally backed flood insurance available throughout Clackamas County, whether or not a property or homesite is located in the floodplain.
- ❖ If suspension from the NFIP occurs, FEMA will not renew any existing flood insurance policies; no new flood insurance policies will be issued.
- ❖ Without the NFIP, private flood insurance can be very expensive and is often not available for residences in the floodplain.
- ❖ Adoption of most of the text amendments to ZDO 703, new FIRMs and new FIS by January 18, 2019 is necessary to avoid suspension from the NFIP.



*Above: Three damaged homes in a row from 2011 Sandy River flooding.*

# OVERVIEW OF FEMA MAPPING PROCESS FOR SANDY RIVER BASIN

- ❖ In conjunction with FEMA, the States of Oregon and Washington identified the Lower Columbia Watershed as a priority for FEMA's Risk MAP program
- ❖ Each Risk MAP flood risk project is tailored to the needs of each community and may involve different products and services.
- ❖ The Sandy River Basin floodplain was re-mapped using LiDAR and new preliminary FIRMs were prepared starting in 2012.



# FEMA PUBLIC OUTREACH DURING MAP DEVELOPMENT

## *Five years of Preliminary Floodplain Mapping Public Outreach... 2013 -2018*

Meeting / Deliverable	Date
Risk MAP Discovery Meeting	March 28, 2012
Flood Risk Review (FRR) Meeting/Draft Map Release	July 2013
Preliminary DFIRM/FIS Release	March 28, 2016
Consultation Coordination Officers (CCO) Meeting	May 5, 2016
Public Meetings/Workshops	June 27, 2016 (Troutdale) July 12, 2016 (Welches)
Appeal Period Starts	May 17, 2017
Appeal Period Ends	August 15, 2017
Draft Multi-Hazard Risk Report	October 30, 2017
Risk MAP Resilience Workshops	October 30, 2017
Revised Preliminary DFIRM/FIS Release	March 26, 2018
Delivery of Final Risk Report and Risk Assessment Database	June 2018
Letter of Final Determination	July 18, 2018 (Clackamas)
Maps and FIS become Effective	January 18, 2019 (Clackamas)

# NEW FIRMS PRODUCED

New floodplain maps are now produced for the Sandy River, Salmon River, Zigzag River, Henry Creek, Cedar Creek, Clear Creek, Still Creek and Tickle Creek.



Above: Looking upstream at the Sandy River from the Timberline Rim Tennis Courts.

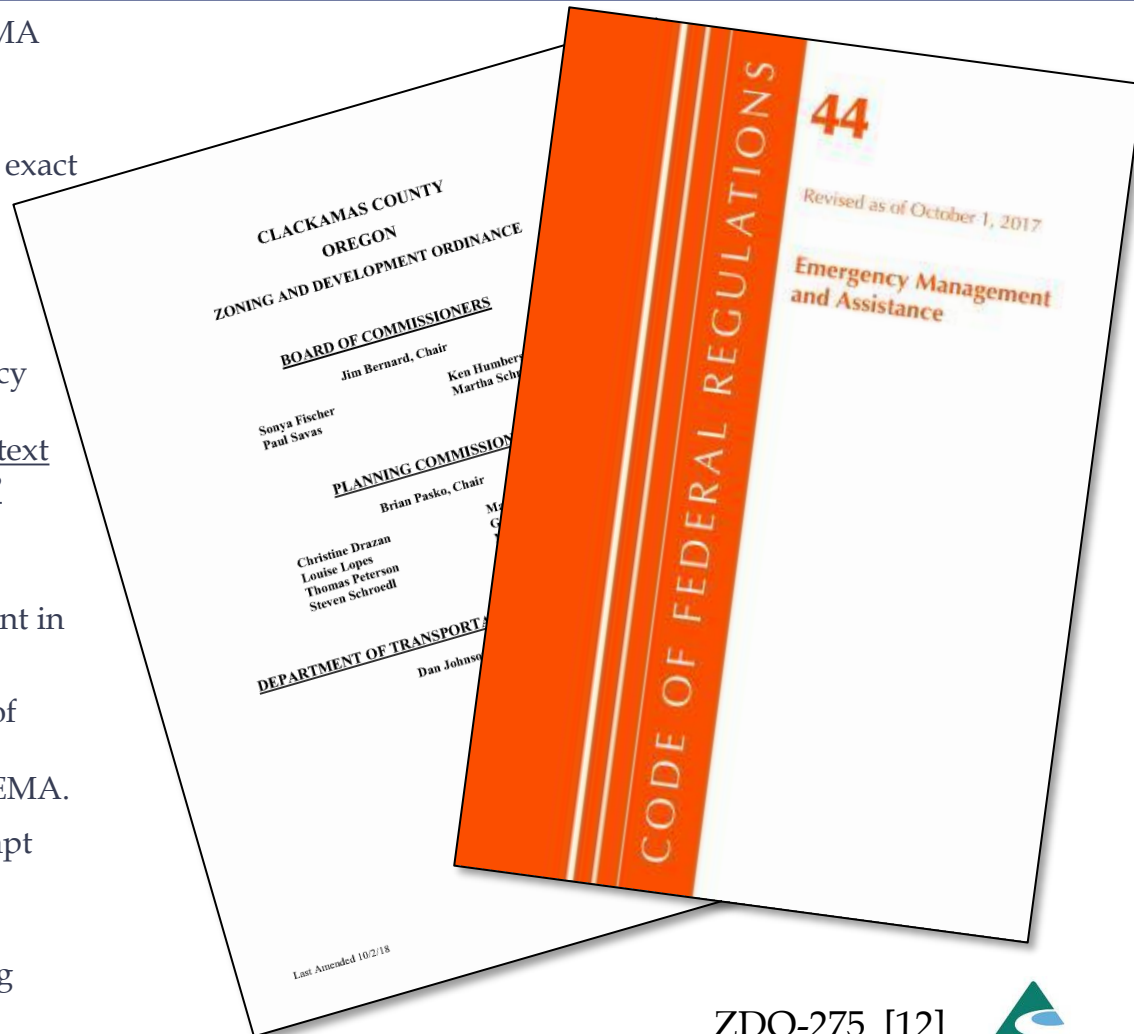
# WHAT DOES THIS MEAN FOR A FLOODPLAIN PROPERTY...

- ❖ The floodplain will be removed or reduced on some properties and added or enlarged on other properties.
- ❖ If a property that was previously out of the floodplain is being added into the floodplain, FEMA will provide “grandfathered” insurance rates for two years to buffer the economic impact.
- ❖ If the County adopts the new FIRMs and ZDO 703 text amendments, the County will remain in the NFIP and federally backed flood insurance coverage will continue to be available for existing development and new construction.



# ACCOMPANYING TEXT AMENDMENTS TO ZDO-275 IN CONJUNCTION WITH NEW FIRMS

1. Required for ongoing compliance with FEMA NFIP regulations of Title 44 of the Code of Federal Regulations (44 CFR).
2. Definition modifications to incorporate the exact language of FEMA's NFIP regulations.
3. Addition of regulations requiring specific standards for siting and design of "Critical Facilities," which include schools, nursing homes, hospitals, police, fire, and emergency response installations. FEMA strongly recommends including this, however, this text amendment is optional for continued NFIP participation.
4. Removal of the fish enhancement project exemption from Section 703.07; development in the floodway.
5. Updates to the construction requirements of manufactured dwellings, as requested by County Building Codes and required by FEMA.
6. Clarification that determination of an exempt use requires review as a Type 1 land use application.
7. Updates to standards for wet-floodproofing certain non-residential structures.





# PLANNING COMMISSION RECOMMENDATION

❖ On December 10, 2018, a hearing for ZDO-275 was held before the Clackamas County Planning Commission, where Staff recommended **approval** of ZDO-275, as proposed, to:

1. Adopt the most recent Flood Insurance Study (FIS) and associated Flood Insurance Rate Maps (FIRMs)
2. Adopt the proposed text changes to ZDO Section 703, Floodplain Management District (FMD).



Above: Elevated home on E Lolo Pass Road along the Sandy River.



Above: Zigzag River Bridge carrying E Lolo Pass Road across the Zigzag River. Photo taken during 2011 flood damage repair work.

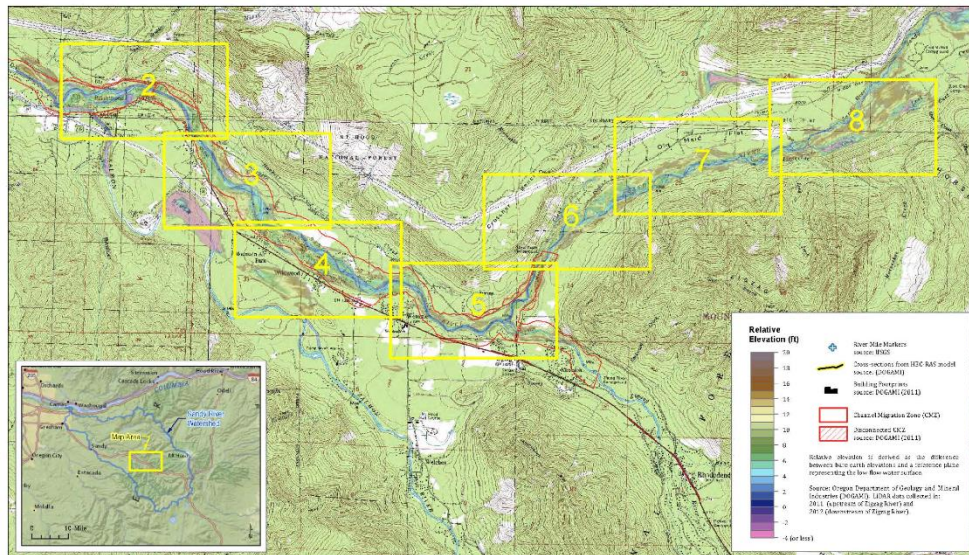
❖ **At the end of the hearing, the Planning Commission unanimously recommended approval of ZDO-275.**

# ADDITIONAL ISSUES RAISED BY PLANNING COMMISSION BEYOND SCOPE OF ZDO-275

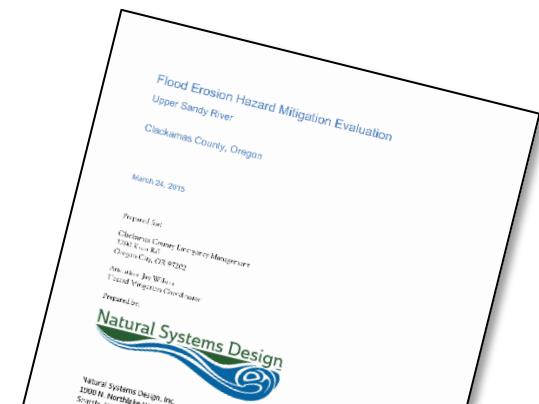
## 1. Discussion and interest about the development of Sandy River Channel Migration Zone (CMZ)

### ❖ Disaster Management is the lead on this project.

- CMZs for Sandy River first mapped by Oregon Department of Geology & Mineral Industries (DOGAMI) in 2011, then refined by Natural Systems Design in 2015.
- Working with PSU-based Oregon Solutions at the State level to examine creation of CMZs.
- Working with U.S. Army Corps of Engineers Silver Jackets to develop Public Engagement Plan for Sandy River area regarding CMZs.



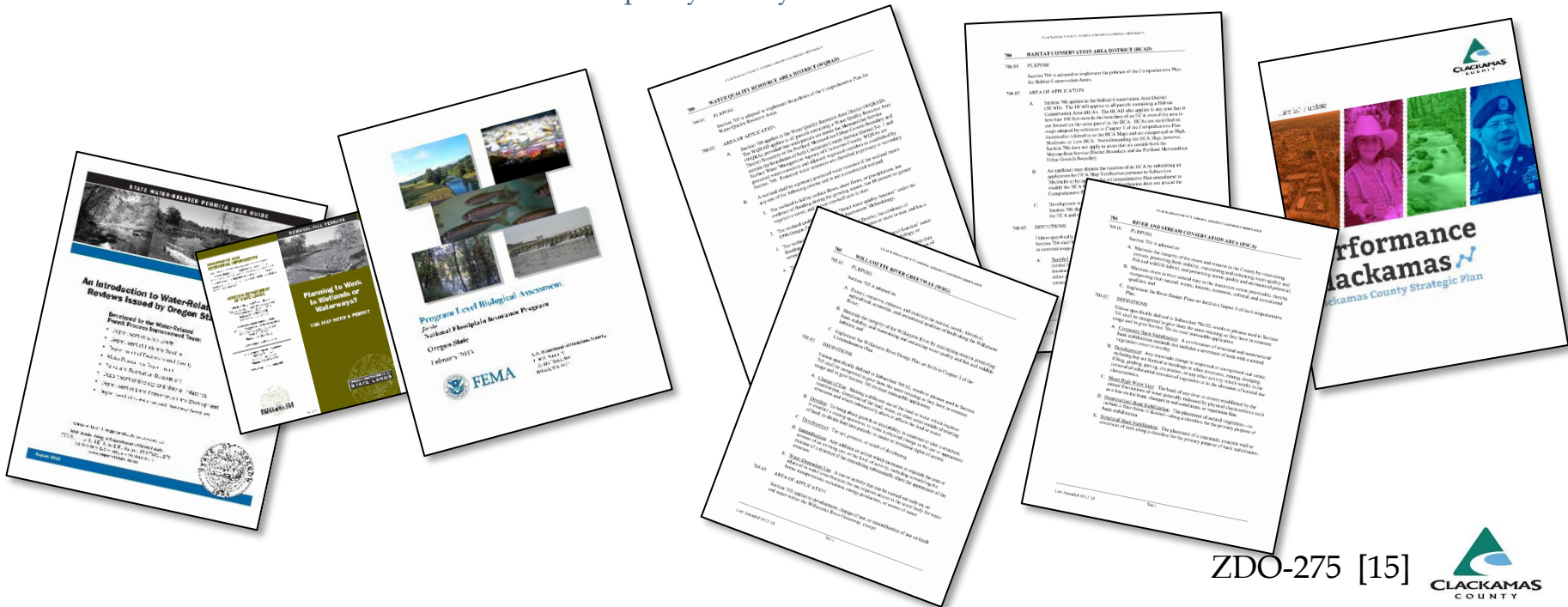
Upper Sandy River - Flood and Erosion Hazard Mitigation Evaluation Project  
 Annotated Channel Migration Hazard Maps  
 Sheet 1: Index



From mapbooks in March 24, 2015  
 Natural Systems Design "Flood Erosion Hazard Mitigation Evaluation Upper Sandy River"

# ADDITIONAL PLANNING COMMISSION ISSUES (CONTINUED)

2. Discussion, interest and testimony (see exhibits) about floodplains also providing habitat and water quality.
- ❖ NFIP and ZDO-275 focus mostly on federal performance standards to manage risk for floodplain development.
  - ❖ Floodplain permitting, on the other hand, usually happens in conjunction with other environmental permitting under County sensitive area overlays, and state and federal environmental mandates and associated permitting.
  - ❖ Touches on contemplated County projects, such as Performance Clackamas Strategic Goal of Masterplan for Surface Water to enhance water quality countywide.



THANK YOU





JENNIFER HUGHES, MANAGER

LINDSEY NESBITT, MANAGER

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DEVELOPMENT SERVICES BUILDING

150 BEAVERCREEK ROAD OREGON CITY, OR 97045

## **STAFF REPORT**

TO: Planning Commission

FROM: Steve Hanschka, Sr. Planner, CFM and Melissa Ahrens, Sr. Planner

DATE: December 3, 2018

RE: File ZDO-275, Proposed Updated Floodplain Maps for the Sandy River Basin and Text Amendments to Section 703, Floodplain Management District (FMD), of the County Zoning & Development Ordinance (ZDO)

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## **BACKGROUND**

Clackamas County is considering amendments to the Zoning and Development Ordinance (ZDO) to adopt new floodplain maps for the Sandy River Basin, produced by the Federal Emergency Management Agency (FEMA), and to adopt text amendments to the ZDO — all of which are required or recommended by FEMA and the Oregon Department of Land Conservation & Development (DLCDC) — that apply to new development countywide in the 100-year floodplain. Most of the proposed amendments are necessary to ensure the continuation of the County's participation in FEMA's National Flood Insurance Program (NFIP) that, among other things, makes federally backed flood insurance coverage available for existing development and new construction, and is required for nearly all mortgages that pertain to the purchase of residential, commercial and industrial structures located in the floodplain.

In 2008, FEMA required the County to adopt the most recent Flood Insurance Study (FIS) and associated Flood Insurance Rate Maps (FIRMs) to continue the County's participation in the NFIP. The County's ongoing participation in the NFIP allows any resident who owns property within unincorporated Clackamas County to voluntarily purchase NFIP flood insurance coverage to protect structures. Additionally, it is a federal requirement to purchase flood insurance for any federally backed mortgage that finances a structure located in the floodplain. Clackamas County adopted the FIS and FIRMs in the 2008 Zoning and Development Ordinance (ZDO) amendment package ZDO-215, which amended Section 703 of the ZDO, the Floodplain Management District (FMD), to include reference to the 2008 FIS and FIRMs and to adopt zoning text changes to comply with FEMA's federal floodplain management regulations, all of which applied countywide to development in the floodplain. In 2012, FEMA initiated new floodplain mapping of the Sandy River Basin, which is the subject of this proposed ZDO-275 amendment package under current consideration.

The Strategic Alliance for Risk Reduction (STARR II) acted as the primary mapping contractor for the project and describes the process as follows:

*In conjunction with FEMA, the States of Oregon and Washington identified the Lower Columbia Watershed as a priority for FEMA's Risk MAP program. The States determine their priorities based on population at risk to hazards, recent events, and community interest. In addition, the availability of new topography mapping technology known as Light Detection and Ranging, or LiDAR, played a major role in selecting the Sandy River watershed as a priority. FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held on March 28, 2012 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the affected communities within the Sandy River watershed. After the 2012 Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that included multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs. This effort is shared between the Oregon Department of Geology and Mineral Industries (DOGAMI) and STARR II.*

From there, a community meeting to present the updated floodplain map data was held in Troutdale on June 27, 2016 and in Welches on July 12, 2016. FEMA's rollout program for the updated FIS and FIRMs for the Sandy River basin included an appeal period, where the public had the opportunity to appeal the preliminary maps. This appeal period lasted from May 17, 2017 to August 15, 2017. Between mid-2017 and early-2018, several comments and appeals were submitted and resolved, then incorporated by FEMA into the ongoing production of the new floodplain maps and associated data. FEMA held three additional public workshops, one in October of 2017 and two in May of 2018 to present the draft FIS and associated FIRMs. Following the completion of FEMA's FIS and FIRM outreach process, they sent Clackamas County Planning staff a Letter of Final Determination (LFD) on July 18, 2018 to provide formal notification of the final flood hazard determination for the Lower Columbia Watershed and to initiate the six-month compliance period. The new FIS and FIRMs for the Sandy River basin will become effective on January 18, 2019 and FEMA requires Clackamas County to adopt current floodplain management standards before the maps become effective in order to remain participants in good standing in the NFIP. Failure to adopt the new FIS and FIRMs and associated text amendments will lead to suspension from the NFIP. As such, Planning Staff have been actively coordinating with FEMA and DLCDD staff to prepare the required updates to ZDO 703, thereby ensuring compliance with the most current FEMA regulations. Outlined below is a table that outlines the overall process:

<b>Meeting / Deliverable</b>	<b>Date</b>
<b>Risk MAP Discovery Meeting</b>	March 28, 2012
<b>Flood Risk Review (FRR) Meeting/Draft Map Release</b>	July 2013
<b>Preliminary DFIRM/FIS Release</b>	March 28, 2016
<b>Consultation Coordination Officers (CCO) Meeting</b>	May 5, 2016
<b>Public Meetings/Workshops</b>	June 27, 2016 (Troutdale) July 12, 2016 (Welches)
<b>Appeal Period Starts</b>	May 17, 2017
<b>Appeal Period Ends</b>	August 15, 2017
<b>Draft Multi-Hazard Risk Report</b>	October 30, 2017

Meeting / Deliverable	Date
<b>Risk MAP Resilience Workshops</b>	October 30, 2017 (Clackamas) May 1, 2018 (City of Portland) May 2, 2018 (Multnomah)
<b>Revised Preliminary DFIRM/FIS Release</b>	March 26, 2018 (Clackamas only)
<b>Delivery of Final Risk Report and Risk Assessment Database</b>	June 2018
<b>Letter of Final Determination</b>	July 18, 2018 (Clackamas) August 1, 2018 (Multnomah)
<b>Maps and FIS become Effective</b>	January 18, 2019 (Clackamas) February 1, 2019 (Multnomah)

As previously noted, adoption of the FIS and FIRMs are required to ensure the County’s ongoing compliance with NFIP standards. Additionally, FEMA and DLCD’s floodplain coordination staff have identified text amendments that are also required in order to bring ZDO 703 into compliance with NFIP regulations countywide. DLCD has also recommended the addition of provisions that limit the siting of critical facilities in the floodplain. Finally, edits are proposed to increase clarity and consistency in ZDO 703. The Staff notes that FEMA NFIP regulations are outlined in Title 44 of the Code of Federal Regulations (44 CFR). County planning staff have been actively coordinating with DLCD and FEMA on the proposed text changes to ensure clarity and successful code implementation. The proposed text amendments would apply to all of the more than 6,000 properties within the County’s 100-year floodplain.

## **PROPOSAL**

ZDO-275 would adopt new floodplain maps for the Sandy River Basin area that includes the Sandy River, the Salmon River, the Zigzag River, Henry Creek, Cedar Creek, Clear Creek, Still Creek and Tickle Creek. As a result of the new maps, some properties that are in the floodplain will move out of the floodplain, some properties that are not in the floodplain will move into the floodplain, and many properties that are currently in the floodplain will stay in the floodplain. The new floodplain maps will also result in some changes to the elevation of the 100-year flood and the configuration of the Regulatory Floodway. The current and new floodplain maps can be viewed at the State’s Oregon Explorer Hazards Reporter Web site at [http://tools.oregonexplorer.info/OE\\_HtmlViewer/Index.html?viewer=hazards](http://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=hazards) or at FEMA’s Map Service Center at <https://msc.fema.gov/portal/advanceSearch>. Hard copies are also available to review at the Planning and Zoning Division office.

The proposed changes are as follows:

- 1. Revision to the reference date of FEMA’s FIS and FIRMs in Section 703.04 to reflect the updated 2019 FIRMs for the Sandy River Basin.** This will *remove or reduce* the floodplain and floodway on some properties and *add or enlarge* the floodplain and floodway on other properties. For example, a large part of the Salmon River floodplain will be reduced due to the updated 2019 mapping from FEMA.

2. **Definition modifications to incorporate the exact language of FEMA’s NFIP regulations.** FEMA and DLCDC have directed to planning staff that the Floodplain Ordinance definitions need to match FEMA’s regulatory definitions verbatim.
3. **Addition of regulations requiring specific standards for siting and design of “Critical Facilities,” which include schools, nursing homes, hospitals, police, fire, and emergency response installations.** FEMA and DLCDC have recommended to Planning staff that the Floodplain Ordinance should include new requirements to plan for and protect critical facilities in the 100-year floodplain. A definition for “Critical Facilities” and a corresponding policy regarding siting and design are proposed.
4. **Removal of the fish enhancement project exemption from Section 703.07; development in the floodway.** FEMA and DLCDC are requiring that the existing exemption for fish enhancement projects is removed from the Floodplain Ordinance to ensure consistency with federal requirements. FEMA Region X policies will still allow planning staff to exempt floodway fish enhancement projects from the requirement for a floodplain development permit, however, since this process is not part of 44 CFR, FEMA has explained that it cannot be codified in ZDO Section 703.
5. **Updates to the construction requirements of manufactured dwellings.** Code clarifications are proposed to the development standards for manufactured dwelling construction to add specifications for longitudinal frame beam elevation and electrical crossover connections.
6. **Clarification that determination of an exempt use requires review as a Type 1 land use application.** Currently there is no land use process requirement for exempt uses. FEMA and DLCDC are requiring that the Floodplain Ordinance include a review process to approve and track each exempt use determination, in compliance with federal law.
7. **Updates to standards for wet-floodproofing certain non-residential structures.** Currently, certain non-residential structures can be wet-floodproofed instead of elevated. FEMA and DLCDC are requiring some additional standards for wet-floodproofing structures to be added to the Floodplain Ordinance, while also aligning wet-floodproofing standards with applicable Oregon building codes.

## **SIGNIFICANT ISSUES**

No significant issues are anticipated; nearly all of the proposed map reference and text amendments to the Floodplain Ordinance, along with adoption of the new FIS and FIRMs, are required by FEMA and DLCDC for the County to maintain its membership in good standing within the NFIP. The recommendation by DLCDC to add provisions limiting the siting of critical facilities in the 100-year floodplain is consistent with the county’s goals to increase disaster resiliency.

## **PUBLIC NOTICE AND COMMENTS**

Notice of the proposed amendments in ZDO-275 was sent to:

- All property owners within the County’s 100-year floodplain
- All County Community Planning Organizations (CPOs) and Hamlets
- DLCDC, Metro and other interested agencies



Notice was also published in the *The Oregonian* and on various social media outlets. To date, the Planning and Zoning Division has only received questions about floodplain mapping changes to specific properties and requests for the proposed ZDO Section 703 edits.

## **ANALYSIS AND FINDINGS**

### **1. Zoning and Development Ordinance (ZDO)**

The proposed text amendments are legislative. Section 1307 of the ZDO establishes procedural requirements for legislative amendments, which have been, or are being, followed in the proposal and review of ZDO-275. As noted previously, notice was provided at least 35 days before the first scheduled public hearing to DLCD, all active CPOs, and other interested agencies to provide an opportunity to review and comment on the proposed amendments. Advertised public hearings are being held before the Planning Commission and the Board of County Commissioners (BCC) to consider the proposed amendments. The ZDO contains no further specific review criteria that must be applied when considering an amendment to the text of the ZDO.

### **2. Statewide Planning Goals**

The substantive amendments proposed in ZDO-275 would only impact properties within the County's 100-year floodplain, which implements the County's acknowledged Comprehensive Plan policies for Open Space and Floodplain, and the Natural Resources and Energy: Natural Hazards Section, as required by the Statewide Planning Goals. ZDO-275 does not propose any amendment to the Comprehensive Plan; nonetheless, Staff has reviewed the proposed ZDO amendments for consistency with Statewide Planning Goals.

#### ***Goal 1 – Citizen Involvement:***

ZDO-271 does not propose any change to the County's citizen involvement program. Earlier sections of this report described the notification and public outreach measures that have been taken, which Staff finds are consistent with the requirements and intent of Goal 1.

#### ***Goal 2 – Land Use Planning:***

As stated above, ZDO-275 does not include an amendment to the County's Comprehensive Plan or Comprehensive Plan Map. Goal 2 is not applicable.

#### ***Goal 3 – Agricultural Lands:***

ZDO-275 does not propose to change any property's zoning designation, and therefore would not reduce the County's agricultural land supply. Furthermore, ZDO-275 would not restrict any permitted agricultural land use. This proposal is consistent with Goal 3.

#### ***Goal 4 – Forest Lands:***

The areas of the County reserved for forestry land uses as required by Goal 4 are zoned AG/F and TBR. Just as ZDO-275 would not reduce the County's agricultural land supply, the proposal would also not reduce its forestry land supply. Furthermore, ZDO-275 would not restrict any permitted forestry-related land use. This proposal is consistent with Goal 4.

#### ***Goal 5 – Natural Resources, Scenic and Historic Areas, and Open Spaces:***

ZDO-275 applies only to the County's 100-year floodplain outright; it would not impact any designated open space area. It does not propose to change any existing Comprehensive Plan policy or land use regulation protecting natural resources, scenic areas, or designated historic resources. Goal 5 is not applicable.

**Goal 6 – *Air, Water and Land Resources Quality:***

This proposal would not change any existing Comprehensive Plan policy or land use regulation established to protect the quality of the County's air, water, or land resources. Goal 6 is not applicable.

**Goal 7 – *Areas Subject to Natural Hazards:***

The proposed amendment will improve the County's implementation of Statewide Planning Goal 7. The new FIS and FIRMs provide a more accurate identification of flood hazards in the Sandy River basin so that they can be more readily and precisely recognized as areas where protection is necessary and where high water presents natural hazards, in the form of flooding, that threaten life and property. Property within the floodplain will be more easily and accurately identified, while the standards for development in the floodplain will be refined, clarified and strengthened. This proposal is consistent with Goal 7.

**Goal 8 – *Recreational Needs:***

ZDO-275 does not relate to existing Comprehensive Plan policies or land use regulations preserving lands for recreational uses. It would not authorize any new land uses that could conflict with the County's recreational needs. Goal 8 is not applicable.

**Goal 9 – *Economic Development:***

ZDO-275 does not relate to Comprehensive Plan policies or land use regulations involving economic development because the text amendment does not propose to alter the supply of land designated for commercial or industrial use. Goal 9 is not applicable.

**Goal 10 – *Housing:***

ZDO-275 will change the boundary of the floodway where new dwellings generally are prohibited; however, the changes are minimal, reduce the overall size of the area inside the floodway, and impact rural areas where Goal 10 does not apply. The changes to ZDO 703 that apply countywide will not reduce the allowance to build dwellings on urban land zoned for housing. This proposal is consistent with Goal 10.

**Goal 11 – *Public Facilities and Services:***

The proposed amendments may have some effect on public facilities that are located in the floodplain because the amendments propose to regulate the siting and design of "Critical facilities," which includes public facilities. The amendments provide standards for safely siting and building schools, nursing homes, hospitals, police, fire, emergency response installations, and installations which produce, use, or store hazardous materials or hazardous waste, such as sewer lines and treatment systems. The proposed amendments specify that public facilities, falling into the category of critical facilities, are appropriately sited and designed to ensure functionality and longevity. As such, the proposed amendment is consistent with Goal 11.

**Goal 12 – Transportation:**

ZDO-275 would not amend the County’s Transportation System Plan. It also would not expand any authorized land uses, and therefore would not create additional impacts to the County’s transportation infrastructure. This proposal is consistent with Goal 12.

**Goal 13 – Energy Conservation:**

This proposal would not change any existing Comprehensive Plan policy or land use regulation aimed at conserving energy. Goal 13 is not applicable.

**Goal 14 – Urbanization:**

ZDO-275 would not change any urban growth boundary, or change any urban reserve designation. Goal 14 is not applicable.

**Goal 15 – Willamette River Greenway:**

ZDO-275 would not change any existing requirement related specifically to development in the Willamette River Greenway. Goal 15 is not applicable.

**Goals 16-19:**

These four Statewide Planning Goals address estuarine resources, coastal shorelands, beaches and dunes, and ocean resources, and are not applicable to Clackamas County.

**3. Clackamas County’s Comprehensive Plan**

Staff finds three chapters of the County’s Comprehensive Plan that are applicable to this proposal.

**Chapter 2 – Citizen Involvement:**

As noted earlier, ZDO-275 does not propose any change to the County’s citizen involvement program. All required entities have been notified in accordance with law, and have been invited to participate in duly-advertised public hearings. The proposal responds to a federal requirement for participation in the National Flood Insurance Program (NFIP). It is consistent with Chapter 2.

**Chapter 4 – Land Use:**

The substantive amendments proposed in ZDO-275 would only affect areas within the County’s 100-year floodplain and do not propose to change the county’s land use planning process. The county will continue to have a comprehensive land use plan and implementing regulations that are consistent with the plan. No exceptions from the Statewide Goals are required. This proposal is consistent with Chapter 4.

**Chapter 11 – The Planning Process:** Chapter 11 of the Comprehensive Plan includes policies requiring inter-governmental and inter-agency coordination, public involvement, and noticing. As explained previously in this report, all required entities have been notified in accordance with law, and have been invited to participate in duly-advertised public hearings.

Chapter 11 of the Comprehensive Plan also contains the specific requirement that the Comprehensive Plan and ZDO be consistent with Statewide Planning Goals and with Metro’s Urban Growth Management Functional Plan; Chapter 11 is what requires the ZDO itself to be consistent with the Comprehensive Plan, as well.

Section 4 of this report's *Analysis and Findings* outlines how ZDO-275 is consistent with the Metro Functional Plan, which includes specific policies related to floodplain management. The findings below in Section 4 of this report demonstrate that the proposal is consistent with the Functional Plan, as such, the proposed amendment is consistent with Chapter 11 of the Comprehensive plan.

#### **4. Urban Growth Management Functional Plan**

**Title 3:** Section 3.07.340 Performance Standards includes specific flood management performance and water quality standards. As previously noted, the proposed amendment will improve the County's flood management practices so that they are consistent with FEMA NFIP regulations. The updated FIRMs provide a more accurate representation of the Sandy River Basin floodplain and, combined with the proposed text amendments, will improve the County's natural hazards planning and resource protection goals. Specifically, improved floodplain mapping data, clarified building siting and design standards, and proposed requirements for the review of exempt development and uses through a Type I land use process will strengthen compliance with the standards of the functional plan related to floodplain management and water quality.

#### **RECOMMENDATION**

Staff finds that adopting the updated FEMA FIS and FIRMs, effective January 18, 2019, as well as the proposed text amendments, will ensure compliance with the NFIP and strengthen natural hazards planning in the County's floodplain.

Therefore, Staff recommends approval of ZDO-275, as proposed in the draft text amendments, in order to:

1. Adopt the January 18, 2019 FEMA FIS and FIRMs for the Sandy River Basin; and
2. Adopt text amendments to ZDO Section 703, *Floodplain Management District*.

**PLANNING COMMISSION  
MINUTES**

December 10, 2018  
6:30 p.m., DSB Auditorium

Commissioners present: Brian Pasko, Mary Phillips, Gerald Murphy, Louise Lopes, Tom Peterson, Michael Wilson, Steven Schroedl, Christine Drazan

Commissioners absent: Mark Fitz

Staff present: Jennifer Hughes, Melissa Ahrens, Steve Hanschka, Darcy Renhard

1. Commission Chair Pasko called the meeting to order at 6:43 pm.

General public testimony not related to agenda items: none.

Commissioner Pasko opened the public hearing for ZDO-275, which is a proposal to amend the Zoning and Development Ordinance and to adopt revised floodplain maps for the Sandy River Basin area as mandated by FEMA.

Jennifer Hughes explained that the postcards that were sent out to all property owners in the affected floodplain areas is required under State law. If the County is proposing to “rezone” property, which means to limit or prohibit uses on the property, then written notice must be provided to all who may be affected. The County has made no determination that property values will change based on any of the proposed amendments. Also, it should be noted that properties that are within city limits are not affected. The mailing went to everyone within the floodplain because there are changes to the applicable ordinance. If you are within the Sandy River Basin, then there are changes that will affect your property. This proposal is very different than a lot of the legislative amendments in that we have very little discretion in what is adopted. These amendments have been handed down from FEMA, and they take effect on January 18, 2019. If we do not adopt them, then we are no longer in the National Flood Insurance Program (NFIP), which would have significant impacts on flood insurance rates for property owners within the County.

Melissa Ahrens presented a PowerPoint outlining the proposed floodplain maps and text amendments to Section 703 of the ZDO. In order to remain a participant in the NFIP, the County is required to adopt FEMA’s amendments. Participation in the NFIP is optional, but participation ensures that property owners within the County have access to federal support in the case of a flood disaster, and also allows for the purchase of federally backed flood insurance.

Public outreach was conducted over a 5-year period from 2013 to 2018. Clackamas County has been a participant in the NFIP since 1978, but if the County opts to suspend participation, FEMA will not renew any existing flood insurance policies and flood insurance rates will increase significantly. Only the Sandy River, Salmon River, Zigzag River, Henry Creek, Cedar Creek, Clear Creek, Still Creek, and Tickle Creek within the Sandy River Basin are included in the new maps. As a result of the new maps, some properties that are currently within the floodplain in these areas will move out of the

floodplain while some properties will move into the floodplain. Amended regulations would require specific standards for siting and design of “critical facilities”, which are hospitals, schools, police, fire, etc. They would also remove the fish enhancement project exemption from Section 703.07. The floodplain will be removed or reduced on some properties and added or enlarged on others, but only within the Sandy River Basin. If the County adopts the new FIRMs and amendments to Section 703, the County will remain in the NFIP and FEMA will provide grandfathered flood insurance rates for 2 years. Staff recommends approval of ZDO-275 as proposed to adopt the most recent Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) and to adopt the proposed text changes to ZDO Section 703.

Commissioner Phillips asked if the term “critical facilities” was added per FEMA. Melissa answered that yes, it is FEMA language. Commissioner Wilson wanted to know if there were any substantial changes that were made to the siting standards. Melissa explained that there were not any specific standards before, these are new standards that are being added by FEMA. Commissioner Schroedl asked for further explanation of Section 703.07. Steve Hanschka responded that it really does not change a whole lot for us. It is basically an agreement between the federal level and FEMA Region X which is not in our Code, but allows us to still issue permits under the same standards. Commissioner Murphy expressed his unhappiness that the revised maps do not include consideration of the channel migration zones. Commissioner Peterson agrees that the County should pursue adopting the channel migration zones. Steve pointed out that the reality is that the FEMA maps are independent of the channel migration zones. We are working on a project to adopt channel migration maps within the County, but that is a project with our Disaster Management program. They are two very separate things. FEMA came to us with these new standards, but they don’t map channel migration. Only over-bank flooding. The channel migration zones are another project that is underway, but we don’t have completion timeline yet. It would come back to the PC under a completely separate proposal. Commissioner Pasko would like to encourage the BCC to add it to the Work Program so that it can move forward.

Staff entered two new exhibits into the record, both of which were provided to the PC tonight.

There were no other agencies who wished to provide testimony.

**Ted Labbe (Portland)** – Mr. Labbe is the Policy and Program Director for Oregon Greenspace. They work with other entities on restoration projects. He is in support of the proposed amendments, but would like to see it go a little further and be even more restrictive. He would love to see an explicit purpose statement that floodplains provide essential ecological functions. He would also like to see a limitation on impervious surfaces. He thinks that we could do more to recognize the ODFW technical standards regarding fish passageways. While he does think that there could be small improvements, he is in support of these proposed amendments.

**Dennis Tylka (Welches)** – Mr. Tylka asked if ZDO-275 exceeds federal minimum standards. Melissa answered that County exceed the minimum standards, which is why Clackamas County has a higher rating. Mr. Tylka referred to an exhibit that he submitted and said that it looks to him like the flood people were using property lines as the floodplain lines, which is not an accurate depiction. He is

proposing to have some type of language in the ordinance that a flood elevation certificate be mandatory in areas that touch on these areas because GIS does not always accurately depict where floodplain is. He is also concerned that the Salmon, Sandy, and Zigzag Rivers are critical salmon habitats and are recognized by NMFS. He feels that the proposed floodway is too narrow to allow obstructions to pass. Additionally, he is concerned that the revision of the floodplain maps will have an adverse impact on the rivers by loosening restrictions on land use patterns and development in the area. He thinks it would be prudent to have a buffer area where the floodplain could be raised if needed. There is going to be significant impact to the rivers if they are managed as a gutter.

**Neil Schulman (Milwaukie)** – Mr. Schulman is director of the North Clackamas Urban Watershed Council. He would like to encourage the County to take the language even further and integrate nature into the flood management process. He would also strongly recommend that language encourage upstream mitigation. A lot of the flooding does not originate in the floodplain, it originates in the uplands and flows down to the lower lands. He agrees that there is a lot of ecological value to floodplain management, but we should take every opportunity we can to remove barriers in the fish passageways. This is an opportunity to look at additional measures that can be taken to improve natural flood management. Steve Hanschka explained that any time things get close to the bed or banks of the river, we coordinate with DSL and ODFW. Commissioner Lopes asked if we would be able to add language to the purpose statement as previously mentioned. Jennifer Hughes explained that the purpose statement is not regulatory, it is a visionary statement. We have other regulations that are outside of Section 703 that apply and work in concert with Section 703.

**Marlyne Casley (Welches)** – A few years ago the County lost their CRS rating. Will this have any effect on that? Steve Hanschka answered that this is correct, and it may end up being one of our performance measures to reinstate the CRS, but it was decided several years ago that it was more labor intensive than there was value.

Commissioner Pasko closed the public testimony portion of the hearing.

Everyone agrees that the maps have to be adopted. Commissioner Murphy moved to adopt the new FEMA maps as presented by staff. Commissioner Wilson seconded. *Ayes=8; Nays=0. Motion passes.*

Commissioner Drazan wanted to know if there are currently any critical facilities located in the floodplains. Steve Hanschka answered that there is only one to his knowledge, but it is possible that there are others. Commissioner Phillips asked what sections we actually have discretion on. Jennifer answered that there isn't much, only on the critical facilities. Commissioner Phillips said that it seems to be that we are focusing on things that are not part of what we are actually looking at tonight, and that some of these things are part of a much bigger picture and need to be addressed through the Work Program.

Commissioner Lopes moves to approve ZDO-275 as presented by staff. Commissioner Peterson seconded. *Ayes=8; Nays=0. Motion passes.*

The stream channel migration and constriction of the streams and the environmental mitigation standards are all topics that the Planning Commission would like staff to take a close look at. There was discussion about the logistics for getting them added to the work program. Commissioner Wilson asked staff to explain where some of these issues already are addressed and whether or not they really are issues. Commissioner Peterson voiced his formal support for the channel migration project that Commissioner Murphy has been working on and feels that it should be a high priority for the County.

Commissioner Phillips provided some corrections to the November 26<sup>th</sup> minutes. Commissioner Wilson moved to approve the minutes with the noted corrections. Commissioner Lopes seconded. *Ayes=7; Nays=0; Abstain=Drazan. Motion passes.*

There being no further business, the meeting was adjourned at 9:09 p.m.

DRAFT



**File ZDO-275**  
**Proposed Amendments to the Zoning and Development Ordinance**

Proposed additions are underlined. Proposed deletions are ~~strikethrough~~.

**703 FLOODPLAIN MANAGEMENT DISTRICT (FMD)**

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703.01 FINDINGS OF FACT

A Floodplain Management District (FMD) is needed for the following reasons:

- A. Flood Losses Resulting from Periodic Inundation: The special flood hazard areas of the County are subject to periodic inundation that results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the County's tax base, all of which adversely affect the public health, safety, and general welfare.
- B. General Causes of These Flood Losses: Flood losses are caused by:
  - 1. The cumulative effect of obstructions in special flood hazard areas ~~that cause~~ increase in flood heights and velocities and, when inadequately anchored, damage land uses in other areas; and
  - 2. The occupancy of special flood hazard areas by uses vulnerable to floods or hazardous to others that are inadequately floodproofed, inadequately elevated, or otherwise unprotected from flood damages.

703.02 PURPOSE

~~This Section 703 is adopted to promote the public health, safety, and general welfare, and to minimize flood losses with provisions designed to:~~

- A. Promote the public health, safety, and general welfare;
- B. Protect human life and health;
- C. Minimize public and private flood losses due to flooding in flood hazard areas;
- D. Minimize expenditure of public money for costly flood control projects;
- E. Minimize prolonged business interruptions;
- F. Help maintain a stable tax base by providing for the sound use and development of special flood hazard areas so as to minimize future flood blight areas;

GA. Restrict or prohibit uses that are dangerous to health, safety, or property in times of flooding or that cause ~~increases~~increased in erosion, flood heights, or velocities;

H. Minimize damage to public facilities and utilities—such as water and gas mains; electric, telephone, and sewer lines; streets; and bridges—located in special flood hazard areas;

IB. Require that uses vulnerable to floods, including public facilities that serve such uses, be provided with flood protection at the time of initial construction;

J. Notify those who occupy special flood hazard areas that they assume responsibility for their actions;

K.C. Protect individuals, as much as possible, from buying lands that are not suitable for intended purposes because of flood hazard, by ensuring to the degree possible that potential buyers are notified that property is in a special flood hazard area; and

LD. Minimize the need for rescue and relief efforts associated with flooding undertaken at the expense of the general public.

#### 703.03 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by the FMD is considered reasonable for regulatory purposes and is based on engineering and scientific study. Larger floods may occur on rare occasions, ~~or the~~ Flood heights may be increased by manmade or natural causes, such as ice jams and bridge openings restricted by debris. ~~This~~ Section 703 does not imply that areas outside the FMD or land uses permitted within the FMD will be free from flooding or flood damages. ~~This~~ Section 703 shall not create liability on the part of the County, ~~or any officer or employee thereof,~~ or the Federal Insurance Administration, for any flood damages that result from reliance on the FMD or any administrative decision lawfully made hereunder.

#### 703.04 APPLICABILITY AREA OF APPLICATION

Section 703 applies to tThe FMD, which is applied to the special flood hazard areas (SFHAs) identified by the Federal Insurance Administration in a scientific and engineering report entitled, “The Flood Insurance Study for Clackamas County, Oregon & Incorporated Areas,” (FIS) dated January 18, 2019~~June 17, 2008~~, with accompanying Flood Insurance Rate Maps (FIRMs).

A. The FIS and FIRMs are hereby adopted by reference and declared to be a part of ~~this~~ Section 703 and are on file at the County Department of Transportation and Development.

B. The Planning Director shall make interpretations where needed, as to the exact location of the boundaries of the SFHA (for example, where there appears to be a

conflict between a mapped boundary and actual field conditions, topography, and/or elevations). In areas where base flood elevation data have been provided, the Planning Director may require the applicant to submit an elevation certificate ~~to determine whether the proposed development is located in the SFHA.~~ To most precisely determine the base flood elevation of the subject area, the elevations provided by the FIS flood profiles in combination with the cross section lines on the FIRM shall supersede the base flood elevation lines and values identified on the FIRM.

703.05 DEFINITIONS

~~The following definitions apply to Section 703: Unless specifically defined below, words or phrases used in this section shall be interpreted to give them the same meaning as they have in common usage and to give this section its most reasonable application.~~

A. ~~Area of Shallow Flooding: A designated AO, AH, AR/AO, AR/AH, or VO zone on a community’s Flood Insurance Rate Map with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.~~

BA. ~~Base Flood: The flood having a one percent chance of being equaled or exceeded in any given year. Also known as the “regulatory flood,” or the “100-year flood,” the base flood is the national standard used by the National Flood Insurance Program and all federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development.~~

CB. Base Flood Elevation: The computed elevation to which floodwater is anticipated to rise during the base flood. Base flood elevations are shown on Flood Insurance Rate Maps and on the flood profiles included in the Flood Insurance Study.

DC. Basement: Any area of ~~the~~ a building ~~having that has~~ its floor subgrade (below ground level) on all sides.

ED. Below-Grade Crawl Space: An enclosed area below the base flood elevation — which is in nearly all cases considered by the National Flood Insurance Program to also be a basement — that generally serves as the foundation for a structure and exhibits the following characteristics:

1. All sides of the crawl space are below the adjacent exterior grades outside the crawl space;
2. The interior grade inside the crawl space is not more than two feet below the lowest adjacent exterior grade; and

3. The height, measured from the interior grade of the crawl space to the top of the crawl space foundation, does not exceed four feet at any point.

FE. Community Rating System: A program of the National Flood Insurance Program (NFIP) that recognizes jurisdictions for implementing floodplain management practices and standards that exceed NFIP minimum requirements. Membership in the program results in increased public safety and property protection, along with reductions in flood insurance premiums.

GF. Conditional Letter of Map Revision (CLOMR): The Federal Emergency Management Agency's (FEMA's) comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective base flood elevations, or the special flood hazard area. ~~The letter does not revise an effective National Flood Insurance Program map, but it indicates whether the project, if built as proposed, would be recognized by FEMA.~~

H. Critical Facility: A facility for which even a slight chance of flooding might be too great. Critical facilities include schools, hospitals, nursing homes, orphanages, penal institutions, fire stations, police stations, communications centers, water and sewage pumping stations, other public or quasi-public buildings, emergency response installations, and installations that produce, use, or store hazardous materials or hazardous waste.

IG. Cross Section: A source of data that is developed during the hydraulic analyses of a stream in the course of producing the Flood Insurance Rate Maps (FIRMs) and the Flood Insurance Study (FIS). Cross sections provide an elevation view of the floodplain taken perpendicular to the flow at specific points and are typically determined using field survey information and topographic maps. Some of the locations of cross sections are shown on the FIRMs and are, in turn, cross-referenced in the FIS, where they provide precise information about a variety of data that relates to flood conditions.

JH. Development: Any manmade 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; or storage of equipment or materials. ~~Development does not include those activities of a type and magnitude that cause no effects on water surface elevations, no effects on the level of insurable damages, and no adverse impacts to upstream or downstream properties, as determined by the Planning Director, based on documentation supplied by the applicant.~~

KI. Elevation Certificate: A form produced by the Federal Emergency Management Agency (FEMA) that is completed by a professional engineer, licensed architect, or licensed surveyor, usually through field survey work, that reports elevation information about grades, structures, and other facilities. An elevation

certificate is used to determine the relationship of grades, structures, and other facilities to the base flood elevation. It is also used to certify building elevations to ensure compliance with community floodplain regulations; determine proper insurance rates; and support a Letter of Map Amendment or Letter of Map Revision Based on Fill. Communities that participate in the Community Rating System are required to use an elevation certificate for all official reporting and recordkeeping of elevations.

LJ. Encroachments: Activities or construction within the floodway, including fill, new construction, substantial improvements, and other development.

MK. Federal Emergency Management Agency (FEMA): A federal agency, whose primary mission is to reduce the loss of life and property and protect the nation from all hazards, including natural disasters, acts of terrorism, and other manmade disasters, by leading and supporting the nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation. Among other things, FEMA manages and oversees the National Flood Insurance Program.

NL. Flood:

1. A general and temporary condition of partial or complete inundation of normally dry land area from:

a1. The overflow of inland or tidal waters, ~~and/or~~

b2. The unusual and rapid accumulation of runoff of surface waters from any source.

c. Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in Subsection 703.05(N)(1)(b) and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

2. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in Subsection 703.05(N)(1)(a).

~~M. Flood Fringe Area: In areas where base flood elevation data have been provided and floodways have been established, the flood fringe area is the portion of the special flood hazard area that is outside of the floodway.~~

- ~~N. Flood Hazard Area: The portion of the special flood hazard area where flood elevations are available but the floodway has not been defined.~~
- O. Flood Insurance Rate Map: ~~An~~The official map of a community, on which the Federal Insurance ~~Administrator~~Administration has delineated both the special flood hazard areas and the risk premium zones applicable to the community.
- P. Flood Insurance Study: An examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation, and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.~~The official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Insurance Rate Maps, and the water surface elevations of the base flood.~~
- Q. Flood Profile: A graph, found in the Flood Insurance Study, of computed flood elevations at floodplain cross sections that is typically available for a stream that has base flood elevations shown on the Flood Insurance Rate Map (FIRM). Elevations provided by the flood profiles, used in combination with the cross section lines on the FIRM, are the most accurate means of determining the base flood elevation at a particular site.
- ~~R. Flood Prone Area: The portion of the special flood hazard area that has been determined by approximate methods and, consequently, for which base flood elevation data are not available.~~
- ~~RS.~~ Floodplain: Land area susceptible to being inundated by water from any source that is adjacent to rivers and streams and is subject to periodic and recurring inundation by floodwaters.
- ~~ST.~~ Floodproofing: AnyA combination of structural and non-structural additionsprovisions, changes, or adjustments to properties and structures subject to flooding primarily for the which reducedreduction or eliminateelimination of flood damages to real estate or improved real propertyproperties, water and sanitary facilities, structures, and their contents ~~of buildings in a flood hazard area.~~
- ~~TU.~~ Floodway: The channel of ~~a~~the river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.; Often referred to as the “regulatory floodway.”
- ~~V. Hydraulic Shadow: The area that is upstream and downstream of an existing structure or other obstruction, where the water is essentially stagnant due to water flowing around the structure or obstruction, as defined on pages 1-3 of the June 2001 Hydraulic Shadow Computations document, on file at the County Department of Transportation and Development.~~

UW. Letter of Map Amendment (LOMA): An official amendment, by letter ~~from the Federal Emergency Management Agency~~, to an effective National Flood Insurance Program map. A LOMA establishes a property's location in relation to the special flood hazard area. ~~LOMAs usually are issued because a property has been inadvertently mapped as being in the floodplain, but is actually on natural high ground above the base flood elevation.~~

VX. Letter of Map Revision (LOMR): The Federal Emergency Management Agency's modification to an effective Flood Insurance Rate Map (FIRM). LOMRs ~~are~~ generally ~~are~~-based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective base flood elevations, or the special flood hazard area. The LOMR officially revises the FIRM, and sometimes the Flood Insurance Study (FIS) report, and, when appropriate, includes a description of the modifications. The LOMR is generally ~~is~~-accompanied by an annotated copy of the affected portions of the FIRM or FIS report.

WY. Letter of Map Revision Based on Fill (LOMR-F): The Federal Emergency Management Agency's modification of the special flood hazard area shown on the Flood Insurance Rate Map based on the placement of fill outside the existing regulatory floodway.

~~Z~~. ~~Lowest Construction Elements: The lowest flooring system of a structure that consists of repeated structural members, spaced 24 inches or less on center.~~

XAA. Lowest Floor: The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Subsection 703.11(A)(1).

YBB. Manufactured Home: A structure, transportable in one or more sections, ~~which that~~ is built on a permanent chassis and is designed for use with or without a permanent foundation when ~~attached deconnected~~ to the required utilities. The term manufactured home does not include a recreational vehicle. For floodplain management purposes, the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days. A manufactured home may also be referred to as a manufactured dwelling.

ZCC. National Flood Insurance Program (NFIP): A federal program that is administered by the Federal Emergency Management Agency that is designed to reduce the loss of life, damage to property, and rising disaster relief costs, both within and beyond the special flood hazard area. The NFIP makes federally

backed flood insurance available to communities that agree to adopt and enforce floodplain management ordinances that meet or exceed NFIP requirements.

~~AADD.~~ New Construction: Structures for which the start of construction commenced on or after the effective date of [a floodplain management regulation adopted by the County \(this Section 703\) and includes any subsequent improvements to such structures.](#)

~~BBEE.~~ “No-Rise” Certification: A certification that is provided by a professional engineer or licensed architect that demonstrates through accompanying hydrologic and hydraulic analyses, performed in accordance with standard engineering practice and National Flood Insurance Program rules and regulations, that an encroachment within the floodway will not result in any increase in the flood levels during the regulatory flood discharge. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map.

~~CCFF.~~ Obstruction: Any dam, wall, wharf, embankment, levee, dike, pile, abutment, projection, excavation, channel, rectification, bridge, conduit, culvert, building, wire, fence, rock, gravel, refuse, fill, structure, or matter in, along, across, or projected into any channel, watercourse, or regulatory flood hazard area that may impede, retard, or change the direction of the flow of water, either in itself or by catching or collecting debris carried by such water, or that is placed where it might be carried downstream by the flow of water resulting in damage to life or property.

~~DDGG.~~ Pre-FIRM Structure: A structure that was built before March 1, 1978, the effective date of the first Flood Insurance Rate Map (FIRM) for the County, and hence, prior to the date when detailed flood hazard data and flood elevations were provided to the County.

~~HH.~~ ~~Post-FIRM Structure: A structure that was built on or after March 1, 1978, the effective date of the first Flood Insurance Rate Map (FIRM) for the County.~~

~~EEH.~~ Recreational Vehicle: A vehicle ~~which~~ is:

1. Built on a single chassis;
2. 400 square feet or less when measured at the largest horizontal projection;
3. Designed to be self-propelled or permanently towable by a light duty truck; and
4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.



~~FFJ~~. Regulatory Flood Protection Elevation: The elevation to which uses regulated by the FMD are required to be elevated or floodproofed.

~~KK~~. Shallow Flooding Area: The portion of the special hazard area with average flood depths of one to three feet that usually exhibit sheet flow on sloping terrain. For areas of alluvial fan flooding, velocities are also determined.

~~GGLL~~. Special Flood Hazard Area: (SFHA): An area having special flood, mudslide (i.e., mudflow), or flood-related erosion hazards, and shown on a FIRM as Zone A, AO, A1-30, AE, AR, AR/A1-30, AR/AR, AR/AO, AR/AH, AR/A, A99, AH, VO, v1-30, VE, V, M, or E. ~~The land area covered by the floodwaters of the base flood on National Flood Insurance Program (NFIP) maps and, thus, the area determined by detailed or approximate studies to be in a 100-year floodplain. The SFHA is subject to the NFIP's floodplain management regulations and the mandatory purchase of flood insurance. The SFHA includes the floodway, flood fringe, flood hazard, flood prone, and shallow flooding areas.~~

~~HHMM~~. Start of Construction: Includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundation or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of the building, whether or not that alteration affects the external dimensions of the structure.

~~IINN~~. Structure: For floodplain management purposes, a walled and roofed building, ~~manufactured home, or including~~ a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

~~JJOO~~. Substantial Damage: Any Damage of any origin sustained by a ~~pre-FIRM~~ structure, ~~or a structure for which the applicable Flood Insurance Rate Map or the Flood Insurance Study has been updated or revised since the date of construction of the structure,~~ whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. The market value of the structure before the damage occurred shall be the structure's rReal mMarket vValue that is provided by the County Department of Assessment and Taxation ~~Assessor's~~

~~office. The cost of restoring a structure shall be determined by the County Building Codes Division, pursuant to Subsection R105.3.1.1 of the 2005 Oregon Residential Specialty Code and through subsequent versions of the applicable, adopted Building Code that address substantially damaged structures within the special flood hazard area.~~

KKPP. Substantial Improvement: Any reconstruction, repair, rehabilitation, ~~addition~~reconstruction, or other improvement — or series of reconstructions, repairs, rehabilitations, ~~reconstruction~~additions or other improvements — of a ~~pre-FIRM structure, or a structure for which the applicable Flood Insurance Rate Map or the Flood Insurance Study has been updated or revised since the date of construction of the structure,~~ the cost of which — or cumulative costs of which at the time of the most recent reconstruction, repair, rehabilitation, ~~addition~~reconstruction, or other improvement — equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. The market value of the structure shall be determined at the time of the most recent reconstruction, repair, rehabilitation, ~~addition~~reconstruction, or other improvement, either before the improvement ~~or repair~~ is started, or if the structure has been damaged and is being restored, before the damage occurred. The market value of the structure shall be the structure’s ~~r~~Real m~~Market v~~Market Value that is provided by the County Department of Assessment and Taxation Assessor’s office. The cost of reconstruction, repair, rehabilitation, ~~addition~~reconstruction, or other improvement of a structure, or series thereof, shall be determined by the County Building Codes Division, ~~pursuant to Subsection R105.3.1.1 of the 2005 Oregon Residential Specialty Code and through subsequent versions of the applicable, adopted Building Code that address substantially improved buildings within the special flood hazard area.~~ This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. Substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor, or other part of the structure commences, whether or not that alteration affects the external dimensions of the structure. Substantial improvement The term does not, however, include either:

1. Any project for improvement of~~to improve~~ a structure to correct existing violations of state or local health, sanitary, or safety code specifications which provided such violations have been identified by the local code enforcement official and which are the project is the minimum necessary to assure safe living conditions; or
2. Any alteration of a “historic structure” listed on the National Register of Historic Places or a State or Local Inventory of Historic Places, provided that the alteration will not preclude the structure’s continued designation as a “historic structure”.

LL. Variance: A grant of relief by the County from the terms of a floodplain management regulation.

MM. Water-Dependent Use: A use that is dependent on close proximity to the water to perform its intended purpose and by reason of the intrinsic nature of its operations. The term “water dependent use” shall be recognized as having a broader meaning than the term “functionally dependent use” as defined in Volume 44 Code of Federal Regulations (CFR) Section 59.1. A “water dependent use” shall not meet the requirements to qualify for a variance under Volume 44 CFR Section 60.6(a)(7) unless the use also qualifies as a “functionally dependent use” as defined in Volume 44 CFR 59.1.

NNQQ. Wet Floodproofing: Permanent or contingent measures that are applied to a structure or its contents that prevent or provide resistance to damage from flooding, while allowing floodwaters to enter the structure or area. Generally, this includes properly anchoring the structure, using flood resistant materials below the base flood elevation and protecting mechanical and utility equipment. Application of wet floodproofing as a flood protection technique under the National Flood Insurance Program is limited to enclosures below elevated residential and non-residential structures and to nonresidential structures that have been issued variances by the County.

703.06 TYPE I EXEMPT USES

The following uses require review as a Type I application pursuant to Section 1307, Procedures, and are exempt from the requirement to obtain a floodplain development permit and from compliance with Subsections 703.10 and 703.11.

A. Uses that do not constitute development. Examples of uses that may qualify for this exemption include farming, wild crop harvesting, archery ranges, wildlife and nature preserves, target ranges, trap and skeet ranges, hunting and fishing areas, hiking and horseback riding trails, lawns, gardens, and play areas.

AB. Reconstruction, repair, rehabilitation, additionreconstruction, or other improvement of a pre-FIRM structure that is not a substantial improvement and where the structure has not sustained substantial damage. If the structure is located in the floodway, no increase in ground coverage shall result unless:

1. a “no-rise” certification is provided;
2. Proof is provided by a professional engineer or licensed architect that the area within which the increase in ground coverage is proposed lies within the hydraulic shadow.

C. Fish enhancement projects — including stream crossings that are a direct component of such projects — outside of the floodway sponsored or approved by a state or federal agency.

703.07 DEVELOPMENT IN THE FLOODWAY

Development in the floodway is prohibited, except as provided in Subsection 703.06(B), or for the following uses listed in this subsection. The following uses are

allowed only if permitted in the underlying zoning district and, ~~with the exception of fish enhancement projects,~~ require approval of a ~~f~~Floodplain ~~d~~Development ~~p~~Permit:

A. ~~Water-dependent uses~~~~Development that requires a waterfront location (e.g., marinas and boat ramps).~~ A “no-rise” certification shall be provided.

B. Riprap or other structural stream bank protection measures, subject to either Subsection 703.07(B)(1) or 703.07(B)(2). ~~A “no-rise” certification and the evidence required in Subsection 703.10(J)(2) shall be provided, or the criteria in Subsection 703.10(J)(1) shall be met.~~

1. If riprap or other structural stream bank protection measures are proposed to repair bank damage, bank removal, or bank erosion, the following criteria shall be met. For the purpose Subsection 703.07(B)(2), pre-existing conditions are the conditions of the repair area upon which the FIRM(s), flood boundary and floodway map(s), and FIS(s) were based that were in effect during the period that the bank was damaged, removed, and/or eroded, leading up to the proposed repair.

a. The measures shall not encroach any further into the stream channel than the pre-existing conditions.

b. The measures shall not add any more cubic yards of bank material than was in place in the pre-existing conditions.

c. The measures shall not exceed the height of the bank nor protrude above the topography that was in place in the pre-existing conditions.

d. The pre-existing conditions shall be demonstrated through some combination of historical and aerial photography, survey and cross-section information, maps or plans, hydrologic and hydraulic modeling, or any other pertinent information.

e. The applicant shall provide evidence from a professional engineer, with expertise in hydrology, hydraulics, fluvial geomorphology, or hydrogeology, that the proposal complies with Subsections 703.07(B)(2)(a) through (d) and that the proposed stream bank protection measures will cause no adverse impacts to upstream or downstream properties, when compared to impacts of the pre-existing conditions.

2. If riprap or other structural stream bank protection measures are proposed for reasons other than to repair bank damage, bank removal, or bank erosion, or if the repair exceeds the standards of Subsection 703.07(B)(1), the applicant shall provide a “no-rise” certification and evidence from a professional engineer, with expertise in hydrology, hydraulics, fluvial geomorphology, or hydrogeology, that the proposed stream bank protection measures will cause no adverse impacts to upstream or downstream properties.

- C. Hydroelectric facilities. A “no-rise” certification shall be provided;
- D. Stream crossings, ~~except those that are a direct component of a fish enhancement project sponsored or approved by a state or federal agency, subject to Subsection 703.10(G).~~ A “no-rise” certification shall be provided;
- E. Replacement, substantial improvement, or repair of substantial damage of a structure that was constructed prior to the establishment of, or revisions to, the floodway, subject to the following:
1. The development shall comply with Subsection 1206.065 ~~and the applicable provisions of Subsections 703.10 and 703.11.~~
  2. Foundations shall be designed by a professional engineer or licensed architect, to the satisfaction of the County Building Codes Division, to withstand the mean velocity of floodwaters in the floodway, as they are listed in the Floodway Data tables of the Flood Insurance Study, and to withstand the scouring forces associated with those floodwater velocities.
  3. If an increase in ground coverage is proposed, ~~the applicant shall provide either a “no-rise” certification shall be provided or proof by a professional engineer or licensed architect that the area within which the increase in ground coverage is proposed lies within the hydraulic shadow.~~
- F. ~~Fish enhancement projects — including stream crossings that are a direct component of such projects — sponsored or approved by a state or federal agency, subject to the following:~~
1. ~~The project requires review as a Type I application pursuant to Section 1307.~~
  2. ~~The responsible agency shall provide a feasibility analysis and certification, prepared by a qualified professional, that the project is designed to keep any rise in 100 year flood levels as close to zero as practically possible and that no structures shall be impacted by any potential rise.~~
  3. ~~Routine maintenance of the project shall be required in order to sustain conveyance over time, and a long term maintenance program shall be included in the analysis and certification.~~

703.08 DUTIES OF THE PLANNING DIRECTOR

The Planning Director is hereby appointed to administer and implement Section 703 by granting or denying development permit applications in accordance with its provisions. The Planning Director may delegate authority to implement these provisions. Duties of the Planning Director under ~~this Section 703~~ shall include:

- A. The Planning Director shall review ~~f~~Floodplain ~~d~~Development ~~p~~Permits to determine if the proposed development adversely affects the flood carrying

capacity of the special flood hazard area. For purposes of this subsection, "adversely affects" means that the cumulative effect of the proposed development and all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point.

B. Within the special flood hazard area, when more detailed base flood elevation or floodway data is available outside of the adopted Flood Insurance Study (FIS) from a federal, state or other authoritative source — such as preliminary or draft information from a new study that will revise the FIS —the Planning Director may obtain, review, and reasonably utilize such data as long as it is more restrictive than the currently effective data. When the data pertains to a preliminary or draft FIS in Zone A, the Planning Director is required to reasonably utilize the data, and is allowed discretion in using this data only to the extent that the technical or scientific validity of the data in the draft or preliminary FIS is questioned by a qualified professional.

C. When base flood elevation data has not been provided (A zones), the Planning Director shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source, in order to administer the standards in Subsections 703.08, 703.10, and 703.11.

D. The Planning Director shall, where base flood elevation data is provided through the FIS, Flood Insurance Rate Map, or utilized pursuant to Subsections 703.08(B) or (C), obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basements and below-grade crawlspaces) of all new or substantially improved structures, and whether or not the structure contains a basement.

~~E.~~ For all new or substantially improved structures, the Planning Director shall ~~review~~obtain either an elevation certificate or a Federal Emergency Management Agency National Flood Insurance Program Floodproofing Certificate (for Non-Residential Structures) provided by the applicant and shall verify and record the actual elevation (in relation to mean sea level) and maintain the elevation and floodproofing certificates required.

1. In either case, the currently effective form shall be used, and it shall be completed in accordance with the accompanying instructions.
2. The determination regarding which certificate is required shall be made based on the nature of the development consistent with National Flood Insurance Program regulations.

~~F.~~ The Planning Director shall maintain for public inspection all records pertaining to the provisions of ~~this~~ Section 703.

G. The Planning Director shall review all floodplain development permits to determine if the proposed development activity qualifies as a substantial improvement.

H. The Planning Director shall provide to building officials the regulatory flood protection elevation applicable to any building requiring a building permit.

IE. The Planning Director shall notify adjacent communities ~~and~~, the State of Oregon Department of Land Conservation and Development, and other appropriate state and federal agencies prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.

J. The Planning Director shall notify the Federal Emergency Management Agency (FEMA) within six months of project completion when an applicant had obtained a Conditional Letter of Map Revision (CLOMR) from FEMA, or when development altered a watercourse, modified floodplain boundaries, or modified base flood elevations. This notification shall be provided as a Letter of Map Revision (LOMR).

1. The project applicant shall be responsible for preparing technical data to support the LOMR application and for payment of all processing and application fees charged by FEMA.

#### 703.09 FLOODPLAIN DEVELOPMENT PERMITS

Except as provided under Subsections ~~703.06(B) and (C) and 703.07(F)~~, a ~~f~~Floodplain d~~e~~velopment p~~e~~rmit (FDP) shall be obtained for development laterally within the FMD before construction or development begins. The permit shall be for all structures, including manufactured dwellings, and for all development, including fill and other activities. Work that is necessary to protect, ~~repair, maintain, or replace~~ existing structures, utility facilities, roadways, driveways, and stream banks in response to emergencies may be undertaken prior to obtaining an FDP, provided that an application is made within 90 days of water receding~~FDP is obtained after the emergency has passed. The measures used for protection may not be able to be permitted.~~ An FDP requires review as a Type II application pursuant to Section 1307, Procedures.

- A. Submittal Requirements: In addition to the submittal requirements identified in Subsection 1307.07(C), an application for an FDP shall include:
1. A site plan drawn to scale, showing elevations of the site; pertinent structure, fill, or storage elevations; size, location, and spatial arrangement of all proposed and existing structures on the site; and location and elevations of streets, water supply, sanitary facilities, and soil types; and other applicable information;
  2. Specifications for building construction and materials, loads and forces, and effect on soil bearing pressures, erosion control, floodproofing, filling, dredging, grading, channel improvement, storage of materials, water supply, and sanitary facilities;

3. A description of the extent to which any watercourse will be altered or relocated as a result of proposed development; and
  4. Either an elevation certificate or a Federal Emergency Management Agency National Flood Insurance Program Floodproofing Certificate (for Non-Residential Structures).
    - a. In either case, the currently effective form shall be used, and it shall be completed in accordance with the accompanying instructions, and based on construction drawings and proposed site locations of development.
    - b. The determination regarding which certificate is required shall be made based on the nature of the proposed development consistent with National Flood Insurance Program regulations.
- B. Factors of Consideration: In reviewing an application for an FDP, the following factors shall be considered:
1. The danger to life and property due to increased flood heights or velocities caused by encroachments;
  2. The danger that materials may be swept on to other lands or downstream to the injury of others;
  3. The proposed water supply and sanitation systems and the ability of those systems to prevent disease, contamination, and unsanitary conditions;
  4. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
  5. The importance to the community of the service provided by the proposed facility;
  6. The requirements of the facility for a waterfront location;
  7. The availability of alternative locations not subject to flooding for the proposed use;
  8. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future;
  9. The relationship of the proposed use to the Comprehensive Plan and floodplain management program for the area;
  10. The safety of access to property in times of flood for ordinary and emergency vehicles;



11. Whether the proposed development activity represents a substantial improvement to an existing structure;

12. Whether the proposed structure qualifies as a critical facility;

1311. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site; and

1412. Other factors that are relevant to the purpose of ~~this Section~~ 703.

C. Approval Criteria: An FDP shall be subject to the following standards and criteria:

1. All necessary permits have been obtained from those federal, state, or local governmental agencies from which prior approval is required.
2. If the proposed development is in the floodway, the standards of Subsection 703.07 have been met.
3. If the proposed development includes alteration of a watercourse, maintenance will be provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.
4. The proposed development will comply with the applicable provisions of Subsections 703.10 and 703.11.

D. Conditions of Approval: The County may attach conditions of approval to an FDP if such conditions are deemed necessary to further the purpose of ~~this Section~~ 703. Such conditions may include, but are not limited to:

1. Limitations on periods of use and operation;
2. Imposition of operation controls, sureties, and deed restrictions; and
3. Floodproofing and other protective measures, such as:
  - a. Installation of watertight doors, bulkheads, and shutters;
  - b. Reinforcement of walls to resist water pressure;
  - c. Use of paints, membranes, or mortars to reduce seepage of water through walls;
  - d. Addition of mass or weight to structures to resist flotation;
  - e. Installation of pumps to lower water levels in structures;
  - f. Construction of water supply and waste treatment systems to prevent the entrance of floodwaters;

- g. Pumping facilities for subsurface external foundation wall and basement floor pressures;
  - h. Construction to resist rupture or collapse caused by water pressure or floating debris;
  - i. Cutoff valves on sewer lines or the elimination of gravity flow basement drains; and
  - j. Requirements for construction of channel modifications, dikes, levees, and other protective measures.
- E. Finalization of an FDP: If a preliminary elevation certificate or floodproofing certificate was required for a structure, [a second elevation certificate is required prior to approval of the foundation inspection](#). In addition, a building permit for that structure shall not receive a final approval or certificate of occupancy until the County approves a final elevation certificate or floodproofing certificate that is based on the as-built/finished construction.
- F. Approval Period: Approval of an FDP is valid for four years from the date of the final written decision. If the County’s final written decision is appealed, the approval period shall commence on the date of the final appellate decision. During this four-year period, the approval shall be implemented, or the approval will become void.
- 1. “Implemented” means all major development permits shall be obtained and maintained, or if no major development permits are required to complete the development contemplated by the approved FDP, “implemented” means all other necessary County development permits (e.g. grading permit, building permit for an accessory structure) shall be obtained and maintained.
    - a. A “major development permit” is:
      - i. A building or manufactured dwelling placement permit for a new primary structure that was part of the FDP approval; or
      - ii. A permit issued by the County Engineering Division for parking lot or road improvements that were part of the FDP approval.

G. Time Extension: If the approval of an FDP is not implemented within the initial approval period established by Subsection 703.09(F), a two-year time extension may be approved pursuant to Section 1310, [Time Extension](#).

703.10 GENERAL [FMD](#) STANDARDS

Development in the FMD shall comply with the following standards:

A. Anchoring:

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

B. Construction Materials and Methods, and Utilities:

1. The following standards shall apply to below-grade crawl spaces. For more detailed information, refer to FEMA Technical Bulletin 11-01, *Crawlspace Construction for Buildings Located in Special Flood Hazard Areas*. For flood insurance purposes, there is an additional charge that is added to the basic flood insurance policy premium for structures that are built on below-grade crawl spaces.
  - a. The building shall be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the openings required by Subsection 703.10(B)(1)(b). Because of hydrodynamic loads, crawl-space construction is prohibited in areas with flood velocities greater than five feet per second unless the design is reviewed by a qualified design professional, such as a professional engineer or licensed architect. Other types of foundations are recommended for these areas.
  - b. The crawl space shall have openings that equalize hydrostatic pressures by allowing the automatic entry and exit of floodwaters. The bottom of each flood vent opening shall be no more than one foot above the lowest adjacent exterior grade.
  - c. Portions of the building below the base flood elevation (BFE) shall be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawl space used to elevate the building, but also any joists, insulation, or other materials that extend below the BFE. The recommended construction practice is to elevate the bottom of joists and all insulation above BFE.
  - d. Any building utility systems within the crawl space shall be elevated above the BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, shall either be placed above the BFE or sealed from floodwaters.
  - e. The interior grade of a crawl space below the BFE shall not be more than two feet below the lowest adjacent exterior grade.
  - f. The height of the below-grade crawl space, measured from the interior grade of the crawl space to the top of the crawl space foundation wall shall not exceed four feet at any point. The height limitation is the maximum

allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas.

- g. There shall be an adequate drainage system that removes floodwaters from the interior area of the crawl space. The enclosed area shall be drained within a reasonable time after a flood event. The type of drainage system will vary because of the site gradient and other drainage characteristics, such as soil types. Possible options include natural drainage through porous, well-drained soils and drainage systems such as perforated pipes, drainage tiles, or gravel or crushed stone drainage by gravity or mechanical means.
  - h. The velocity of floodwaters at the site should not exceed five feet per second for any crawl space. For velocities in excess of five feet per second, other foundation types should be used.
2. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage, and using methods and practices that minimize flood damage. For more detailed information, refer to November 1999 FEMA Publication 348, *Protecting Building Utilities from Flood Damage*; and FEMA Technical Bulletin 2-93, *Flood-Resistant Materials Requirements*.
  3. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
  4. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the system into floodwaters.
  5. All equipment, machinery, appliances, and electrical boxes that pertain to electrical, ventilation, plumbing, and heating and air-conditioning systems and services, as well as outside fuel storage tanks, outside air-conditioning units, and other interior or exterior service facilities, systems, equipment, machinery, ~~and appliances, and other utilities~~ shall be ~~designed, elevated, or~~ floodproofed, ~~and/or located~~ so as to prevent water from entering or accumulating within the components during conditions of flooding.
    - a. Floodproofed facilities, systems, equipment, machinery, and appliances — except for waterproofed wires and cables, as well as waterproofed and sealed plumbing pipes and other plumbing services — shall be certified as such by a preliminary and final floodproofing certificate.
    - b. Except for manufactured dwelling electrical crossover connections, regulated pursuant to Subsection 703.11(A)(1), nNon-floodproofed facilities, systems, equipment, machinery, and appliances shall be elevated at least two feet above the BFE, except that duct systems may be elevated at least one foot above the BFE.

6. Onsite waste~~water~~ disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with Oregon Department of Environmental Quality regulations.
  7. A professional engineer or licensed architect shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the County.
- C. Substantial Improvement and Substantial Damage: A structure for which a substantial improvement or repair of substantial damage is proposed shall be elevated, retrofitted, upgraded, etc., such that the structure and all of its interior and exterior service facilities, systems, equipment, machinery and appliances shall be brought into compliance with the applicable standards of this section.
- D. Manufactured DwellingsHomes:
1. Manufactured dwellingshomes to be placed or substantially improved shall be ~~placedelevated~~ on a permanent foundation and elevated pursuant to Subsection 703.11 ~~such that the lowest floor is elevated at least two feet above the BFE, or the lowest construction elements are elevated at least 18 inches above the BFE, whichever results in the higher elevation of the lowest floor.~~
  2. Manufactured dwellingshomes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors.
  3. Manufactured dwellingshomes shall be placed ~~pursuant to Section 824,~~ utilizing the applicable designs and guidelines, as approved by the Building Codes Division, of the September 1985 FEMA Publication, *Manufactured Home Installation in Flood Hazard Areas*, and State of Oregon Manufactured Dwelling Installation Specialty Code, whichever is the most restrictive ~~or any more recent or replacement publication thereof.~~
- E. Recreational Vehicles: Recreational vehicles shall comply with the requirements of Subsection 703.10(D) for manufactured dwellings or shall be:
1. Located on the site for fewer than 180 consecutive days;
  2. Fully licensed and ready for highway use;
  3. Supported on wheels or a jacking system;
  4. Attached to services on the site only by quick-disconnect type utilities and security devices; and

5. Void of any permanently attached additions.

F. Fill:

1. Any fill or other materials — except those proposed within the interior of, and inside the walls of, a crawl space, foundation, basement or enclosure floor — shall be shown to have a beneficial purpose and the amount thereof not greater than is necessary to achieve that purpose, as demonstrated by a plan submitted by the applicant, showing the uses to which the filled land will be put and the final dimensions of the proposed fill or other materials.
2. Fill or other materials shall be protected against erosion by riprap, vegetative cover, or bulkheading.
3. Structures may be allowed to be constructed on fill and thereby elevated above the BFE, subject to the following standards:
  - a. The fill shall be placed such that the lowest adjacent finished grade of the fill to the foundation of the structure is at least two feet above the BFE.
  - b. The lowest portion of the lowest structural support system of the building (i.e., the bottom of slab, bottom of footings, or bottom of any other lowest on-grade or sub-grade supporting member) shall be located at least one foot above the BFE.
  - c. Placement of the fill shall require approval of a grading permit.
  - d. The structure shall be constructed pursuant to the applicable standards of FEMA Technical Bulletin 10-01, *Ensuring That Structures Built on Fill in or near Special Flood Hazard Areas Are Reasonably Safe from Flooding*.
4. All fill placed at or below the BFE shall be balanced with at least an equal amount of material removal either on-site, or from a nearby area at or below the BFE and in the same drainage basin. In addition, the following standards shall apply:
  - a. Excavation below the level of the seasonal groundwater table shall not be used in balancing fill volumes against excavation volumes;
  - b. The mean annual groundwater level shall be determined by soil morphology, or other available data on groundwater conditions;
  - c. Balancing of a fill shall occur at the same time as the fill is placed on the development site;
  - d. The site plan required in Subsection 703.09(A)(1) shall identify the area where material is removed from the floodplain to balance fill volumes, including pertinent elevations and volume of fill removed;

- e. A professional engineer or licensed architect shall certify that the amount of material removed balances the amount of fill material;
  - f. A suitable recorded easement or similar legally binding mechanism, in a form acceptable to County Counsel shall be provided to the Planning Director, indicating that future development of the delineated area where material is removed to balance fill volumes is prohibited, and the delineated area cannot be used in the future as balancing for a fill; and
  - g. When the balancing occurs off-site, the application shall also include:
    - i. Authorization from the owner of the property where the balancing will occur; and
    - ii. A legal description of the parcel where the balancing will occur.
5. The following uses or activities are not subject to the provisions of Subsection 703.10(F)(4):
- a. Removal and/or fill necessary to plant new trees or vegetation;
  - b. Removal and/or fill required for the construction of storm-water runoff detention facilities and/or structures; and
  - c. Removal and/or fill required for the construction of other facilities such as levees designed specifically to reduce or mitigate flood impacts.
- G. Stream Crossings, Including Bridges and Culverts, and Transportation Projects:
- 1. Stream crossings and transportation projects shall be designed as balanced removal and fill projects, or designed to not raise the BFE.
  - 2. Stream crossings and transportation projects that encroach into the floodway shall obtain a “no-rise” certification, or, if the “no-rise” condition cannot be achieved, shall obtain a Conditional Letter of Map Revision, prior to permitting the work, followed by a Letter of Map Revision after the work has been completed.
  - 3. Stream crossings and transportation projects shall be designed to minimize the area of fill in the special flood hazard area (SFHA) and to minimize erosive water velocities.
  - 4. Stream crossings shall be as close to perpendicular to the stream as practicable.
  - 5. Stream crossings shall be designed to allow fish passage.

6. Stream crossings and transportation projects are subject to review and approval pursuant to applicable federal and state statutes and administrative rules.

H. Subdivisions:

1. Subdivisions shall be consistent with the need to minimize flood damage.
2. Subdivisions shall have public utilities and facilities, such as sewer, gas, electrical, and water systems, located and constructed to minimize flood damage.
3. Subdivisions shall have adequate drainage provided to reduce exposure to flood damage.
4. ~~The applicant shall provide base flood elevations for the area of development. Where base flood elevation data have not been provided or are not available from another authorized source, the data shall be generated for subdivisions that contain at least 50 lots or five acres.~~

I. Toxic or Hazardous Materials:

1. The storage or use of toxic or hazardous materials in conjunction with nonresidential uses is prohibited, except as permitted in Subsection 703.10(I)(2).
2. Storage or use of toxic or hazardous materials may be permitted if the applicant demonstrates the following:
  - a. The proposed development requires toxic or hazardous materials for operation.
  - b. An area outside the SFHA is not available to be used for storage or use of toxic or hazardous materials.
  - c. The containers, structures, facilities and machinery that contain, use or process the toxic or hazardous materials shall be elevated:
    - i. A minimum of two feet above the BFE in AE zones, as indicated on the FIRM or determined pursuant to Subsection 703.08(B) flood fringe and flood hazard areas;
    - ii. A level to be determined pursuant to Subsection 703.11(C)(1) in unnumbered A zones, as indicated on the FIRM or determined pursuant to Subsection 703.08(B) flood prone areas; or



- iii. The depth number specified on the Flood Insurance Rate Map — or a minimum of two feet above the highest adjacent grade if no depth number is specified — in shallow flooding areas.
- iv. The structures that support the containers, structures, facilities, and machinery that contain, use or process the toxic or hazardous materials shall comply with Subsections 703.10(A) and 703.10(B)(2) and (7).

J. Critical Facilities: Construction of new critical facilities shall be, to the extent possible, located outside the limits of the Special Flood Hazard Area (SFHA). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet above base flood elevation or to the height of the 500-year flood, whichever is higher. Access to and from the critical facility shall also be protected to the height utilized above. Floodproofing and sealing measures shall be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.

~~J. Riprap or Other Structural Stream Bank Protection Measures:~~

- ~~1. If riprap or other structural stream bank protection measures are proposed to repair bank damage, bank removal or bank erosion, the following criteria shall be met. For the purpose of this subsection, “pre-existing conditions” are the conditions of the repair area upon which the FIRM(s), Flood Boundary and Floodway Map(s), and FIS(s) were based that were in effect during the period that the bank was damaged, removed and / or eroded, leading up to the proposed repair.~~
  - ~~a. The measures shall not encroach any further into the stream channel than the pre-existing conditions.~~
  - ~~b. The measures shall not add any more cubic yards of bank material than was in place in the pre-existing conditions.~~
  - ~~c. The measures shall not exceed the height of the bank nor protrude above the topography that was in place in the pre-existing conditions.~~
  - ~~d. The pre-existing conditions shall be demonstrated through some combination of historical and aerial photography, survey and cross-section information, maps or plans, hydrologic and hydraulic modeling, or any other pertinent information.~~
  - ~~e. The applicant shall provide evidence from a professional engineer, with expertise in hydrology, hydraulics, fluvial geomorphology, or hydrogeology, that the proposal complies with Subsections 703.10(J)(1)(a) through (d) and that the proposed stream bank protection measures will~~

~~cause no adverse impacts to upstream or downstream properties, when compared to impacts of the pre-existing conditions.~~

~~2. If riprap or other structural stream bank protection measures are proposed for reasons other than to repair bank damage, bank removal or bank erosion, or if the repair exceeds the standards of Subsection 703.10(J)(1), the applicant shall provide evidence from a professional engineer, with expertise in hydrology, hydraulics, fluvial geomorphology, or hydrogeology, that the proposed stream bank protection measures will cause no adverse impacts to upstream or downstream properties.~~

703.11 SPECIFIC STANDARDS

A. ~~AE Zones with Designated Floodways~~~~Flood Fringe and Floodway Areas:~~ In AE zones with designated floodways~~flood fringe and floodway areas~~, as indicated on the Flood Insurance Rate Map (FIRM) or determined pursuant to Subsection 703.08(B), development shall comply with the following criteria:

1. Residential Construction: New construction and substantial improvement of a dwelling shall have the lowest floor, including basement, elevated at least two feet above the base flood elevation (BFE), ~~— or the lowest construction elements elevated at least one foot above the BFE, whichever results in the higher elevation of the lowest floor~~ — except that new or substantially improved manufactured ~~dwellingshomes~~ shall have the bottom of the longitudinal frame beam~~lowest floor, including basement, and electrical crossover connections~~ elevated at least ~~one foot~~two feet above the BFE, ~~or the lowest construction elements elevated at least 18 inches above the BFE, whichever results in the higher elevation of the lowest floor.~~ Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall either be certified by a professional engineer or licensed architect or shall meet or exceed the following minimum criteria. For more detailed information, refer to FEMA Technical Bulletin 1-93, *Openings in Foundation Walls*.
  - a. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided, unless the applicant provides documentation from a professional engineer or licensed architect that a flood vent manufacturer's product can provide less than one square inch of opening for every square foot of enclosed area and still meet National Flood Insurance Program standards.
  - b. The bottom of all openings shall be no higher than one foot above grade.

- c. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.
2. Nonresidential Construction: New construction and substantial improvement of a nonresidential structure shall either comply with Subsection 703.11(A)(1), or, together with attendant utility and sanitary facilities, shall comply with the following criteria. For more detailed information, refer to FEMA Technical Bulletin 3-93, *Non-Residential Floodproofing — Requirements & Certification*.
    - a. The structure shall be floodproofed, so that below the point one foot above the BFE, the structure is watertight, with walls substantially impermeable to the passage of water. Applicants floodproofing nonresidential structures shall be notified in writing that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g. a building floodproofed to one foot above the BFE will be rated as being floodproofed to the BFE).
    - b. The structure shall have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
    - c. A professional engineer or licensed architect shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the County.
- B. AE Zones without Designated Floodways~~Flood Hazard Areas~~: In AE zones without designated floodways~~flood hazard areas~~, as indicated on the FIRM or determined pursuant to Subsection 703.08(B), development shall comply with Subsection 703.11(A) and the following criteria:
1. The cumulative effect of the proposed development and all other existing and anticipated development, shall not increase the water surface elevation of the base flood more than one foot at any point.
  2. Whenever possible, structures shall be constructed with the longitudinal axis parallel to the direction of flood flow.
  3. So far as practical, structures shall be placed approximately on the same flood flow lines as those of adjoining structures.
- C. Unnumbered A Zones~~Flood Prone Areas~~: In unnumbered A zones~~flood-prone areas~~, as indicated on the FIRM or determined pursuant to Subsection 703.08(B), development shall comply with the following criteria:

1. Proposed construction shall be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, post-flood improvements to the waterway, etc., where available. Failure to elevate the lowest floor to at least two feet above the highest grade may result in higher insurance rates.
  2. Proposed residential construction shall comply with Subsections 703.11(A)(1)~~(a) through (e)~~. Proposed nonresidential construction, together with attendant utility and sanitary facilities, shall comply with Subsections 703.11(A)(2)~~(a) through (e)~~. However, the level to which the structure must be elevated or floodproofed shall be determined pursuant to Subsection 703.11(C)(1).
  3. Proposed construction shall comply with Subsections 703.11(B)(2) and (3).
  4. The applicant shall provide base flood elevations for the area of development. Where base flood elevation data have not been provided or are not available from another authorized source, the data shall be generated for subdivisions or other proposed development that contain at least 50 lots or five acres, whichever is less.
- D. Areas of Shallow Flooding~~Areas~~: In areas of shallow flooding~~areas~~, development shall comply with the following criteria:
1. New construction and substantial improvement of a dwelling shall comply with Subsections 703.11(A)(1)~~(a) through (e)~~ and shall have the lowest floor, including basement, elevated above the highest adjacent grade of the building site to a minimum of two feet above the depth number specified on the FIRM; ~~or shall have the lowest construction elements elevated to a minimum of one foot above the depth number specified on the FIRM, whichever results in the higher elevation of the lowest floor.~~ If no depth number is specified, the lowest floor; ~~or the lowest construction elements, whichever results in the higher elevation of the lowest floor,~~ shall be elevated at least two feet above the highest adjacent grade of the building site.
  2. New construction and substantial improvement of a nonresidential structure shall either comply with Subsection 703.11(D)(1), or, together with attendant utility and sanitary facilities, shall comply with Subsection 703.11(A)(2)~~(a) through (e)~~, except that the structure shall be floodproofed to the elevation identified in Subsection 703.11(D)(1).
  3. Adequate drainage paths shall be provided around structures on slopes to guide floodwaters around and away from proposed structures.

703.12 EXCEPTION

- A. Approval Criteria: Certain non-residential structures — such as detached garages and storage sheds solely used for parking and limited storage that are no greater

than 400 square feet in area and do not exceed one story, pole barns used for storage of farm machinery and equipment, small garden sheds, and structures used in conjunction with agricultural activities — may be granted an exception from the elevation and floodproofing standards of Subsection 703.11, subject to the following criteria. (For more detailed information, refer to FEMA Technical Bulletin 7-93, *Wet Floodproofing Requirements*.) Additionally, the following structures may qualify for the exception:

1. Residential accessory structures up to 200 square feet, which may not require a building permit pursuant to Oregon Residential Specialty Code R105.2;

2. Residential accessory structures greater than 200 and up to 400 square feet if the lot size and setbacks qualify pursuant to Oregon Residential Specialty Code R105.2; and

3. Commercial accessory structures that are up to 120 square feet, which may not require a building permit pursuant to Oregon Structural Specialty Code 105.2.

a4. The exception is reviewed pursuant to Subsection 703.13, and compliance with the approval criteria of Subsection 703.13(A) is demonstrated.

b2. The structure will be wet floodproofed.

c. The structure will not be temperature controlled.

d3. The structure will not cause significant flood risk.

e4. The structure will not be used for human habitation, and will be utilized primarily for storage or parking.

f5. The structure will be located, designed, and constructed to have low flood damage potential.

g6. The structure will be constructed and placed on the building site so as to offer the minimum resistance to the flow of flood waters.

h. The structure will not be used to store toxic material, oil or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality, unless confined in a tank installed in compliance with Section 703 or stored at least one foot above the base flood elevation.

i. The structure will be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood.

- j. The structure will be constructed with electrical and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.
- k. The structure will be constructed to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater. Designs for complying with this requirement must be certified by a licensed professional engineer or architect or comply with Subsections 703.11(A)(1)(a) through (c).

- 17. The structure will be constructed with flood-resistant materials that meet the requirements of the County Building Codes Division, up to:
  - a. A minimum of one foot above the BFE in AE zones, as indicated on the FIRM or determined pursuant to Subsection 703.08(B) flood fringe and flood hazard areas;
  - b. A level to be determined pursuant to Subsection 703.11(C)(1) in unnumbered A zones, as indicated on the FIRM or determined pursuant to Subsection 703.08(B) flood prone areas; or
  - c. The depth number specified on the Flood Insurance Rate Map — or a minimum of two feet above the highest adjacent grade if no depth number is specified — in areas of shallow flooding areas.

138. If the structure will be located in the floodway, the structure will comply with Subsection 703.07.

B. Insurance Consequences: If an exception is granted for a structure that is accessory to a dwelling and the structure will exceed a value greater than 10 percent of the value of the dwelling, the applicant shall be given written notice that substantial increases in insurance rates may result.

#### 703.13 VARIANCES

A. Approval Criteria: In conjunction with review of a floodplain development permit, a variance from the requirements of this section 703 may be approved, subject to the following standards and criteria:

- 1. The request is consistent with Subsection 703.09(B).
- 2. There is good and sufficient cause for the variance.
- 3. Compliance with the requirements for which the variance is requested would cause an exceptional hardship to the applicant.
- 4. Approval of the variance would not result in increased flood levels during base flood discharge, additional threats to public safety, extraordinary public

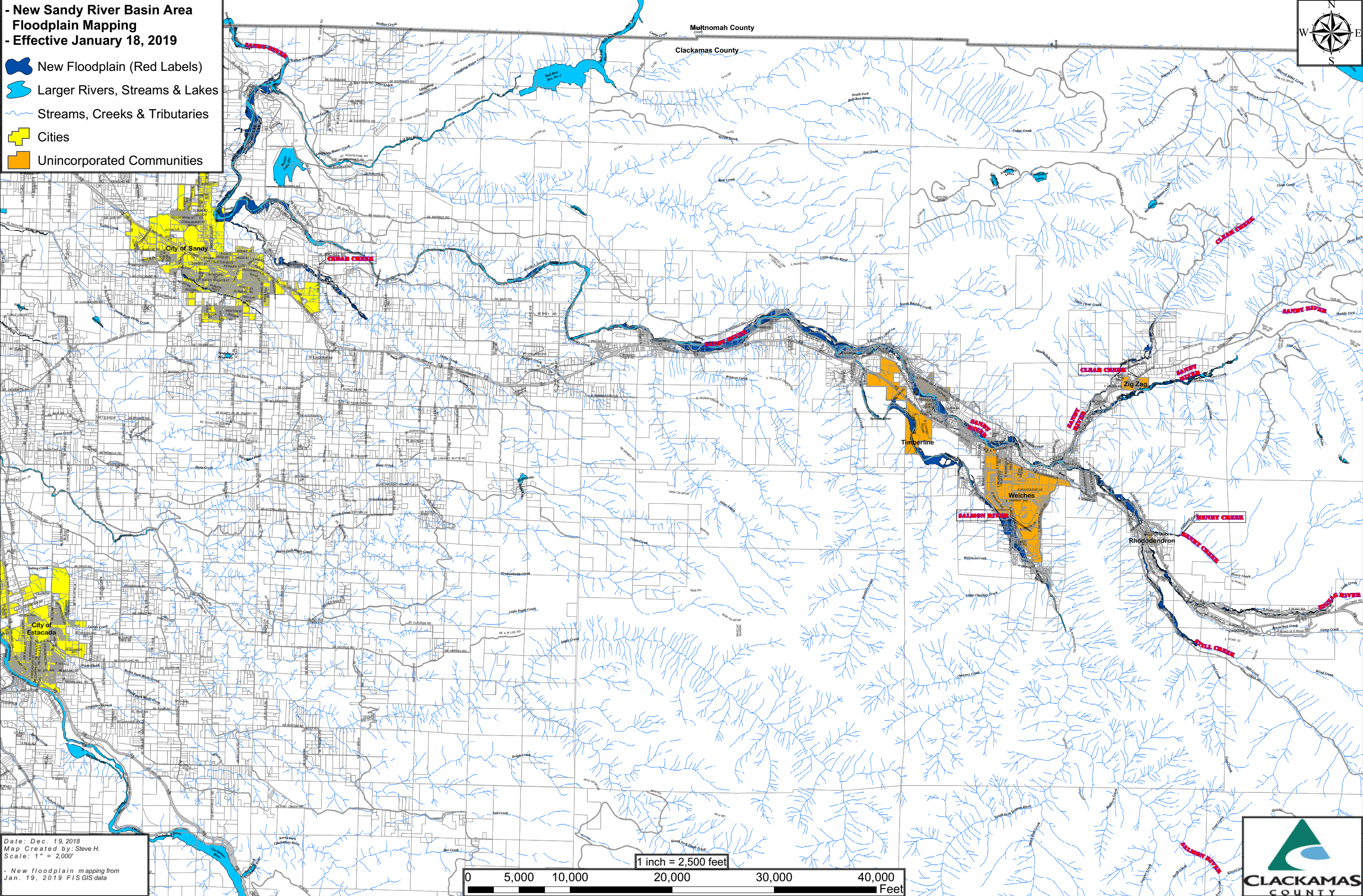
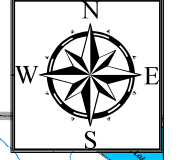
expense, or a nuisance condition, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

5. The variance requested is the minimum necessary, considering the flood hazard, to provide relief.
  6. If the proposal is to repair or rehabilitate a historic structure that is listed on the National Register of Historic Places or a State or Local Inventory of Historic Places, the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.
- B. ~~Insurance~~ Consequences: If a variance is granted that allows the lowest floor of a structure to be built below the regulatory flood protection elevation, the applicant shall be given written notice that:
1. ~~The~~ the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation;- and
  2. Such construction below the base flood level increases risks to life and property and the County is not liable for any damages that result from the variance approval.
- C. The written notice required by Subsection 703.13(B) shall be maintained with a record of all variance actions.

[Amended by Ord. ZDO-230, 9/26/11; Amended by Ord. ZDO-248, 10/13/14]

**- New Sandy River Basin Area  
Floodplain Mapping  
- Effective January 18, 2019**

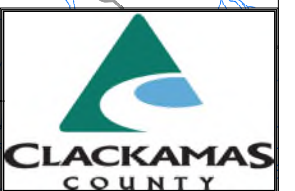
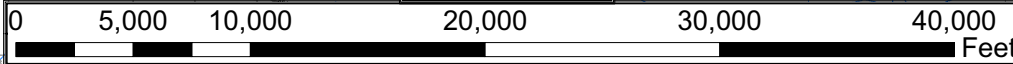
-  New Floodplain (Red Labels)
-  Larger Rivers, Streams & Lakes
-  Streams, Creeks & Tributaries
-  Cities
-  Unincorporated Communities



Date: Dec. 19, 2018  
Map Created by: Steve H.  
Scale: 1" = 2,000'

- New floodplain mapping from  
Jan. 19, 2019 FISGIS data

1 inch = 2,500 feet







Dennis Tylka \* PO Box 369 Welches, OR 97067 \* 503-622-3853

Steve Hanschka, Clackamas County Planning

December 10, 2018

### **Comments on the proposed ZDO 275 Flood Maps**

The new flood maps with the GIS tax lots overlaid did not accurately delineate the floodplain because it failed to map a river side channel, this concern is site specific to Manape drive but should be extrapolated if I notice this error here it should be assumed there would be errors everywhere the GIS and flood maps were used together. The side channel that runs between Manape Drive and the Salmon River was not mapped as Floodway even though I submitted photos of several feet of water with a swift current. **The flood maps didn't accurately delineate a second part of the river side channel that runs almost at a right angle to the Salmon River toward Manape Drive and failed to map floodplains.** ( I believe this has been resolved.) The purpose floodway is not sufficiently wide enough to allow for bank erosion considering the type of soil and log jams, requiring the Salmon River to be managed as a gutter to protect life and property instead of a significant Goal 5 Resource. The proposed flood maps will have a significant adverse impact on the Salmon River and its riparian habitat a Goal 5 resource by removing several properties that were historically mapped by FEMA as "Salmon River Floodways" transforming them to developable property. The Salmon River was designated a federally Wild and Scenic River in 1988 the "Outstanding and Remarkable Values (ORV's) are Scenery, Recreation, Fisheries, Wildlife, Hydrology, Botany/Ecology, and Recreation, reducing the floodway will reduce the protected riparian area will have an adverse impact on this Goal 5 resource. The Salmon River is part of the Sandy River which together has been determined by National Marine Fisheries Service and Oregon as critical habitat for the restoration for the Lower Columbia River Salmon and Steelhead endangered species in the ESA Recovery Plan June 2013, reducing the protection for the Salmon River Riparian area and managing the Salmon River as a gutter will have an adverse impact on the Salmon and Steelhead critical habitat.

### **History**

My street address is 68865 East Manape Drive, my house is approximately 60 feet from the top of the bank of the Salmon River, I own lots 1 thru 7 next to the Salmon River. I have resided there since May 1974 giving me 44 years of historical perspective on flooding and development. Manape drive is a partially passable road within "Idlewild" subdivision that was subdivided in the early 1900's and was Re-platted with an extension being added name "Maulding's Addition" in 1931 into 50 x 100 foot lots. The topography of the area is mostly uneven with large depression and numerous old flood channels that run at about a 45 degree angle down river, the highest elevation is between Manape drive and the river and then drops in elevation by several feet as you move to the west away from the river. Almost all of these lots are within the Salmon

River Floodway as the floodway is over 650 ft wide and a floodplain over 900 feet wide that restricted development to only a few house the rest of the lots are covered by forest with dense undercover.

The biggest flood event in recent history happen in December 1964 destroying the bridge that crosses the Salmon River and coming within 20 ft of my house,( the previous owner established a marker for this high water mark). The 1964 flood did extensive damage eroding the east side of the river bank (Welches RD side) of the Salmon River right up to the foundation of several homes and destroying the bridge. The west side of the river bank (Manape Dr) is much lower in elevation than the bank on the east side, the river bank had little erosion damage but the river water flooded about 40 feet outside of its river bank. After the flood and all the way up to the 1980's the Army Corp of Engineers(ACE) channelized the Salmon River with bulldozers rebuilding the river bank on the east side with riprap using boulders from the river in order to keep the residential structures from falling into the river. I remember asking the ACE in the mid 70's why they didn't rip rap the west side of the river, the ACE told me they rip rapped the bank where there was existing houses but did not rip rap in areas that had no development because they didn't want to obstruct the flood water from flooding the west side in order to protect the east river bank.

During the 44 years I've live here I was forced to evacuated my house 3 times because of flood waters and large trees floating down the river, the first 2 times were in the 1970's when the river water overflowed its banks and gigantic cedar trees with their root balls were coming down the river sideways scraping both sides of the river bank and the root balls were smashing into the bottom of the bridge. The fire department told me to leave because they were afraid these huge trees were going to catch on something and create a log jam flooding my house, or the trees would take out the bridge. The 3rd time was in 1997 when I left my house because the flood waters was eating away my river bank causing large trees to fall into the river further eroding my bank, the fire department told me to leave because they didn't know how much of my river bank would be eaten away or if my house would be hit by the falling trees, or if the falling trees would snag other trees coming down the river and create a log jam flooding or destroying my house.

After my 1st evacuation I started to devote considerable amounts of time and effort watching the level of the river waters during high water as a way to predict when I should evacuate. There are usually 1 or 2 high water events a year, I established several reference points to measure the height of the river and would check them several times a day and night, it was not uncommon to see the water levels at or near the top of its banks in front of my house at least once a year. One of my reference points was the mouth of the river side channel downstream from my house on lot# 7; I notice that during every one of these high water events, water from the Salmon River would be flowing into that side channel several feet deep.

## Meeting

I attended a public meeting/ work shop on 7-12-2016 in Welches hosted by Oregon Department of Geology and Mineral Industries (DOGAMI) and STARR, where preliminary flood maps and studies were discussed and handed out to residents affected along the Sandy/Salmon River. At that meeting STARR had some computers set up for anyone to give there address and they could get a print out of a tax lot map that would display the tax lot in relation to the new flood maps. I gave that person my street address and she handed me a map that indicated most of my tax lots

that were originally in the floodway was now outside of any regulated flood hazard area (Exhibit #1). I immediately went to STARR and told them that the new map did not accurately delineate the flood hazard area because it failed to map a river side channel. At that meeting I was introduced to Jed Roberts from DOGAMI and was told I had to discuss my concern with him as he was the Flood Mapping Coordinator. I asked Jed why he removed over 650 feet of floodway and Jed said the river bank was sufficiently high enough to contain all of the water within its banks during floods. I point out that the river bank elevation decreases downriver from by house and there is no river bank where an old river channel connects to the Salmon River. I also said the Salmon River floods this side channel with several feet of water every year. Jed looked at his map and said it looks like he can see something and asked for my e-mail so he could get back to me.

1st Concern: The new purposed flood maps with the GIS tax lots overlaid did not accurately delineated the flood hazard area between Manape Drive and the Salmon River because there is a river side channel that floods and has current during high water. I stated that it looked like the flood maps were using the tax lot boundaries instead of the edge of the river side channel making it appear that all of these tax lots were outside of the flood hazard zone (EX 2). In several e-mails I told Jed Roberts that I measured from the property markers of tax lots 6-15 block 1 and lots 1-4 block 2 along Manape Drive toward the river side channel and determined that 30 to 40 feet of each of these tax lots were within this river side channel and that I walked the side channel and found several pipes that mark the property corners of these tax lots and were within the side channel.

Jed's responses was that according to the LIDAR maps the edge of the side channel was mapped correctly but said the GIS tax lot overlay was not guaranty to be accurate in delineating that the tax lot would be entirely in or out of the flood hazard zone which would explain why these tax lots appeared to be outside of the river's side channel.

I told Jed that this could be problematic because when I went to an open house in Welches 7, 12-2016 I told a lady my address and she handed me a map and said almost all of my property had been removed from the "Floodway" and I was now outside of any regulated flood hazard zone, she said the good news was that all of these lots can be developed now. I also told Jed that when Clackamas County adopted this new flood map with the GIS tax lot overlays, a property owner or County employee would assume after looking at these maps that shows that the tax lots were entirely outside the regulated flood hazard zone no flood hazard restriction would apply to development on this tax lot.

Obviously this could become a problematic with property owners, county employees, attorneys, and hearing officers disagreeing as what the maps show. FEMA need to put a giant disclaimer on these new flood maps along with the GIS tax lot overlays " stating that these map are not accurate in determining if a tax lot is entirely within or outside of a flood hazard area.

Clackamas County should also insert the same disclaimer into the Ordinance at the time of Adoption, also the County should insert language that would **require** an elevation survey for all 4 corners plus a map displaying elevation contours for properties bordering the flood zones, filed with the County to insure development has no adverse impact. ZDO703.04

APPLICABILITY B states inpart : *The Planning Director shall make interpretations where needed, as to the exact location of the boundaries of the SFHA (for example, where there appears to be a conflict between a mapped boundary and actual field conditions, topography,*

*and/or elevations). In areas where base flood elevation data have been provided, the Planning Director may require the applicant to submit an elevation certificate to determine whether the proposed development is located in the SFHA.*

The ordinance should require this if the property adjoins a SFHA.

2nd Concern: The new purposed floodway should have included the river side channel that runs between Manape Drive and the Salmon River; I have produced several photos where the Salmon River floods this side channel with several feet of water in it with a strong current during high water (EX 3-6) I have attached a copy from my attorney from 1990 from the ACE (EX 7) where federal agencies use the 3 X 3 rule which defines hazardous flood waters as waters greater than 3 feet deep and flowing greater than 3 feet per second because it would be potentially hazardous to life and property. The river bank that runs parallel to this side channel that separates this side channel from the river is only 3 to 4 feet high, the river not only floods this side channel thru its opening during high water it also overflows its banks. This side channel should be evaluated to determine if the channel is within the floodway because when the floodway was delineated by DGMI and their contractors they were unaware there was a physical low point in the river bank that allows an opening for the water to flow unrestricted into this channel and the river bank was only a few feet high, because I told DGMI and their contractors this fact at the public meeting in Welches 7-12-2016.

3rd Concern: The flood maps didn't accurately delineate a second river side channel that runs almost at a right angle to the Salmon River towards Manape Drive and beyond. Jed Roberts said he and Fletch O'Brien agreed with me and said they had asked the contractor to map that side channel into the maps. I haven't received a revised copy showing that river channel to date. I also stated that this side channel could allow flood waters to flood the property on the other side of Manape drive away from the river as the ground elevation declines as you get away from the river, I had a survey map with ground elevation contours and a LOMA that establishes the ground is lower away from the river. ( This concerned has been resolved, I think)

4<sup>th</sup> Concern: Clackamas County has Inventoried the Salmon River as well as a ¼ mile area from the river in their Comprehensive Plan as a Principal River Conservation as a significant Goal 5 Resource. The Salmon River was also designated a federally Wild and Scenic River in 1988, the "Outstanding and Remarkable Values" for this river are Scenery, Recreation, Fisheries, Wildlife, Hydrology, Botany/Ecology, and Recreation.. The Salmon River is part of the Sandy River which together has been determine by National Marine Fisheries Service and Oregon as critical habitat for the restoration for the Lower Columbia River Salmon and Steelhead endangered species in the ESA Recovery Plan June 2013.

The purposed Salmon River floodway and flood hazard zone is not sufficiently wide enough to allow the Salmon River to naturally migrate and wander as natural rivers do. The new purposed floodway is too narrow to compensate for an increase in flood water elevation due to obstructions such as log jams and bank erosion. This would violate ZDO 703.01 states:

*FINDINGS OF FACT, subsection B, titled General Causes of These Flood Losses: Flood losses are caused by:*

- 1. The cumulative effect of obstructions in special flood hazard areas that increase flood heights and velocities and, when inadequately anchored, damage land uses in other areas; and*
- 2. The occupancy of special flood hazard areas by uses vulnerable to floods or hazardous to others that are inadequately floodproofed, inadequately elevated, or otherwise unprotected from flood damages.*

At present the floodway is over 650 wide, the river has plenty of room to move to the west without regards to loss of life or property damage as this area has been managed as floodway with little development. The new purposed floodway will be reduced significantly to about 100 feet allowing much of the old floodway to be developed. Clackamas County has a 100foot setback requirement from the Salmon River in ZDO 704 but there is an exception in 704.05 (A,1) because these lots are so small. When new houses are built in these areas the Salmon River would no longer be allowed to migrate and move, establish log jams, or gather woody debris beneficial for fish habitat that would endanger life and property, instead tax dollars will have to be used to manage the river as a gutter adversely impacting the Salmon River and the critical Salmon and Steelhead habitat.

As stated before, after the 1964 flood the ACE channelized the Salmon River into a narrow channel, isolating many of the old flood channels that I described in my subdivision. The US Soil Survey identifies the soil as 63B- Multnomah, very cobbly loamy sand with slopes between 0 and 8 percent. I had a soil report done by a graduated student, Periann Russell from OSU while at the EPA in 1991, as I was concerned with bank stability (EX 8-9).

The report states: *the stream is supported extensively with riprap to ensure bank stability during base flow and moderate storm events (5-25 year recurrence intervals) of the stream. However, given the occurrence of a large storm events, bank stability is unpredictable. While 63B Multnomah soil is well drained, it also has a great amount of pore space allowing it to hold water when water input is faster than drainage such as in a flood stage. This condition would produce unstable conditions.*

I evacuated my house in 1997 because my river bank was eroding, even though the ACE rip rapped my bank in front of my house. My house was the last house on the west side of the river bank going down river so the rip rapping stopped there. It would be easy to predict that since the river establishes these old flood channel and depression in the past the river will try to reestablish a connection with these old flood channels considering how weak the soil type is.

The Salmon River, and its main tributaries the South Fork and Chenny Creek flow through US Forest Service property much of it in high canyons Wilderness areas offering a surplus amounts of old growth trees for the river to wash down. During the 1964 flood much of the property

damage was done as the result of log jams and debris in the river. After the 1964 flood the US Soil Service and Clackamas County Soil prepared a “Flood Hazard Analyses” for Clackamas County Planning (EX 10-11) which states in part on page:

*The stream gradient in this watershed are steep and change markedly in a short distance. In addition the river bottom soils are a gravelly silt loam or sandy loam with little resistance to erosion. Therefore, high flood flows are very destructive to stream banks and pile up debris from past floods, into log Jams which cause further destruction. Flood elevation for a given size of floods very considerably from place to place depending on the log jams, bank erosion and channel changes.*

The 3 times I was forced to evacuate my house was because of the possibility of log jams causing the river to over flow its banks and destroying my house and the bridge over the river. It is very common to see large trees with their root balls attach floating down the river, the higher the water the bigger the trees.

I know it's impossible to plan for every flood event possible but river bank erosion with weak soil and log jams are known hazards that have occurred in the past and will occur in the future. There is large amounts of data that has been collected documenting that the rivers do not stay within their banks and this comment should apply to the entire flood study area of the Sandy/Salmon River study area because of the flood history for these rivers. Exhibits 11 and 12 shows there is little room for the river to naturally migrate, these pictures is a house built on the edge of the side channel I described before that was built under a LOMA.

5th Concern: This revision of the flood maps will have a significant adverse impact on the Salmon River because the revision changes land use patterns in the riparian habitat of the Salmon River. Before this revision this subdivision was historically mapped by FEMA as “Salmon River Floodways” that was over 650 wide, regulated by Clackamas County as floodway pursuant to ZDO 703.07 that prohibited development. This designation as floodway maintained a very large natural riparian habitat free from development. Now with this revision the maps change the designation from floodway to developable property that would open up this riparian habitat to development.

The Salmon River was designated a federally Wild and Scenic River in 1988 the “Outstanding and Remarkable Values” for this river are Scenery, Recreation, Fisheries, Wildlife, Hydrology, Botany/Ecology, and Recreation. Clackamas County has Inventoried the Salomon River as well as a ¼ mile area from the river in their Comprehensive Plan as a Principal River Conservation Area a significant Goal 5 Resource in 1976. The Salmon River is part of the Sandy River which together has been determine by National Marine Fisheries Service and Oregon as critical habitat for the restoration for the Lower Columbia River Salmon and Steelhead endangered species in the ESA Recovery Plan June 2013.

Before these revisions it was easy to manage this river for the ORV's, a significant Goal 5 resource, and habitat for endangered salmon because there was over a 650 floodway that prohibited development and another 900 feet wide floodplain restricting development. The river was free to migrate and braid and to flood with little concern for the loss of life or property damage.

1. These new revision removing the floodway will now delineates these properties as developable property that will allow these properties to be development destroying these riparian habitat by the clearing of vegetation , filling, grading, for residential and accessory structures, and etc. When these properties are develop, the priority for managing this river in times of floods will change to prevent loss of life and to protect property damage requiring bank rip rap, channelizing, removing woody debris from river, and etc.

Even though I was referring to the removal of the floodway in my subdivision there needs to be analysis of how many acres were removed in total from the floodway next to the Sandy/Salmon River as a result of this new Flood Study and how this will affect land use patterns. After that analysis FEMA should be required to consult with the US Forrest Service, BLM, National Marine Fisheries Service, State of Oregon, and Clackamas County to evaluate cumulative effect of this action for adverse significant effects on the Sandy/Salmon River.

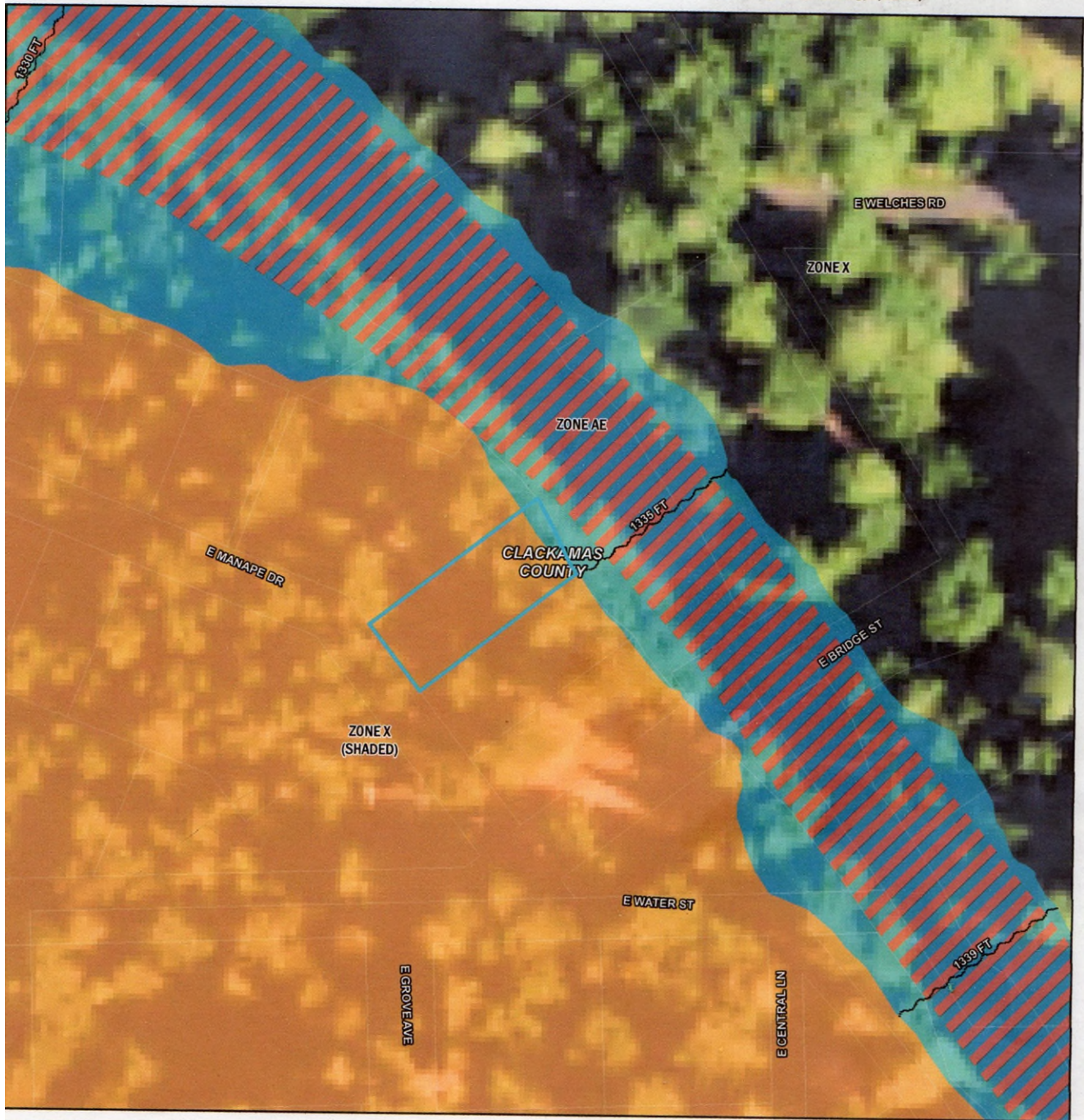


# RiskMAP PUBLIC MEETING

Map Contains:  
**PROPERTY IDENTIFICATION MAP**  
 LOWER COLUMBIA-SANDY WATERSHED,  
 OREGON  
 DATE July 2016



This is a non-regulatory product and is provided for information gathering and sharing purposes only.



## ASEMAP LAYERS

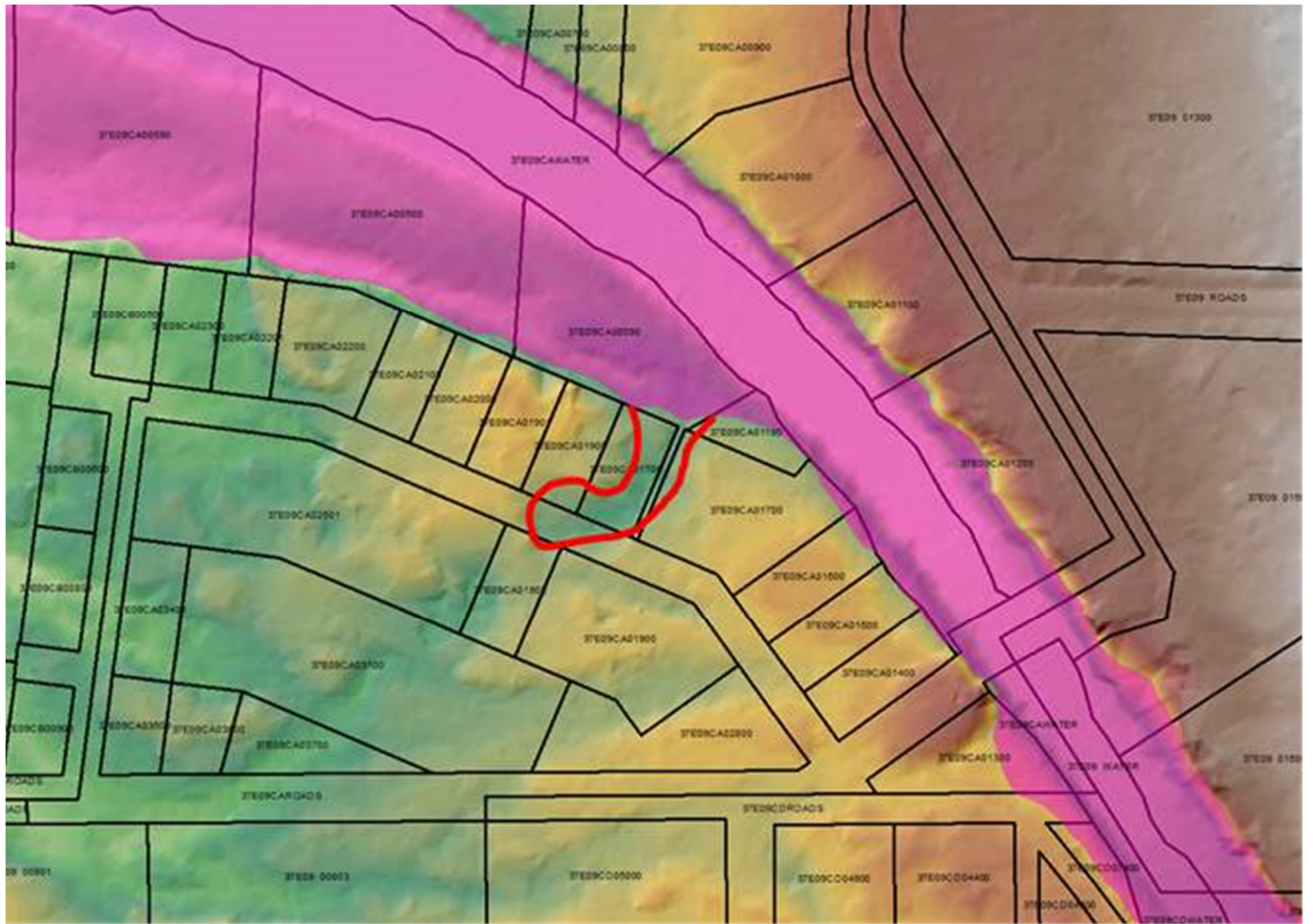
### ISE MAP

- PARCELS
- STRUCTURES
- POLITICAL
- COASTAL TRANSECTS
- DAM
- LEVEE
- BASE FLOOD ELEVATION

PRELIMINARY FLOOD HAZARD AREAS  
 (EX 1)

## REFERENCE

1 inch = 84.5 feet      1:1,014



(EX 2)



(EX 3) Mouth of side channel



(EX 4) River overflowing bank into side channel



((EX 5) Side channel



(EX 6) Log in side channel



DEPARTMENT OF THE ARMY  
PORTLAND DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 2946  
PORTLAND, OREGON 97208-2946

EX 23

RECEIVED  
MAR 27 1990  
Ans'd.....

462-89-PRC

Reply to  
Attention of:

March 23, 1990

Planning Division

Mr. Erik J. Fjelstad  
Rappleyea, Beck, Halterline & Roskie  
1200 The Bank of California Tower  
407 SW. Broadway  
Portland, Oregon 97205

Dear Mr. Fjelstad:

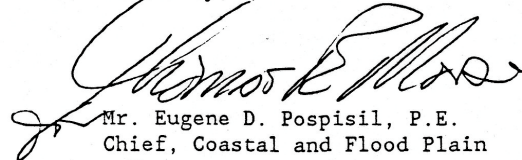
This confirms a telephone conversation between you and Mr. Ken McGowen on March 21, 1990, in which you requested flood hazard information on some property in the community of Welches, Clackamas County, Oregon on the Salmon River.

According to your description, the property is about 100 yards downstream of the Bridge Street Bridge in T3S, R7E, SW.1/4 Section 9. The nearest street identified was E. Manape Drive. In that area the 100-year flood elevation is about 1,332 to 1,333 feet National Geodetic Vertical Datum (NGVD). This information and area is shown on the Clackamas County Flood Insurance Rate Map (FIRM), panel 208. A floodway, which is about 650 feet wide in that reach of Salmon River and includes the site, is shown on the Flood Boundary and Floodway Map covering the same area.

According to the minimum standards for the National Flood Insurance Program, a floodway is an area which needs to be reserved for the faster moving flood waters. It includes the stream channel and adjacent floodplain necessary to carry off the 100-year flood with an "insignificant" increase in flood water elevation. Once a floodway has been established for a reach of stream, the area within that floodway should be kept clear of any new encroachments. This would include any structures or fills. Generally accepted among floodplain management units of Federal agencies is the 3 X 3 rule which defines hazardous flood waters. This means that flood waters which are three feet deep and flowing at three feet per second or any amount greater than that, are considered potentially hazardous to life and property.

Should you have any questions, you may again contact Mr. McGowen at telephone (503) 326-6411.

Sincerely,



Mr. Eugene D. Pospisil, P.E.  
Chief, Coastal and Flood Plain  
Management Branch

(EX 7)

Periann Russell  
3330 SW Knollbrook Ave.  
Corvallis, Oregon 97333

March 14, 1991

Dennis Tylka  
P.O.Box 369  
Welches, Oregon 97067

Dear Mr. Tylka:

I have reviewed the information you sent me in conjunction with the on-site evaluation I performed on Saturday March 2 concerning the Salmon River stream corridor bordering your house and tax lot 1700. The following is a description of my findings concerning the stream corridor:

#### Soil Type

According to the soil map for the Clackamas County Area, the soil type along the stream corridor is 63B-Multnomah very cobbly loamy sand with slopes between 0 and 8 percent. The soil/slope regime is reported as having high drainage capabilities consisting of approximately 5 inches of surface soil consisting of cobbly, loamy sand. The subsoil is described as a mixture of cobbly coarse sand and large stones. Soil suitability for construction, sanitary facilities and recreation activity is rated as severe according to Clackamas County soil maps and tables. The areal extent of 63B-Multnomah is approximately 855 feet on the tax lot 1700 side of the corridor and approximately 164 feet on the other side. These estimates were taken from the Clackamas soil map you sent me using the state plane coordinates on the map.

#### Vegetation

The natural vegetation has been disturbed on lot 1700 by clearing and by construction of a gravel parking pad. Vegetation along the corridor at the point of disturbance extends approximately 5 to 15 feet from the stream and consists primarily of douglas Fir, western red cedar, maple leaf, western hemlock and red alder. The remainder of the lot vegetation is undisturbed.

#### Bank Stability

The stream is supported extensively with riprap to ensure bank stability during base flow and moderate storm events (5-25 year recurrence intervals) of the stream. However, given the occurrence of a large storm event, bank stability is unpredictable. While 63B Multnomah soil is well drained, it also has a great amount of pore space allowing it to hold water when water input is faster than drainage such as in flood stage. This condition would produce unstable conditions.

(EX 8)



#### Flooding

According to the Clackamas County Floodway boundary and floodway map, the corridor and property are within current flood plain and floodway boundaries.

#### Slope of the land abutting the stream

Slope measurement was not conducted manually, but Clackamas County soil maps indicate slopes to be between 0 and 8 percent which agree with my estimates.

#### Stream Character

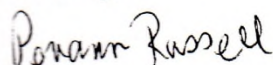
Observation indicates a healthy stream in terms of flow regime, riparian vegetation water quality and overall diversity. Additionally, the literature you sent to me included scientific support for my observations.

It is difficult to predict the cumulative affects of grading and filling in the specific vicinity without further study, but it can be safely stated that any disturbance of natural environments has an effect on the subsequent processes and can potentially affect water quality and stability. In the case of vegetation removal alone, the area's hydrologic regime is altered by the removal of the key component in the system responsible for evapotranspiration and inception. The absence of these two processes usually results in increased runoff that can lead to increased erosion depending on the infiltration rate of the soil and the vegetation cover. Furthermore, grading and filling can make additional modifications to the corridor environment by removing naturally permeable material and replacing it with an artificial permeable layer resulting in changes in runoff. In the case of lot 1700, the gravel is permeable and can be considered compatible with the normal soil type, though the repercussions are not conclusive.

There are two questions prevailing in your situation: 1) How far must a dwelling or constructed project be set from a stream to avoid negative impact to the stream? 2) How much buffer does a stream corridor require to sustain its integrity? These questions can be answered in terms of the stream corridor characterizations listed above, but not without a guiding framework. I do not believe an accurate assessment can be made without a more quantifiable framework. For example, one of the documents you sent me stated that a minimum of 50 feet was recommended for the width of corridor. Why 50 feet? How does the observation of stream corridor characteristics, when evaluated, add up to 50 feet? This number seems totally arbitrary.

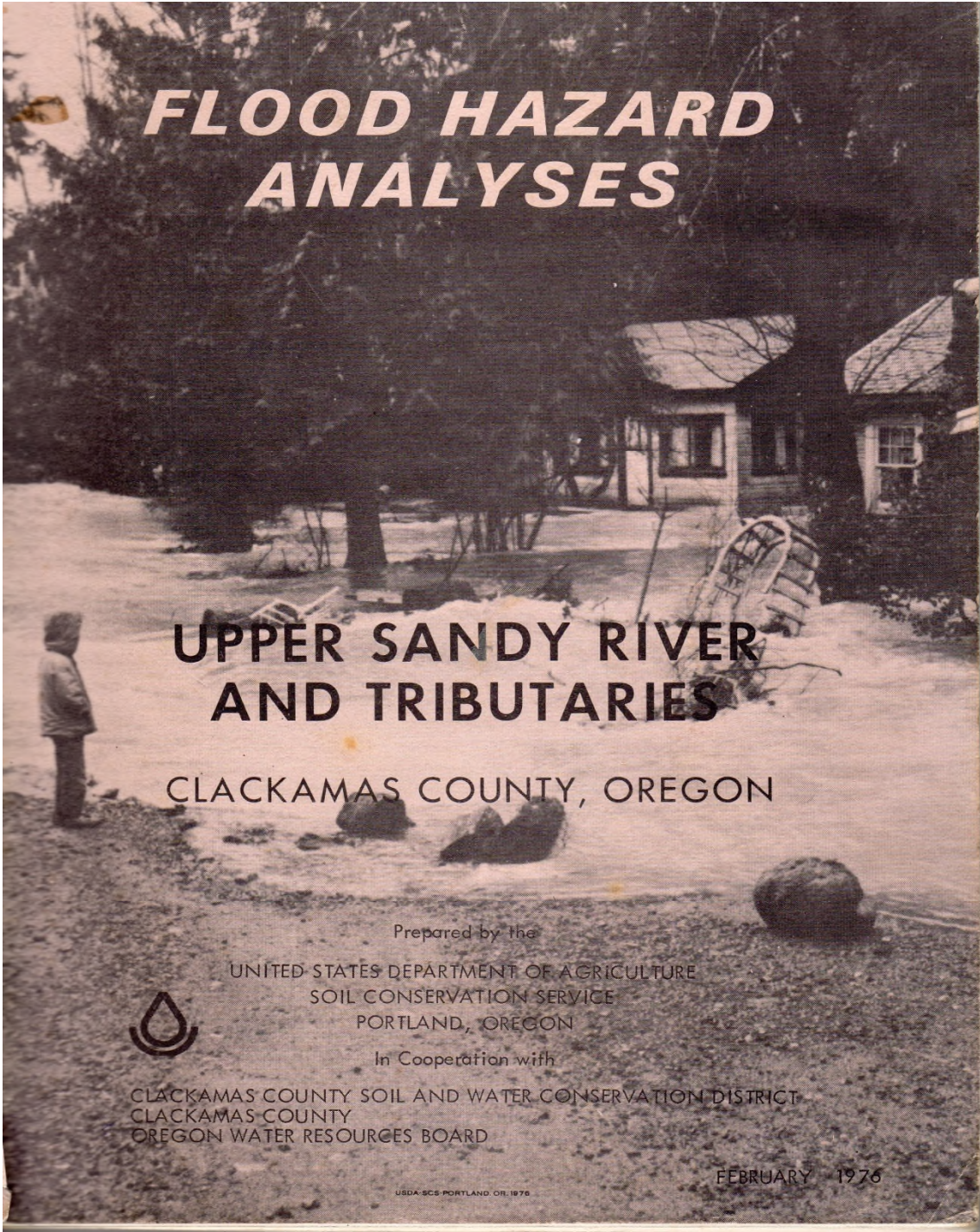
If you have any questions or comments regarding my findings, please feel free to call me at 753-7567 (home) or at 737-1221 (school) or at 757-4590 (Environmental Protection Agency).

Sincerely,



Periann Russell

(EX9)



(EX10)



Ex 11



Ex 12

December 10, 2018

Planning Commission Chair Pasko and fellow Commissioners,

As you consider the proposed amendments to the Floodplain Development Ordinance (ZDO-275), we ask that you also consider amendments that we are proposing to the purpose statement and two other sections of this ordinance, that better reflect the best available science for floodplain hazard management.

In Sections 703.09 and 703.10, we ask that you consider amendments that would reduce the likelihood of downstream flooding by restricting the placement of dikes, levees and dams, and clarifies a cut-and-fill requirement for a net reduction in fill volumes, not a no-net-loss requirement. Flood events and volumes are increasing in frequency and for the purposes of protecting people and property we should require measures that will improve conditions in flood hazard areas over time.

The amendments to the Purpose Statement that we'd like to propose are:

1. to explicitly state the goal of minimizing public costs associated with toxic substance contamination and subsequent environmental damage, alongside the goals of minimizing rescue and relief efforts, resulting from flood hazards;
2. to recognize the role that ecological services can serve in managing flood risks and moderating impacts to people and property; and
3. to explicitly assert the goal of leveraging the FEMA NFIP Community Rating System voluntary measures to reduce flooding hazards and impacts upon people and property.

Amend

703.02.L. Minimize the need for rescue, relief, and toxic substance and environmental hazard clean-up efforts associated with flooding of developed land undertaken at the expense of the general public.

Add:

703.02.M. To leverage Natural infrastructure including large, mature trees, riparian buffers, wetlands in the headwaters and floodplains as the best proven methods of reducing flood risk to people and property.

703.02.N. To leverage the FEMA NFIP Community Rating System voluntary measures to reduce the risks of flooding hazards and maximize rate reduction opportunities for county landowners who participate in the NFIP.

Thank you for your consideration.

Respectfully,

Joseph P Edge  
Chair, North Clackamas Urban Watersheds Council

Cc: Neil Schulman, Executive Director, North Clackamas Urban Watersheds Council

December 5, 2018

Steve Hanschka, Senior Planner  
Clackamas County  
Dept. of Transportation and Development  
150 Beaver Creek Rd.  
Oregon City, OR 97045  
[stevehan@clackamas.us](mailto:stevehan@clackamas.us)

**RE: ZDO-275 Floodplain Management District Updates**

The Urban Greenspaces Institute (UGI) welcomes the opportunity to comment on proposed changes to the Clackamas County zoning code ZDO-275 Floodplain Management District (FMD). In general, we support the updates but in places we believe the code could be improved further. Please see our detailed comments below.

UGI works across the Portland-Vancouver metropolitan region to integrate greenspaces with the built environment. We engage with agencies, nonprofits, and the public on collaborative conservation initiatives and how to best leverage our limited public monies to achieve wildlife habitat connectivity, clean water, and public access to nature.

*703.01 Findings of Fact and 703.02 Purpose* – In addition to highlighting the significant impacts on human health, safety, financial well-being, and general welfare from flood losses, we urge the County highlight the essential ecological services that floodplains serve.

Floodplains represent essential freshwater habitat for imperiled salmon and steelhead, as well as a host of other highly valued fish and wildlife. Intact, functioning floodplains can help buffer downstream flood impacts, through spreading floodwaters, attenuating and reducing peak flows, and infiltrating high flows that recharge local groundwaters that sustain late summer base flows.

We encourage the County to include a Purpose statement that makes these ecological functions and values explicit by recognizing Special Flood Hazard Zones (SFHZ) and the associated Riparian Buffer Zones (RBZ) as essential fish habitat and wildlife habitat, to mitigate impacts from new and existing land uses on the SFHA and RBZ, and to acknowledge the other critical ecological functions and values that floodplains serve.

*703.09 Floodplain Development Permits* – In general, we support the proposed language and changes to this section of the code. However, we have one small suggestion for improvement. Under 'D. Conditions of Approval', we suggest striking j. ("Requirements for construction of channel modifications, dikes, levees, and other protective measures.") or at least limiting these options for people developing in

floodplains. These options should be a last resort and only used when other options and approaches are exhausted. When and where new channel modification is used, the landowner/proponent should mitigate their use by the removal of other channel modifications/bank armoring at a 2:1 ratio.

*703.10 General FMD Standards* – Under ‘B. Construction materials and methods, and utilities’, we appreciate the addition of language at 6. to ensure that on-site waste disposal systems be located to avoid impairment to them or contamination from them during flooding consistent with Oregon Department of Environmental Quality standards.

Under ‘F. Fill’, we appreciate the County’s current requirements around balanced addition and removal of fill at or below the base flood elevation. However, we encourage the County go farther and consider additional requirements for *reducing* fill (that is going beyond a simple balancing exercise), especially where floodplains are highly-constrained and there are high flood risks to existing homes or infrastructure.

Under ‘G. Stream Crossings, Including Bridges and Culverts, and Transportation Projects’ we think there is even greater opportunity to go beyond a simple balancing exercise of fill and removal. Especially in the case of public transportation projects, we suggest the County should look at requiring the removal of fill from floodplains, focusing on floodplain area that are highly constrained by existing development, roads, and other human infrastructure.

UGI asserts that stream crossings should be designed to allow *and restore* fish passage, *consistent with Oregon Department of Fish and Wildlife fish passage design criteria*. We would like to see Clackamas County add the above-italicized language to ensure there is consistency with ODFW design standards. This addition parallels what the County proposed to do with on-site waste disposal systems (referencing ODEQ standards).

Under ‘K. Riprap or Other Structural Stream Bank Protection Measures’, we think the requirements need to be strengthened. Rather than statements that new structures not encroach any further into stream channels than pre-existing conditions, we suggest a requirement that new riprap or other structural stream bank protection must be set back (where feasible) and mitigated with the removal of an equal or greater amount of bank armoring elsewhere on/off the property.

We suggest the updated code allow stream bank stabilization only if a feasible alternative does not exist for protecting structures, roadways, flood protection facilities or sole source access routes; and prohibited otherwise. If used, bank stabilization methods must be required to use bioengineering techniques to the maximum extent practical. Though technical guidance does not yet exist for Oregon, we would encourage the County to look at and reference the Washington State Integrated Streambank Protection Guidelines



<https://wdfw.wa.gov/publications/00046/>.

*Other missing but needed elements* – Other elements that we would like to see included in the Floodplain Management District update are: detailed specifications on mitigation, improved variance procedures, and new standards for impervious surfaces and riparian vegetation. The proposed code lacks explicit mitigation requirements that go beyond the simple 1:1 balancing exercise for the placement of new fill and other structural improvements. By including a special section on mitigation, the County to more clearly specify how and where mitigation for the placement of new fill and bank armoring could take place, and the code could work more effectively to discourage the use of these practices.

The proposed codes around variances could be strengthened to limit the use of variances and make compliance with the new code standards easier. Finally, there is no mention of limits on new impervious surfaces in the code, and we believe something must be included to safeguard the ability of floodplains to infiltrate floodwaters. This is another element that could benefit from a mitigation strategy. We encourage the County to give more thought to these missing elements.

The proposed updates to the Clackamas County Floodplain Management District represent needed improvements to the County's current floodplain development rules. In addition to the habitat protection benefits these new rules will mean for imperiled salmon, the new code will provide additional safeguards for the public in the face of shifting climate regimes and flashier runoff regimes, under which flooding could worsen or become more frequent in many settings across Clackamas County.

Thank you for the opportunity to comment.

Sincerely,

  
Ted Labbe

Policy and Program Director  
Urban Greenspaces Institute