

**Floodplain and Drainage Advisory Committee  
Draft Standards and Recommendations  
January 27, 2012 Committee Meeting**

Based on presentations and discussions at the three committee meetings held to date, the following draft standards and recommendations have been developed for discussion purposes. Wording would need to be refined before standards are appropriate for inclusion in any codes. Recommendations are non-regulatory actions that could be undertaken.

**Floodplain Mapping and Flood Data Scenarios**

***Activity in Areas without FEMA-Delineated Floodplains***

**Current Criteria:** There currently are no FEMA standards for non-delineated floodplains. However, some local governments have adopted some criteria. In New Castle County, non-delineated floodplains (defined as areas associated with a USGS blue line stream having a 1% chance of being flooded in any given year for which FEMA has not delineated a floodplain) are subject to the provisions of the code regarding non-conforming structures and uses, fill placed in the floodplain, building criteria, and public safety.

**Proposed Standard #1:** A flood study that establishes BFE at the site shall be required for projects without FEMA-delineated floodplains in watersheds greater than \_\_\_\_ square miles for record plan approval or building permit issuance for all developments of 5 acres or 5 lots, whichever is greater.

Alternate – 5 acres / 25 lots or other levels.

**Committee Discussion:** What should the threshold be for watershed size where a flood study is required?

**Proposed Standard #2:** Record plans and building permit applications shall reference the BFE developed in flood studies which have been reviewed and approved by appropriate county or municipal agency.

***Activity in Areas with Delineated Floodplains but No Base Flood Elevations (BFEs)***

**Current Criteria:** These areas are known as Zone A. Existing FEMA standards are somewhat unclear for smaller sites but require determination if a site is reasonably safe from flooding. In nearly all cases this requires identifying a BFE and this data must be included for all proposed development greater than 5 acres or 50 lots. FEMA requires the determination of BFEs but not necessarily the preparation a new flood study. The NFIP requires the determination of BFEs prior to subdividing.

**Proposed Standard #1:** A flood study shall be required in areas with FEMA-mapped floodplains but without BFEs prior to record plan approval or building permit issuance for all developments of 5 acres / 5 lots, whichever is greater. Flood studies shall be submitted to FEMA such that official maps can be revised with the most up-to-date information. This process is also known as a letter of map revision (LOMR) or conditional letter of map revision (CLOMR).

Alternate – 5 acres / 25 lots or other levels.

**Proposed Standard #2:** Record plans and building permit applications shall show the BFE and the floodplain delineation from a flood study approved by FEMA. Flood studies or LOMRs / CLOMRs must be approved prior to the recordation stage for subdivisions and building permit stage for buildings. Floodplain depictions shall be based on a LOMR / CLOMR or official FEMA map.

### ***Activity in Areas with Delineated Floodplains***

**Current Criteria:** FEMA standards allow construction within delineated floodplains so long as numerous conditions are adhered to. Changes to floodplains necessitate a LOMR or CLOMR.

See below for proposed standards.

## **Development and Building Scenarios**

### ***Inadequate Building Standards***

**Current Criteria:** No FEMA standards exist if a subdivision or building is out of a mapped floodplain, even when data indicated the site is at risk due to map errors. If a subdivision or building is within a mapped floodplain, FEMA requirements are for the lowest floor elevation, including basement, to be at or above the BFE. Below grade basements and crawl spaces are prohibited by FEMA in the mapped floodplain.

**Proposed Standard #1:** All new construction or substantially improved structures located within or adjacent to a FEMA mapped floodplain shall have 1.5 feet (18 inches) of freeboard for lowest floors, including basements and crawl spaces. In other words, lowest floors and equipment and machinery shall be 1.5 feet (18 inches) above the BFE.

Alternate – 1.0 foot (12 inches) freeboard.

**Committee Discussion:** How far or how much above floodplain should “adjacent” mean?

**Current Criteria:** Existing NFIP standard requires hydrostatic vents within one foot of grade for structures with enclosures below the lowest floor located within the FEMA mapped floodplain.

**Proposed Standard #2:** Hydrostatic vents shall be required within one foot of grade for all new construction or substantially improved structures with enclosures below the lowest floor located in FEMA mapped floodplains, or adjacent to the FEMA mapped floodplain if the lowest adjacent grade to the structure is below the BFE.

**Current Criteria:** In some municipalities and jurisdictional areas in the state, new development is allowed in floodplains.

**Proposed Standard #3:** In non-tidal areas, limit or prohibit all encroachments within mapped floodplains for all record plan development.

**Proposed Standard #4:** Fill placed in the floodplain which results in land having an elevation less than 18 inches above BFE should not result in a relaxation of standards.

**Proposed Standard #5:** Encroachment in all floodplains that would increase flood heights by 0.1 foot or more is prohibited.

**Committee Discussion:** What should be the threshold for this standard (square footage or type of activity)?

#### ***Inconsistent and/or Minimum Code Provisions***

**Current Criteria:** Development and placement of fill in the floodplain are currently allowed by some jurisdictions in the state.

**Proposed Standard #1:** All new development or substantially improved structures within all mapped floodplains shall be prohibited except for the following: buildings with water-dependant use, infilling on existing lots where sufficient space to build outside the floodplain is not possible,

\_\_\_\_\_.  
Alternate – All new development or substantially improved structures are allowed in tidal or coastal floodplains but prohibited in riverine floodplains except for the following: buildings with water-dependant use, infilling on existing lots where sufficient space to build outside the floodplain is not possible, \_\_\_\_\_.

#### ***Lack of Enforcement of Existing Standards***

**Current Criteria:** FEMA technical bulletins provide detailed descriptions of NFIP requirements for items such as breakaway walls, hydrostatic openings, elevators, crawl spaces, and flood-resistant materials in ground level enclosures. Compliance with the provisions of these technical bulletins is required for NFIP-participating communities.

**Proposed Standard #1:** Communities should adopt ordinance language which incorporates FEMA technical bulletins by reference into appropriate regulations.

**Proposed Standard #2:** Floodplain information including map used, flood zone delineations, base flood elevations, and proposed lowest floor elevations shall be required on record plans and building permits for all new construction or substantial improvements within a FEMA floodplain.

**Proposed Standard #3:** Elevation certificates shall be completed both pre- and post-construction. For buildings to be floodproofed, a FEMA Floodproofing Certificate form shall be completed both pre and post construction.

**Current Criteria:** FEMA requires the inclusion of base flood elevation data for developments of 5 acres or 50 lots, whichever is greater.

**Proposed Standard #4:** FEMA requirements shall be enforced, with the clarification that flood studies be performed in compliance with FEMA's guidelines to develop base flood elevations, delineate them on proposed site plans, and have the effective FEMA map revised to show the results of these studies prior to plan approval.

## **Recommendations**

**Recommendation #1:** A separate plan review or building permit process should be required for all development or construction activities in floodplains.

**Recommendation #2:** Memoranda of Agreement (MOA) should be encouraged between counties or other larger governments and smaller cities or towns for enforcement of floodplain regulations where local capabilities are insufficient.

**Recommendation #3:** A Certified Floodplain Manager should be on staff or under contract at each agency to review floodplain activities. DNREC can provide assistance by providing training to assist staff in becoming Certified Floodplain Managers, and proctor the exam periodically.

**Recommendation #4:** The “Point on the Boundary Method” should not be used for major subdivisions or building projects but may be used for any minor (less than 5 acres / 5 lots) development and/or use of land where other acceptable information is not available. When no more suitable method of determining flood risk is available, location of flood prone areas may be determined by using the elevation of multiple points on the boundary of the identified floodplain which is nearest the proposed construction.

**Recommendation #5:** A separate zoning district for floodplains should be created such that buyers cannot purchase property without being aware of flood zone status and cannot change the floodplain without meeting zoning district notification requirements.

**Recommendation #6:** FEMA standards for manufactured (mobile) homes should be reviewed for consideration of adoption of higher standards. Local regulations should not permit manufactured homes to be on a 36 inch piers where base flood elevations are more than 36 inches above grade.

**Recommendation #7:** Lending banks are currently required to review maps in FEMA’s map service center and disclose flood risks at closing but this often does not occur. DNREC should meet with the Board of Realtors within six months to develop improved wording on seller disclosure forms, should investigate lending regulations to determine whether flood zone determinations are required in advance of settlement, and if so how far in advance.

**Committee Discussion – What type of process can be created in areas where mapping exists so that buyers are made aware they are in or not in a floodplain? After the fact notifications are common. How can the disconnect be closed and when would be a better time in the process to notify home buyers?**

**Recommendation #8:** Communities should adopt floodplain maps by utilizing “effective map as last revised” terminology so that updated maps from FEMA are automatically adopted.

Alternate - Communities should adopt floodplain maps by date upon release of updated maps from FEMA.

**Recommendation #9:** Communities should review their codes to eliminate phrases such as “no land below the level of the 100-year flood may be developed unless . . .”

**Recommendation #10:** DNREC shall make it a priority to modernize floodplain maps.

### **Drainage and Grading Scenarios**

#### ***Easements and Disruption of Existing Drainage Conveyances***

**Current Criteria:** Drainage is mostly a local issue and therefore numerous standards exist which vary by county and municipality. Closed drainage conveyances (in pipes) are sometimes placed within an easement although easement widths and responsible parties are not always specified. Open drainage conveyances (swales and ditches) can be either natural or manmade and can differ in size and / or cross section. Sometimes open drainage is apparent but often times it is unapparent.

**Proposed Standard #1:** Easements of an adequate width shall be required over closed drainage conveyance systems and open drainage conveyance systems. Easements shall clearly designate responsible parties such that no obstructions can be placed within the eased areas without prior notice.

Alternate – Easements a minimum of \_\_\_\_\_ feet in width.

**Proposed Standard #2:** The blocking or placement of obstructions in open drainage shall be prohibited.

**Proposed Standard #3:** Conveyance systems in new developments or within a planned subdivision shall be adequate to handle runoff resulting from the 10-year event.

#### ***Inadequate and Adverse Lot Grading***

**Proposed Standard #1:** A minimum amount of grading information shall be shown on site plans and building permit applications to demonstrate adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands. Submittals shall include topography that extends to a point of conveyance.

Alternate: Lots a minimum of \_\_\_\_\_ square feet in size need not demonstrate drainage to a point of conveyance but shall still demonstrate adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands.

**Proposed Standard #2:** A lines and grades plan submittal or spot grades submittal shall be required for all development or construction activity greater than 5,000 square feet. Information shall include finished floor elevation and road elevations and demonstrate that all first floor elevations are a minimum of 18 inches above existing ground elevation and \_\_\_\_\_ inches above road elevation. If floor elevation is lower than road elevation, adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands must be shown.

Alternate – First floor elevations shall be a minimum of 12 inches above existing ground elevation.

**Proposed Standard #3:** A lines and grades plan as-built submittal shall be required for all development or construction activity greater than 5,000 square feet. Information to be shown shall

include floor elevation, road elevation, and a sufficient number of ground elevations to clearly demonstrate adequate drainage away from structures, protection of mechanical systems, and no adverse impacts to adjacent structures or lands.

### **Recommendations**

**Recommendation #1:** The review of existing drainage patterns should be included not only in the subdivision stage but in the building permit process as well.

**Recommendation #2:** Permanent easements conveyed to a public entity should be considered whenever public dollars are spent to correct a drainage deficiency.

**Recommendation #3:** DNREC should oversee the preparation of a guideline similar to the Residential Lot Grading Guidelines from Deltona, Florida. County or municipal governments could then incorporate the guidelines into their codes and ordinances.