



# Applying HUD's Floodplain Management and Wetlands Protection Standards

U.S. Department of Housing and Urban Development  
Office of Environment and Energy



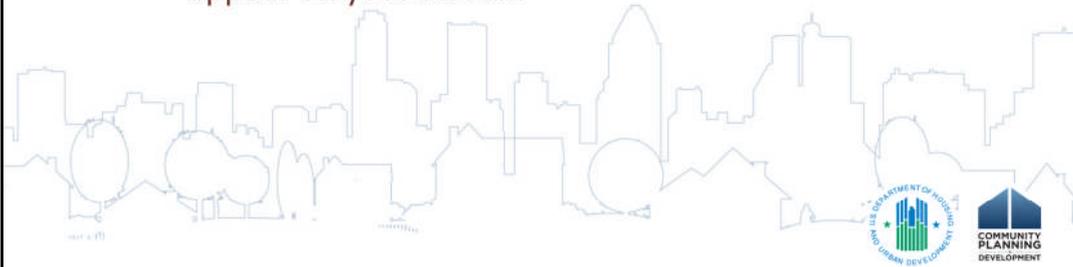
# Webinar Format

- Presentation will last approximately 45 minutes followed by 45 minutes of Q&A.
- Recording of webinar will be posted on HUD's [Office of Environment and Energy Website](#) by the conclusion of the webinar series in October.
- Audience members are muted due to the high number of participants.



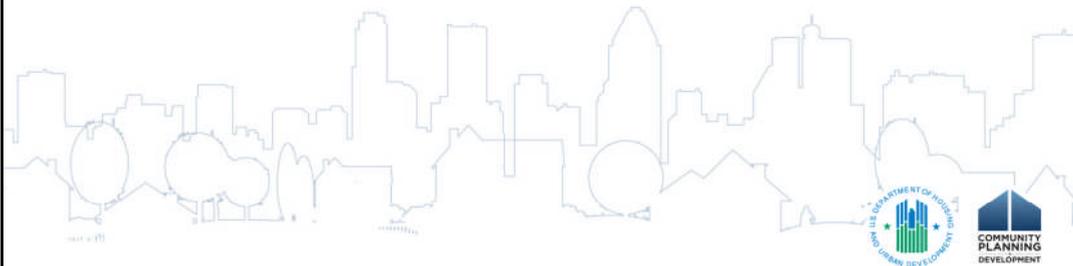
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- If you have technical difficulty with the audio or video portions of this webcast, try:
  - Logging off, then logging in again
  - Requesting help through the Q &A box that will appear on your screen.



# How to Submit Questions

Type your questions in the Q & A box that will appear on your screen during the presentation. Technical questions will be addressed right away; content questions will be answered after the presentation.



# Executive Order 11988 Floodplain Management Training



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U.S. Department of Housing and Urban Development Office of  
Environment and Energy

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# Executive Order 11988

Requires Federal Agencies to

- avoid development in the Floodplain
- develop regulations

(24 CFR Part 55)



The executive order 11988 was signed during the Carter Administration

THE Purpose :

Federal Agencies should avoid directly or indirectly supporting development in the flood plain unless there are no practicable alternatives.

Click

Further it required Federal Agencies to develop regulation to carry out the EO. At HUD the regulation is 24 CFR Part 55.

# Floodplain Management

Purpose: Federal Agencies should

- avoid development in base (i.e. 100-year or 500-year for critical actions) floodplain
- avoid adverse effect to FP
- study alternatives to project



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It directs federal agencies to avoid development, (click) avoid actions that would have an adverse effect, (click) and to study alternative s



Floods cause millions of dollars of damage to private property and threat to human life every year in the US and when the flood comes it is often the Federal government who is called to assist the victims.

Also it is a serious threat to the health and safety of citizens. In our photo here the road is flooded making it difficult to provide emergency assistance.

# Floodplain Management

24 CFR Part 55

**Applies to physical actions in 100yr (or critical actions in 500yr):**

- 1-4 family rehab if > 50% value
- Buildings
- Roads
- Pipelines
- **Anything except minor clearing and grubbing**

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HUD's environmental regulations applies to:

Federally undertaken, financed or assisted construction and improvements and;

Read the list:

Note The regulation does not prohibit approval of such actions (except certain actions in high hazards areas) but provides a consistent means for implementing the Department's interpretation of the EO (the eight step process)

## 24 CFR Part 55.12

### Eight Step Process N/A

- 1-4 family dwelling < 50% change in value
- Minor repairs NOT Rehab (see Q and As)
- Incidental portion in floodplain
- Imminent threats to health/safety
- Minor amendment to approved action
- Down payment assistance to existing
- Areas with LOMA/LOMR
- Mortgage Insurance (Single Family)

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55.12

Inapplicability:

The eight step process does not apply to:

- \* HUD mortgage insurance assistance for the purchase, mortgaging or refinancing of existing one to four family properties;
- \* Financial assistance for minor repairs or improvements on one top four family properties;
- \* A project site with an incidental portion located in the floodplain if the construction doesn't occupy the floodplain
- \* Interim assistance involving imminent threats to health and safety;
- \* A minor amendment to a previously approved action with no additional adverse impact on or from a floodplain. IF the rehab is major "substantial improvement" then must do eight step process;
- \* Housing Vouchers under the Section 8 existing Housing Program or other forms of rental subsidy that are not project based;
- \* Those areas that have been determined by FEMA to not be located in a flood hazard area due to a LOMA or LOMR (Letter of Map Revision)

# Alternatives



New Site at a  
higher elevation  
or safer area



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As early as possible program participants should be encouraged to find ways to avoid the flood plain.  
Choosing an entirely new site with out flood plain is ideal but not always possible.

# Alternatives

New Site

Redesign Existing Site

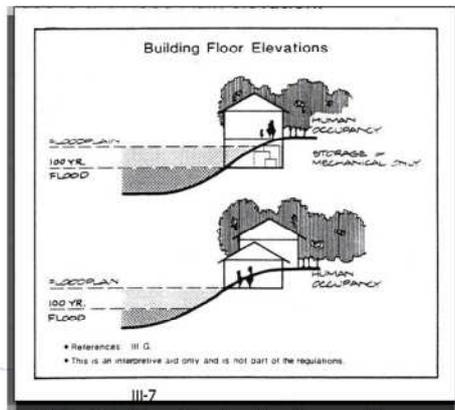
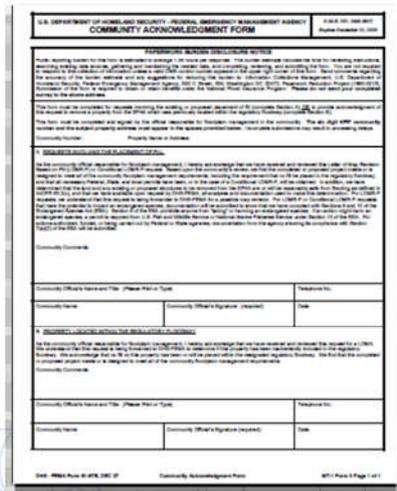


Image from town of Avon, CT  
[http://www.town.avon.ct.us/Public\\_Documents/0000FB6A-80000001/section3](http://www.town.avon.ct.us/Public_Documents/0000FB6A-80000001/section3)



Also the current site can be redesigned so that the construction is not located in the flood plain.

# Alternatives



The image shows a FEMA Community Acknowledgment Form, Form No. 475, dated 11/2010. The form is titled "FEDERAL EMERGENCY MANAGEMENT AGENCY COMMUNITY ACKNOWLEDGMENT FORM". It contains several sections for providing information about the community, including the community name, type, and location. The form is designed to be filled out by the community and submitted to FEMA.

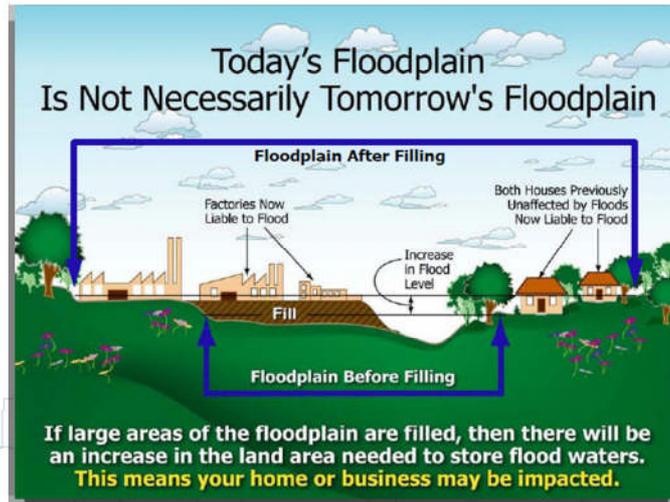
New Site  
Redesign Existing  
Site

Obtain LOMA or  
LOMR

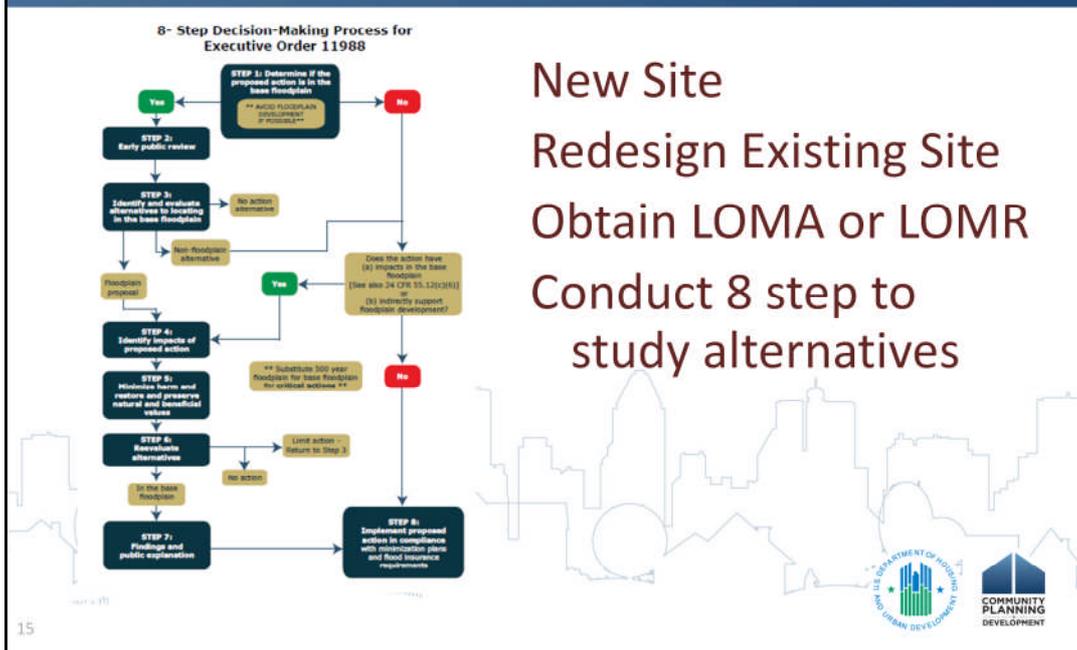


The applicant could obtain a Letter of Map Amendment or a Letter of Map Revision from FEMA that actually removes the site or portions of the site from the flood plain. Conditional versions (CLOMA CLOMR) set forth a process for obtaining compliance in the future. Details can be obtained from your FEO.

# Be Aware of Impacts



# Alternatives



Finally if the applicant indicates they are submitting the project in the Flood Plain HUD must conduct the 8-step process.

HUD cannot delegate this part of the review. Program staff must conduct the 8 step process in writing. Consult with 55.12 to see when the process is not applicable and when the public notices are and are not applicable. Lets quickly review the process.

# Floodplain Management Decision Making Process

Requires :

- Consideration of alternatives
- Public Notice/s (2)
- Mitigate damage

Process called: 8 Step Process

Model 8 Step Process available at:

[http://portal.hud.gov/hudportal/documents/hudoc?id=DOC\\_14214.doc](http://portal.hud.gov/hudportal/documents/hudoc?id=DOC_14214.doc)

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Read the screen

Have you performed an 8 Step Process for floodplains or wetlands before?  
Yes/No

## The 8-Step Process: Step 1

**Is the site in the 100 yr Floodplain (or 500-year floodplain for critical actions)?**

IF no,

- Photo Copy FIRM Map and panel
- Mark the site
- Use to document the ER
- Proceed with project

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Step 1 Determine if the proposed action is in the 100 year floodplain or the 500 year for CRITICAL actions;a critical action is a irreplaceable record, explosives, and disabled occupants

Photocopy the Flood Insurance Map,mark the site and if the site is not in the FP proceed you are done with the process.

However,.....

## Prohibitions on Federal Assistance

**Floodways:** portion of floodplain which is effective in carrying flow, where the flood hazard is generally greatest, and where water depths and velocities are highest.

- ALL ACTIONS ARE PROHIBITED except for functionally dependent uses

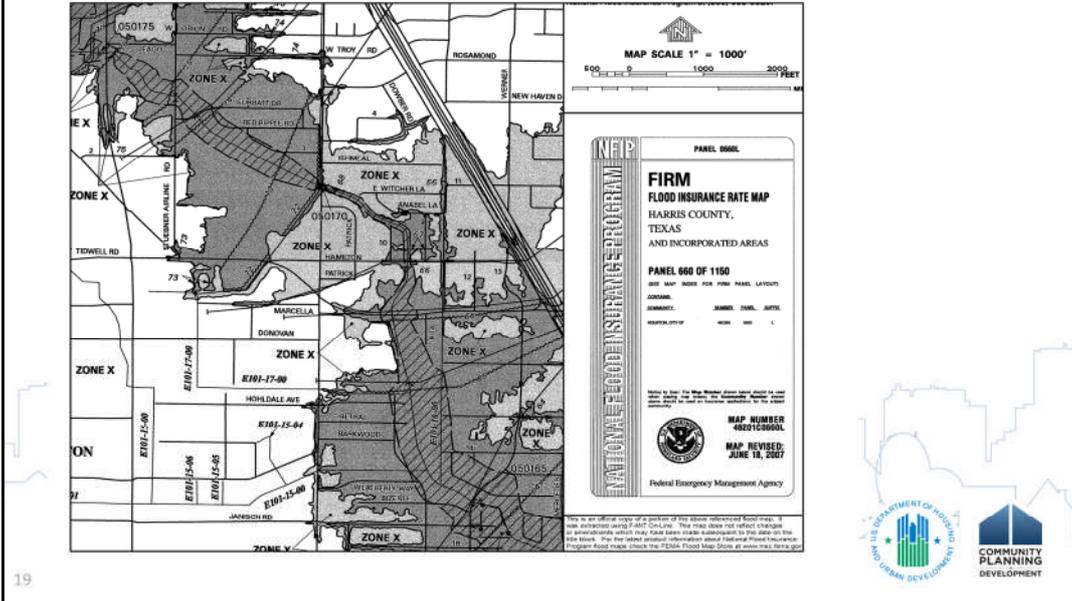
**Coastal High Hazard Areas (V Zone):** area subject to high velocity waters from hurricanes or tsunamis.

- Critical Actions are prohibited in these areas
- Action must meet NFIP standards or standards applicable at the time of construction

\* See 55.1(C) for further information.



# Example of a FIRM

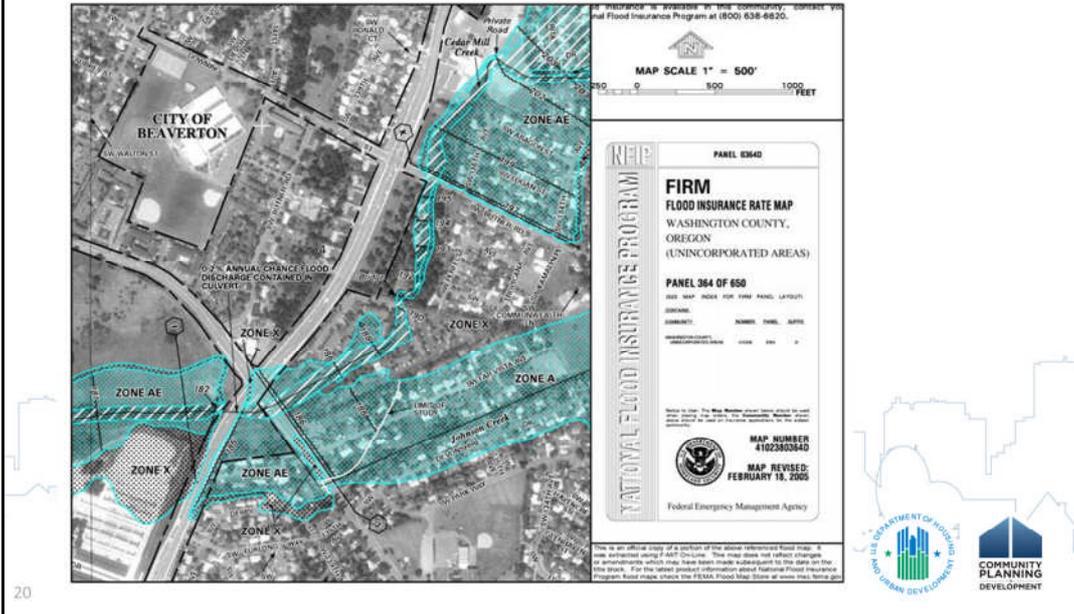


Have you used a FEMA Flood Insurance Rate Map before?

Yes

No

# Example of a DFIRM





If the site has flood plain but not where construction will take place what do you do?

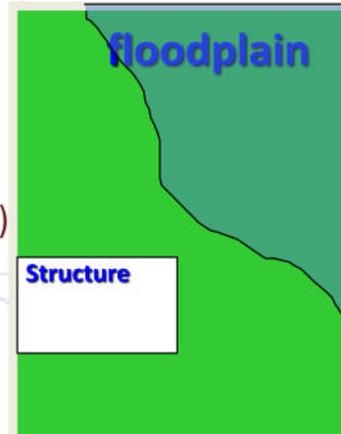
## The 8-Step Process: Step 1

**Is the site in the 100 yr Floodplain\* (marked as an A, V, or E Zone on the FIRM)?**

IF no, for building or construction

- Photo Copy FIRM Map and panel
- Mark the site
- Use to document the ER
- Create covenant or restriction & drainage plan (24 CFR Part 55.12(c)(6))
- Proceed with project

\*Or 500-year floodplain for critical actions



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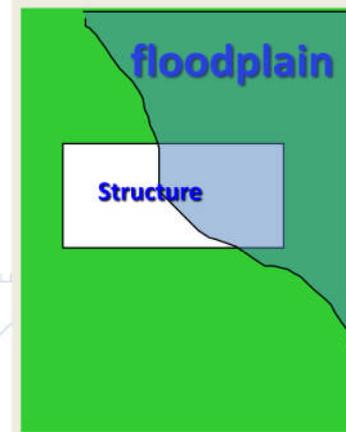
**Step 1** If the building is not in the flood plain consult with 55.12 (b)(6) and create restrictive covenant to prevent future development and drainage plan to prevent damage to FP.

## The 8-Step Process: Step 1

**Is the site in the 100-yr Floodplain\*?  
site? building? both?**

IF yes to building or both:  
*Continue to Step Two*

\*Or 500-year floodplain for  
critical actions



If yes to development in FP proceed to step 2

Sea-Level Rise and increases in extreme events (floods and droughts) are occurring and current maps do not consider trends or anticipated conditions:



Washaway Beach, Cape Shoalwater, WA has been eroding an average of 100 feet per year for a century.



In this Aug. 24, 2010, photo is a view looking east about a block from the tiny town of Minnewaukan, ND's only school. Devils Lake, which was once 8 miles away, today is lapping at the community from three sides. (AP)

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Attribution to climate change aside, or solar flares and whatever Chamber of Commerce line of the week, it is occurring and documented. In 2007, the [Intergovernmental Panel on Climate Change's Fourth Assessment Report \(AR4\)](#) predicted that by 2100, [global warming](#) will lead to a sea level rise of 180 to 590 mm. More recent forecasts predict even greater levels.

## Step 2 Early Public Notice

*Allow 15-day comment period*

### **Notice shall state:**

- The name of the project
- Proposed location
- Describe the activity
- Amount of property in the FP
- Location of the environmental record
- Name the Official to send comment to

• Example at:

[http://www.hud.gov/offices/cpd/environment/review/sample\\_notices\\_flood.doc](http://www.hud.gov/offices/cpd/environment/review/sample_notices_flood.doc)

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Early public notice must notify public of potential development in FP

## Step 3 Evaluate Alternatives

### What are the alternatives?

- Alternative sites?
  - natural conditions
  - social demands/needs
  - economic cost
  - legal limitation
- Alternative methods to achieve project goals
- A “no project” alternative

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Step 3 in writing consider the feasibility of alternatives including not funding the project as proposed. Consider, the physical conditions, the need, costs and zoning uses.

## Step 4 Identify Impacts

**Impact to the floodplain**

**Impact to people and property**

Types of impacts:

- Positive and Negative
- Concentrated and Dispersed
- Short and long term

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Step 4 Identify how the FP will be impacted for each alternative. Once again this is a planning process a process designed to look for alternatives when practicable.

## Step 5 Minimize Restore and Preserve

### **Minimize harm to lives and property**

- limit fill of floodplain
- minimize grading
- relocate non-conforming structures
- preserve natural drainage
- use pervious surfaces / green alleys
- maintain buffers
- use detention ponds or rain gardens
- use development restrictions such as easements and covenants (see NRCS)
- minimize tree cutting and destruction of wetland vegetation

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Next in writing find ways to reduce the impact and preserve the flood plain

## Step 6 Reevaluate the Project

Is project still feasible considering?

- Exposure to floods
- Potential to increase hazards
- New information gathered in step 4 and 5
- Reevaluate the site and the alternatives considered at Step 3

Reevaluate the proposal based on the data and study you have conducted.

## Step 7 Publish the Final Notice

### If it is determined there is no alternative:

- Publish Final Notice
  - justify location in Floodplain
  - list alternatives considered
  - list all mitigation measures
  - WAIT seven days for comment
  - Example at:

[http://www.hud.gov/offices/cpd/environment/review/sample\\_notices\\_flood.doc](http://www.hud.gov/offices/cpd/environment/review/sample_notices_flood.doc)

Finally publish the final notice notifying the public what alternative was chosen and what mitigation will take place.

## Step 8 Implement the Project



### Program Staff Must:

- continue to monitor and
- ensure mitigation measures are implemented



Continued monitoring and enforcement is the responsibility of the the Program staff. The mitigating measures should be conveyed to the applicant in writing.

## Eight Step Process: Timing



Process must  
be completed  
prior to FONSI

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The 7th step is the final notice (when required) which must be published prior to the FONSI

Step 8 is proceed with the project which is when the FONSI can be made.

## **BUY FLOOD INSURANCE!!!**

(\*this is in red caps for shouting effect/emphasis\*)

The Flood Disaster Protection Act of 1973, as amended, requires that property owners purchase flood insurance for buildings located within Special Flood Hazard Areas (SFHA), when Federal financial assistance is used to acquire, repair, improve, or construct a building.

Note that this is required by a statute and not the E.O. 11988. This requirement will apply in many cases where the 8 Step process may not be applicable.

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Anytime federal financial assistance is used in a floodplain, you must purchase flood insurance (one exception is state formula grants). This is a separate provision from the executive order and will apply even when the 8 Step does not.

Flood insurance requirements cannot be fulfilled by self-insurance except as authorized by law for assistance to state-owned projects within states approved by the Director of FEMA consistent with 44 CFR §75.11.

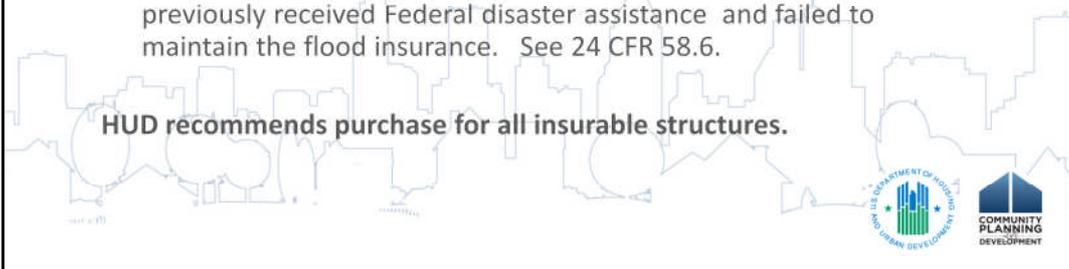
# Flood Insurance

**Duration of Flood Insurance Coverage.** The statutory period for flood insurance coverage may extend beyond project completion. For loans, loan insurance or loan guarantees, flood insurance coverage must be continued for the term of the loan.

**For grants and other non-loan forms of financial assistance, flood insurance coverage must be continued for the life of the building irrespective of the transfer of ownership.**

**One Bite Rule.** HUD cannot offer Federal disaster assistance for a person's property for construction activities, where the person previously received Federal disaster assistance and failed to maintain the flood insurance. See 24 CFR 58.6.

**HUD recommends purchase for all insurable structures.**



# Monitoring Flood Insurance

U.S. DEPARTMENT OF HOMELAND SECURITY  
**FEDERAL EMERGENCY MANAGEMENT AGENCY**  
 National Flood Insurance Program  
**PART 1 (OF 2) OF FLOOD INSURANCE APPLICATION**

O.M.B. No. 1660-0006 Expires August 31, 2013

NEW  
 RENEWAL  
 CURRENT POLICY NUMBER \_\_\_\_\_

**IMPORTANT—PLEASE PRINT OR TYPE**

POLICY TYPE	DIRECT BILL INSTRUCTIONS: <input type="checkbox"/> BILL INSURED <input type="checkbox"/> BILL FIRST MORTGAGEE <input type="checkbox"/> BILL SECOND MORTGAGEE <input type="checkbox"/> BILL LOSS PAYEE <input type="checkbox"/> BILL OTHER		POLICY PERIOD IS FROM _____ TO _____ 12:01 A.M. LOCAL TIME AT THE INSURED PROPERTY LOCATION WAITING PERIOD: <input type="checkbox"/> STANDARD 30-DAY <input type="checkbox"/> MAP REV. CODE CHANGE FROM NON-SFHA TO SFHA—ONE DAY <input type="checkbox"/> LOAN—NO WAITING <input type="checkbox"/> LENDER REQUIRED—NO WAITING	
	NAME, ADDRESS OF LICENSED PROPERTY OR CASUALTY INSURANCE AGENT OR BROKER: AGENCY NO.: _____ AGENT'S TAX ID: _____ PHONE NO.: _____ FAX NO.: _____		NAME, MAILING ADDRESS, AND TELEPHONE NO. OF INSURED: IS INSURED PROPERTY LOCATION SAME AS INSURED'S MAILING ADDRESS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF NO, ENTER PROPERTY ADDRESS, IF RURAL, DESCRIBE PROPERTY LOCATION (DO NOT USE P.O. BOX).	
AGENCY INFORMATION	IS INSURANCE REQUIRED FOR DISASTER ASSISTANCE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, CHECK THE GOVERNMENT AGENCY: <input type="checkbox"/> SBA <input type="checkbox"/> FEMA <input type="checkbox"/> FHA <input type="checkbox"/> OTHER (SPECIFY): _____ ENTER CASE FILE NUMBER: _____		IF SECOND MORTGAGE, LOSS PAYEE OR OTHER IS TO BE BILLED, COMPLETE THE FOLLOWING, INCLUDING THE NAME, AND ADDRESS: <input type="checkbox"/> 1ST MORTGAGEE <input type="checkbox"/> DISASTER AGENCY <input type="checkbox"/> LOSS PAYEE <input type="checkbox"/> IF OTHER, PLEASE SPECIFY: _____	
	NAME AND ADDRESS OF FIRST MORTGAGEE: LOAN NO.: _____ FAX NO.: _____ PHONE NO.: _____		LOAN NO.: _____ FAX NO.: _____ PHONE NO.: _____	
DISASTER ASSISTANCE	RATING MAP INFORMATION NAME OF COUNTY/PARISH: _____ COMMUNITY NO./PARCEL NO. AND SUFFIX: _____ FIRM ZONE: _____ COMMUNITY PROGRAM TYPE IS: <input type="checkbox"/> REGULAR <input type="checkbox"/> EMERGENCY		GRANDFATHERED? <input type="checkbox"/> YES <input type="checkbox"/> NO      IF YES, <input type="checkbox"/> BUILT IN COMPLIANCE? CONTINUOUS COVERAGE? PRIOR POLICY NO.: _____ CURRENT COMMUNITY NO./PARCEL NO. AND SUFFIX: _____ CURRENT FIRM ZONE: _____ CURRENT SFE: _____	
	IS INSURED BUILDING OWNED BY STATE GOVERNMENT? <input type="checkbox"/> YES <input type="checkbox"/> NO		IS BUILDING LOCATED ON FEDERAL LAND? <input type="checkbox"/> YES <input type="checkbox"/> NO	
MORTGAGEE	BUILDING OCCUPANCY <input type="checkbox"/> SINGLE FAMILY <input type="checkbox"/> 2-4 FAMILIES <input type="checkbox"/> OTHER RESIDENTIAL <input type="checkbox"/> NON-RESIDENTIAL (INCLUDING HOTELS/RESORTS)		CONDO FORM OF OWNERSHIP? <input type="checkbox"/> YES <input type="checkbox"/> NO CONDO COVERAGE IS FOR: <input type="checkbox"/> UNIT <input type="checkbox"/> ENTIRE BUILDING	
	NUMBER OF FLOORS IN ENTIRE BUILDING (INCLUDE BASEMENT/ENCLOSED AREA, IF ANY) OR BUILDING TYPE <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 OR MORE <input type="checkbox"/> SPLIT LEVEL <input type="checkbox"/> TOWNHOUSE/ROWHOUSE (INCLUDE LOW-RISE ONLY) <input type="checkbox"/> MANUFACTURED (DOUBLE HOME/TRAILER, TRAILER ON)		IS THIS BUILDING BEING CONSTRUCTED? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> BUILDING WALLED AND ROOFED? <input type="checkbox"/> YES <input type="checkbox"/> NO	
COMMUNITY	BASEMENT ENCLOSURE, DRAINAGE SPACE <input type="checkbox"/> NONE <input type="checkbox"/> FINISHED BASEMENT/ENCLOSURE		IS BUILDING OVER WATER? <input type="checkbox"/> NO <input type="checkbox"/> PARTIALLY <input type="checkbox"/> ENTIRELY	
	IS BUILDING FINISHED?		BUILDING USE: <input type="checkbox"/> MAIN HOUSE/BUILDING <input type="checkbox"/> DETACHED GUEST HOUSE <input type="checkbox"/> DETACHED GARAGE <input type="checkbox"/> AGRICULTURAL BUILDING <input type="checkbox"/> WAREHOUSE <input type="checkbox"/> FOUNDATION, CLUBHOUSE, RECREATION BUILDING <input type="checkbox"/> TOOL/STORAGE SHED <input type="checkbox"/> OTHER: _____	

Grantees can condition assistance upon receiving notification of flood insurance policy changes. Contact information should be placed in the 2<sup>nd</sup> Mortgagee or Other Box.



# HUD and E.O. 11990 Wetlands Protection

**Jerimiah Sanders**  
**Office of Environment and Energy**



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Anonymous wetland from EPA site and Portland Swale



# E.O. 11990 - Protection of Wetlands

- Issued May 24, 1977 by President Carter.
- Purpose is “to **avoid** to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to **avoid** direct or indirect support of new construction in wetlands wherever there is a practicable alternative[.]”



# E.O. 11990 vs. 404 Clean Water Act

## Similarities:

Similar *wetlands* definitions but differ in application:

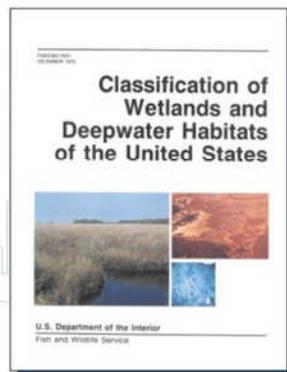
- E.O. 11990 Sec. 7 (c): “Those areas that are **inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.** Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.” EO is more explicit due to a greater number of examples.
- Section 404, 33 CFR 328.3(b): “The term ***wetlands*** means those areas that are **inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.** Wetlands generally include swamps, marshes, bogs, and similar areas.”

sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds

# Sources for Wetlands Identification

Fish and Wildlife Services Classification Manual:

<http://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf#search=>



## E.O. 11990 vs. 404 Clean Water Act

404 jurisdiction can be somewhat ambiguous but basically limited to:

Traditional navigable waters

Tributaries of the above that are relatively permanent (flow year round or continuous flow seasonally, typically three months)

Adjacent waters

Water with a “significant nexus” to a traditional navigable water.

Excludes prior converted cropland

**Note: ALL 404 Wetlands are EO 11990 Wetlands.**

# Wetlands Protection

Decision making process



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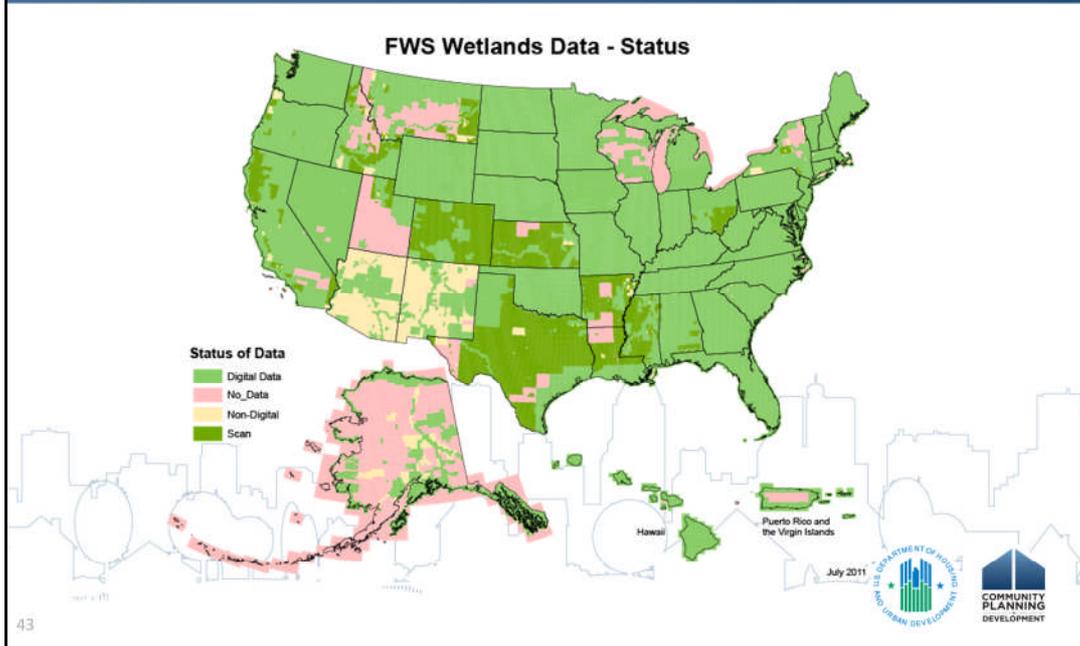
Template

## Step 1: Designated Wetlands

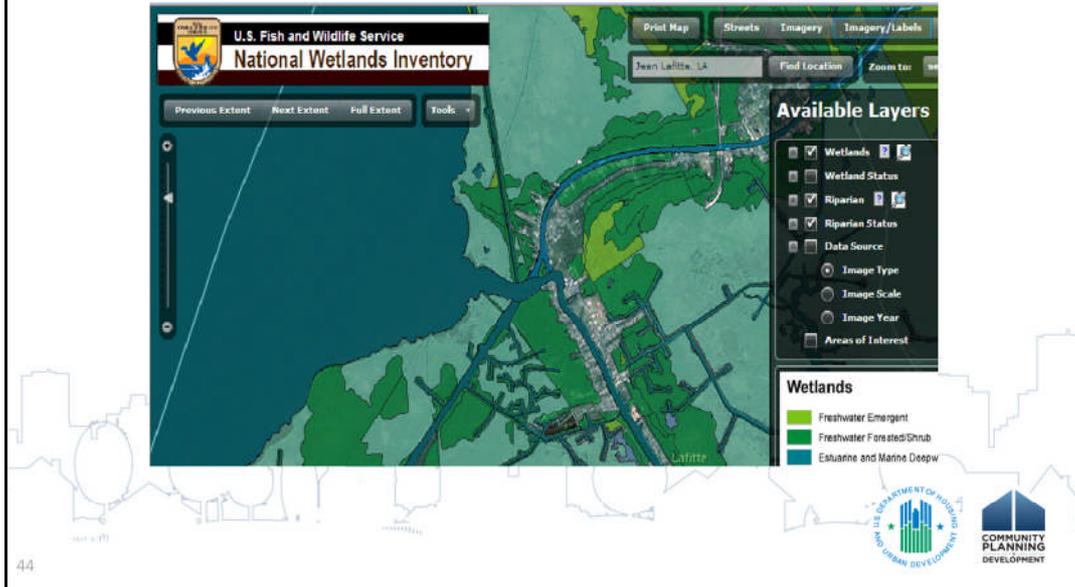
- National Wetlands Inventory as primary and can use NRCS, State, and Local Wetlands Data
- Contact FWS or a wetlands professional if the presence is not shown on maps but is suspected or known.
  - <http://www.fws.gov/wetlands/NWI/Staff.html>
  - [Wetlands Definition for EO 11990: Classification of Wetlands and Deepwater Habitats of the United States, U. S. Fish and Wildlife Service, Cowardin.](#)

\*A site visit or delineation by a wetland professional may also be used to confirm the map's accuracy but it is not required.

# Step 1: Designated Wetlands



# National Wetlands Inventory Map



Have you used the FWS National Wetlands Inventory? Yes/No

# Step 1: Floodplain Presence

For new construction in a wetland and floodplain, combine §55.20 decision making process with E.O. 11990

Sec. 7 for definitions for wetlands and construction (applicability);

Sec. 5 for factors relevant to survival and quality of the wetland (impacts); and

Sec. 2(a) economic, environmental, and other factors such as technology in making the wetland finding. First and second notice cite both Executive Orders (practicability).

## Step 1: Primary NBFV of Floodplain

The wetland is the primary natural and beneficial function and value for new construction proposed in both a floodplain and a wetland.



Step 7 requires that all mitigation measures be undertaken to minimize adverse impacts and to restore and preserve the natural and beneficial functions and values.

## Step 2: Public Notices

Involve public in decision making

15 calendar day minimum comment period

Notice content: project description, location, wetland acreage,

contact, office address and hours.

May combine wetland notice with flood plain notice or Draft EIS, if wetland notice is identified in title.

Published in local printed news

Mailed to federal, state, and local public agencies, organizations, and individuals known to be interested.

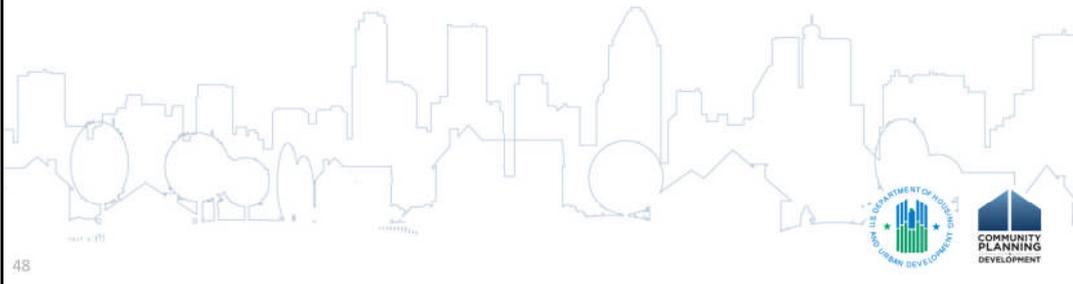
## Step 3: Practicable Alternatives

Identify and evaluate alternatives to construction in wetlands:

Construction locations outside the wetlands

Alternative methods to serve the identical project objective

Alternative not to approve any construction proposing to occupy or modify a wetland



## Step 4: Evaluate impacts to wetlands

Identify and evaluate potential direct and indirect impacts of the proposed construction on the survival and quality of wetlands

Sec. 5 factors:

Public health, safety, and welfare (incl. Water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion).

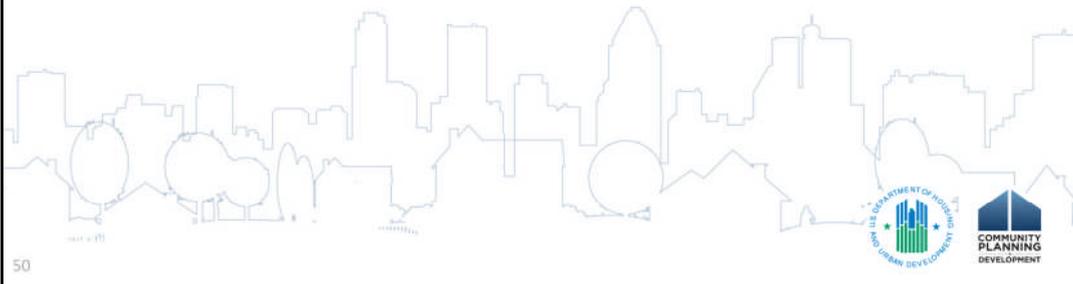
Maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and flood and fiber resources; and

Other uses of wetlands in the public interest, incl. recreation, scientific and cultural uses.

## Step 4: Evaluation

Sec. 2(a) requires decision makers take into account economic, environmental, and other pertinent factors in making a finding.

- (i) cost increases attributed directly to wetland-required construction and mitigation measures to minimize harm to the wetland;
- (ii) increased costs to affordability of housing.



## Step 5: Minimization

Design or modify the proposed construction to minimize the potential adverse impacts to wetlands; and  
Restore and preserve its natural and beneficial functions and values.  
Reject the proposal if minimization is financially or physically unworkable.



## Step 5: Minimization (cont'd)

Note: some minimization examples are manmade swales, permeable surfaces (e.g. green alleys), site planning around sensitive areas, covenants or easements for non-affected wetlands, and compensatory mitigation.



Chicago Green Alley and a Portland, OR swale.

## Step 6: Reevaluate

Whether still practicable, in light of the (1) possible adverse impact on the on-site wetland or (2) whether other neighboring wetlands will be impacted and (3) look at the potential to disrupt the natural and beneficial values of wetlands.

Whether alternatives preliminarily rejected in Step 3 are practicable in the light of information gained in Steps 4 and 5.



## Step 7: No Practicable Alternative Finding

If reevaluation results in a finding of no practicable alternative, publish the final notice for 7 calendar days according to Step 2.

Final notice content include also:

- (i) reasons why the construction must be located in the wetland;
- (ii) list of alternatives considered under Step 3; and
- (iii) cite all mitigation measures to be taken to minimize adverse impact and to restore and preserve the natural and beneficial functions and values.

## Step 8: Implementation

Complete the decision making process for protection of wetlands and the environmental review compliance.

Continuing responsibility exists on part of decision makers and builders to ensure that the mitigating measures identified in Step 7 are implemented.



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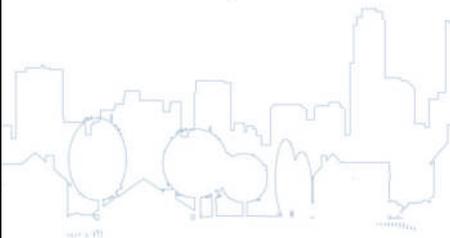
# Conclusion

**Avoidance is the first priority.**

- Tough to recreate
- Bad sites and poor investments: often prone to flooding, wave action, erosion, soil instability, liquefaction, sinkholes, subsidence, and special earthquake hazards



MSOffice



Tigard, OR failed swale



# Who wants a role in this?



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UN DEVELOPMENT

# Resources

ATEC: <http://www.hud.gov/offices/cpd/environment/atec.cfm>

FEMA Map Service Center:

<http://www.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

DFIRM Database:

[http://www.msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&categoryId=12001&langId=-1&userType=G&parent\\_category\\_rn=12009&dfirmCatId=12009&type=1](http://www.msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&categoryId=12001&langId=-1&userType=G&parent_category_rn=12009&dfirmCatId=12009&type=1)

FWS:

<http://www.fws.gov/wetlands/>

