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News from Region 10



Regulating Fences in the Floodplain

Suzie Sarpong, P.E., FEMA Region 10

A question that is frequently asked of Floodplain Administrators is “do I need to issue a Floodplain Development Permit for a fence in the floodplain?” The answer is simple – yes. A permit is required for any development in the Special Flood Hazard Area as required in 44 CFR §60.3(b)(1) and in every local floodplain management code adopted by communities. “Development” is defined as any human-made change to land and the definition is intended to cast a wide net. However, this is generally followed up with the question “are there any guidelines for fences in floodplains?” While FEMA has not issued any specific guidance for fences in the floodplain, an understanding of the potential impacts as a result of constructing a fence or wall in the floodplain or floodway can help a community develop design guidelines to minimize these potential impacts.

Fences and walls come in different styles and materials. Masonry block,

chain link or woven wire, horizontal or vertical wood slats - all of these may affect flood risk and may exacerbate flooding conditions by serving as a dam whether by virtue of its material and construction or from a pile-up of flood-carrying debris blocking spaces and not allowing water to flow through. The most obvious adverse impact is altering flood flow by shifting floodwater onto adjacent neighbors, either causing flooding to occur in areas that were previously not flood-prone or increasing the amount of flooding from previous conditions. Another hazard would be a build-up of water behind the fence that suddenly breaks, creating a mini-flash flood resulting in higher flooding downstream and potentially more damage than would have occurred otherwise.

Good floodplain management considers the effects the proposed design of a fence or wall may have based on the site-specific flooding conditions and should offer design guidelines to reduce the adverse impacts or obstruction that could result from construction of a fence or wall.

Continued on next page

Fences in the Floodplain (cont'd)



Figure 1: An example of how a chain link fence becomes a debris dam.

Proposed fences or walls within the floodway require extra scrutiny. A hydrologic and hydraulic analysis is required to ensure there is no increase in the base flood elevation for any proposed obstruction in the floodway. Ideally, design guidelines should not allow block walls in the floodway at all. Other types of proposed fences require extra scrutiny to ensure there is no increase in the base flood elevation and that the supports for the fence, if allowed, are appropriately anchored for scour to ensure the fence and/or supports do not get uprooted and transported downstream, adding additional debris and potential hazards.

Design guidelines for fences and/or walls in the floodplain don't have to be weighty. They could include: requiring a setback from property boundary to alleviate shifting floodwaters on the adjacent properties; elevating the bottom chord of the fence or wall to the base flood elevation to allow floodwater and the debris carried by floodwater to flow underneath the fence, preventing the inadvertent dam

**Figure 2: Standards for Fencing and Walls
Pima County Regional Flood Control District, AZ**

Fence or Wall Type	Uses of Fencing/Walls Allowed				
	Floodway Fringe	Floodway	Main Channel	Shallow Sheet Flow Area	Ponding Areas (w/ Limited Vel.)
A	Yes	Yes	Yes, unless the purpose is to contain livestock within a corral	Yes	Yes
B	Yes	Yes, with limited cross fencing	No, this usually involves livestock	Yes	Yes
C	Case by case review of design required.				
D	Yes, if elevated to or above the flood height. ¹	Case by case review of design required.	No	Yes, if elevated to or above the flood height. ¹	Yes
E	Yes, if elevated to or above the flood height. ¹	No	No	Yes, if elevated to or above the flood height. ¹	Yes
F	Case by case review of design required.	No	No	Yes, if elevated to or above the flood height ¹ , or adequate openings provided	Yes, if elevated to or above the flood height ¹ , or adequate openings provided

Fence/Wall Types:

- A. "Open" barbed or barbless wire. For floodplain management purposes, barbed and/or barbless wire will be considered "open" if there is no more than one horizontal strand per foot of height¹ and no more than one vertical wire or post every six feet.
- B. "Open" pipe or rail fencing (e.g. corrals). For floodplain management purposes, pipe/rail fencing will be considered open if the horizontal pipes/rails occupy less than 10% of the area fenced and posts are spaced no closer than eight (8) feet.
- C. Collapsible fencing.
- D. Other wire, pipe, or rail type fencing (e.g. field fence, chicken wire, etc.) which does not meet the "open" requirements described above.
- E. Chain link fencing
- F. Continuous wood fencing or masonry walls.

Fencing and Walls in floodplains and/or erosion hazard areas require a Floodplain Use Permit.

¹ Individual horizontal wire strands can be placed below the flood height provided they are spaced no closer than six (6) inches apart. Individual vertical wire strands can be placed below the flood height provided they are spaced no closer than six (6) feet apart. For wire, pipe, or rail fencing that does not meet the "open" requirements, and for wood or masonry walls/fences, the bottom of the wall/fence must be elevated to or above the elevation of the water during the 100-year flood event. Wood and masonry fencing/walls do not need to be elevated if they provide enough openings at their bases to allow the free flow of floodwaters without increasing the depth of water at all.

situation; openings in a solid wall, similar to flood vents; or requiring an impact analysis or hydrologic and hydraulic study on fence proposals.

Figure 2 above provides an example to help with permitting fences and walls in the floodplains and floodways. Consider customizing this to fit the flooding conditions in your area!

For more information, please contact Suzanne Sarpong at Suzanne.sarpong@fema.dhs.gov.

Newsletter Ideas?

Want to spread the word about an upcoming event or recent success story? Let us know what you want to see in future issues! Articles can be up to 500 words and may include pictures.

Email RXNewsletter@starr-team.com.

Oregon ESA Integration Planning

Stakeholder Engagement Continues

If you attended the recent NORFMA Conference and heard FEMA Region 10's Erin Cooper present alongside Sara O'Brien, Executive Director of the Willamette Partnership, you heard about the ongoing stakeholder engagement process surrounding the National Flood Insurance Program (NFIP) and Endangered Species Act (ESA) considerations for participating Oregon NFIP communities and tribes. Erin and Sara are working alongside a team of dedicated partners to ensure that planning for the future implementation of the NOAA Fisheries Oregon NFIP Biological Opinion will employ the most collaborative approach possible.

To meet that goal, Region 10 staff and partners are continuing the conversation by hosting a series of virtual meetings with industry

groups, local and tribal governments, and other interested organizations through October to gain input on strategy development for continued implementation of the NFIP that doesn't cause continued jeopardy to native salmon and other listed species in Oregon floodplains.

Visit oregonnfip.org to learn more and to sign up for future project notifications. You may also contact Erin Cooper, FEMA Region 10, via email to discuss the project: erin.cooper@fema.dhs.gov.

NFIP 102 Workshops

Upcoming trainings by Idaho Department of Water Resources

This November, the Idaho Department of Water Resources is hosting two free workshops which will cover "NFIP 102" topics including permitting, substantial damage, substantial improvements, manufactured homes, elevation certificates, LOMCs, and more.

Course Dates and Locations

November 17, 2020

8:30am – 4:30pm

City of Rexburg Council Chamber Room

35 N 1ST E, Rexburg, ID

November 19, 2020

8:30am – 4:30pm

City of Pocatello Water Department 1889 N Arthur Ave, Pocatello, ID

For additional information or to RSVP for one of these events, please contact the Idaho State NFIP Coordinator, Maureen O'Shea at maureen.oshea@idwr.idaho.gov.



Ask the Help Desk

The Region 10 Service Center is here to help local community officials and stakeholders with technical, training, mitigation, and mapping questions.

Email RegionXHelpDesk@starr-team.com.

Online Training

(All times Pacific)

BRIC Series: Planning Application Development

October 7, 10 am
Online – 1 CEC

CRS: Changes in the CRS – 2021 Addendum to Manual

October 13, 10 am
Online – 1 CEC

CRS: Substantial Damage Properties Management Plans

October 14, 10 am
Online – 1 CEC

BRIC Series: Project Scoping Application Development

October 14, 1 pm
Online – 1 CEC

BRIC Series: Project Grant Application Development

October 21, 10 am
Online – 1 CEC

STARR: Floodplain Development Permit Review

October 22, 9 am
Online – 1 CEC

STARR: Inspecting Floodplain Development

October 22, 10:30 am
Online – 1 CEC

BRIC Series: Benefit Cost Analysis for Basics Projects

October 28, 10 am
Online – 1 CEC

To register for online courses, visit STARR's training site: j.mp/starronlinetraining, or email RXTraining@starr-team.com.