Creating a Flood Ready Community

Delaware Planning Education Program
Module 2
Recommended Strategies for Reducing Vulnerability and Exposure
Overview

- FEMA – NFIP
  - Maps – Know the Risk of Flooding
  - Maps – Limitations
  - Regulations – Minimums aren’t enough
  - Flood Insurance
  - Reduce Flood Risk and Vulnerability
Know Your Flood Risk

- FEMA Flood Insurance Rate Maps (FIRMs).
- FEMA Flood Insurance Study (FIS)
Effective FIRMs in Delaware

- New Castle County
  - February 4, 2015

- Kent County
  - July 7, 2014

- Sussex County
  - March 16, 2015
Probability of Risk

Figure 3-1. This graph shows the relationship between flood recurrence intervals and the probability of an event occurring within a 30-year period.

Percent Chance for One or More Floods of a Given Magnitude Being Equalled or Exceeded in a 30-Year Period

Homeowners Guide to Retrofitting FEMA P-312
Where to view floodplain maps?

www.de.gov/floodplanning
Delaware Flood Planning Tool

Overview

The Delaware Department of Natural Resources and Environmental Control (DNREC) Flood Tool is an Interactive web map application. This tool is designed to aid you in researching your flood risk in the state of Delaware. It is designed to provide floodplain managers, insurance agents, developers, real estate agents, engineers, surveyors, local planners and citizens with an effective means by which to make informed decisions about the degree...
Preliminary FIRMs New Castle Co.
Preliminary FIRMs Kent County
Preliminary FIRMs Sussex County
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Location is WITHIN the FEMA 100-year floodplain

Effective Flood Zone: A

Preliminary Flood Zone: AE

FEMA Issued Flood Map: 10005C0250K

Effective Map Date: 3/15/2015

Watershed (HUC12): Clear Brook-Nanticoke River

Effective Advisory Flood Height: n/a

Preliminary Base Flood Elevation: 31.1
Where to view floodplain maps

- http://fema.maps.arcgis.com/home/
Click on FEMA’s NFHL
View FEMA’s ArcGIS Online
Where to view floodplain maps

- http://msc.fema.gov/portal
View Effective, Preliminary, or Historic
Search Results for LAUREL, TOWN OF

Click subscribe to receive email notifications when products are updated.

**Please Note:** Searching All Products by county displays all products for all communities within the county. You can refine your search results by specifying your specific jurisdiction location using the drop-down menus above.

- Effective Products (12)
- Preliminary Products (41)
  - Preliminary FIRM Panels (35)
  - Preliminary FIS Reports (4)
  - Preliminary FIRM Database (2)
- Pending Product (0)
- Historic Products (16)
- Flood Risk Products (8)

Share This Page.


Official website of the Department of Homeland Security
View Preliminary FIRMds
Using FEMA flood maps as your sole source of flood risk information is like driving forward using only your rearview mirrors.
FEMA Flood Insurance Rate Maps limitations

- FIRM’s show an analysis of flood scenario based on past events and data.
- Indicate areas of high, moderate, low risk.
- Future conditions are not taken into account.
- Margin of error in calculations.
- Mother nature is unpredictable.
- Conditions continuously change – one map will not suffice.
FIRMs do not account for the following:

- Shoreline erosion, wetland loss, subsidence, and relative sea level rise.
- Upland development or topographic changes.
- Degradation or settlement of levees and floodwalls.
- Changes in storm climatology (frequency and severity).
- The effects of multiple storm events.
Other considerations

- Few if any standards existing for development immediately adjacent to the floodplain or outside mapped floodplains.

- ~25% of flood damages nationally occur to structures which are outside a FEMA-mapped floodplain.
House with proposed basement under construction just outside the floodplain filled with groundwater.
Debris

Photo by G. Williams - Seaford 6/26/06
Encroachment

Puncheon Run Floodway

Flood Fringe

Puncheon Run

Copyright
## Floodway data table from FIS

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¹Miles above confluence with Christina River  
²Feet above confluence with Little Mill Creek  
³Feet above the City of Wilmington corporate limits  
⁴Elevation computed without consideration of backwater effects from Delaware River
<table>
<thead>
<tr>
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Today’s Floodplain
Is Not Necessarily Tomorrow’s Floodplain

If large areas of the floodplain are filled, then there will be an increase in the land area needed to store flood waters. This means your home or business may be impacted.
Changing coast

Wave height ≥ 3 feet
Wave height 3.0–1.5 feet
Wave height < 1.5 feet

BFE: Flood level including wave effects
1% annual chance stillwater elevation

1. Unelevated building constructed before community entered the NFIP
2. Properly elevated building
3. Limit of base flooding and waves

Shoreline, Sand beach, Buildings, Overland wind fetch, Vegetated region, Limit of SFHA
Erosion

Broadkill Beach 10/31/12
Multiple events

Photo by T. Pratt 11/8/12
Oceanfront dune providing protection prior to winter storms.
Loss of oceanfront dune protection following winter storms.
Floodplain issues to address

- Development in Areas Without Sufficient Floodplain Mapping and Flood Data
- Inadequate Building Standards
- Inconsistent and / or Minimum Code Provisions
- Lack of Enforcement of Existing Standards
- Real Estate Disclosure form
FEMA Federal Regulations

- 44 CFR 59 & 60 - minimums
- Participation in the NFIP requires adoption of at least minimum floodplain management regulations.
  - Community has ability to adopt higher standards.
  - CRS program rewards adoption of higher standards.
Improved Floodplain Regulations and Enforcement

Benefits:

- Lowers the cost of flood insurance.
- Avoiding NFIP probation ensures continued insurance availability.
- Reduce flood damage and expensive drainage solutions.
Suggested Higher Standards to reduce risk of flood damage

- Freeboard
  - Factor of safety usually expressed in feet above the base flood elevation.
  - Compensates for the many unknown factors that could contribute to flood heights greater than the flood heights calculated for a particular flood event.
Reducing Risk - Higher standards

- 40 of 46 communities chose to adopt some level of freeboard in their new floodplain ordinances.
Lowest floor several feet below BFE – damaged beyond repair
Lowest floor several feet above BFE - no damage
Reducing Risk – Higher Standards

- Reconsider how development is permitted in Coastal A Zones.
  - LiMWA line.

- Require structures seaward of the LiMWA line to be built to Zone VE standards.
  - Pile foundation.

- These structures are still susceptible to 1.5 feet of wave action.
Avoid practices that benefit one property at the expense of another.
Suggested Higher Standards to reduce risk of flood damage

- Require the bottom of the lowest horizontal supporting member of a Manufactured Home to be the lowest floor.
Reducing Risk - Higher Standards

**Figure 3-3.** Manufactured home with lowest floor elevated to the BFE.

- **BFE (NFIP Minimum Requirement)**
- **BFE (Best Practice)**
Best Practices

- APA - Planning Advisory Service Report 584
- Planning and Design principles
PAS Report - General Principles

- Maintain natural and beneficial function of floodplain.
- Adopt a no adverse impact approach to floodplain management.
- Avoid new development in the floodplain whenever possible.
- Use best available data to assess risk.
- Consider future conditions including development impacts and climate change.
Flood Insurance issues

- Biggert-Waters Flood Insurance Reform Act of 2012
- Homeowner Flood Insurance Affordability Act of 2014
- NFIP reauthorized until September 2017.
Lowest Floor elevation relative to BFE

![Graph showing annual premium savings over at-BFE premium for different elevations relative to BFE.]

**Note:** Annual premiums calculated using the *NFIP Flood Insurance Manual*, October 3, 2013, for a one-story single-family home with no basement, no enclosure, and full replacement coverage. Premiums are based on the maximum available coverage of building coverage of $250,000 for building and $100,000 for contents coverage. Zone V building is assumed to be free of obstructions.
If your property is in a floodplain, how you build has a huge effect on the cost of flood insurance.
The National Flood Insurance Program is not currently financially solvent. They do not charge enough to pay expected claims in major events.
U.S. 2016 Billion-Dollar Weather and Climate Disasters

- Rockies and Northeast Severe Weather July 28–30
- Plains Tornadoes and Central Severe Weather May 8–11
- West Virginia Flooding and Ohio Valley Tornadoes June 22–24
- Southeast and Eastern Tornadoes February 22–24
- Western and Southern Wildfires Summer–Fall 2016
- South and Southeast Tornadoes April 26–May 2
- Hurricane Matthew October 7–9
- North and Central Texas Hail Storm April 10–12
- North Texas Hail Storm March 23–24
- Houston Flooding April 17–18
- Texas and Louisiana Flooding March 8–12
- Louisiana Flooding August 12–15
- Southern Severe Weather March 17–18

Western and Eastern Drought Entire Year

This map denotes the approximate location for each of the 15 billion-dollar weather and climate disasters that have impacted the United States during 2016.
Ways to Reduce risk and insurance premiums

- Mitigate
  - Elevate
  - Relocate
- Buyout / remove structure all together
Elevation project

Fenwick Island, DE
Relocation project

Before
Big Stone Beach, DE

After
Buyout

- Williams Street Bowers Beach, DE
Severe Floods in 2008 and 2009
Summary

- Educate residents on their risk.
- Flood insurance alone is not the solution.
- Buildings with floors 18 inches above the base flood elevation are far less likely to be damaged.
- Discourage fill in the flood fringe.
- Locate critical facilities outside of high risk areas.
- Generally discourage development in the floodplain.
“Floods are an act of God, but flood losses are largely an act of man.”

-Gilbert F. White
Questions?

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