DELAWARE
FLOODPLAIN AND
DRAINAGE
STANDARDS AND
RECOMMENDATIONS

A Report to the Delaware General Assembly by the Delaware Department of Natural Resources and Environmental Control

March 15, 2013

The full report is available at:

www.dnrec.delaware.gov/swc/Pages/FloodplainandDrainageCodeWorkGroupCommittee.aspx

DUFFIELD ASSOCIATES

A consensus for increased floodplain development standards

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DNREC Shoreline and Waterway Management

Lewes Water Workshop
December 1, 2020

Delaware Consensus Higher Floodplain Standards

Floodplain and Drainage Advisory Committee

The Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Watershed Stewardship, would like to thank the following organizations for their active participation on the Committee:

- American Council of Engineering Companies
- Committee of 100
- Delaware Association of Conservation Districts
- Delaware Association of Counties (3 representatives)
- Delaware Association of Realtors
- Delaware Department of Transportation
- Delaware Emergency Management Agency
- Delaware Insurance Commissioner's Office
- Delaware League of Local Governments (2 representatives)
- Federal Emergency Management Agency
- Home Builders Association of Delaware
- Sussex County Association of Towns
- DNREC Division of Watershed Stewardship (2 representatives)

- Duffield Associates, Inc. (contractor to DNREC)
- University of Delaware Water Resources Agency (technical assistance)

Repetitive Flood damage harms property owners and the entire community

There is a threshold beyond which publicly funded action is both likely and costly

Glenville, Delaware – 165 homes bought
$30 million acquisition and demolition

Delaware Senate Bill 64: Floodplain and Drainage Advisory Committee Report
Consensus recommendations which Lewes may wish to consider:

Require 18 inches of Freeboard for new development

Shallow fill above BFE will not exempt development from floodplain regulations

Prohibit or limit the subdividing of land in the floodplain

Prohibit new non-water-dependent structures in floodplains in newly subdivided lands

Prohibit Encroachments that would cause more than 0.1 foot of rise without “compensatory storage” (this is mainly a non-tidal concept)

2017 ASFPM Study:

2,000 sq ft. home on crawl space foundation first floor two feet of freeboard.

Additional cost of freeboard construction: $4,690
Annual insurance cost with no freeboard: $2,147
Annual insurance cost with 2 feet of freeboard: $734
Annual premium savings: $1,413
Payoff time for $4,690 via premium savings: 3.3 years
Insurance savings during 30 year mortgage: $37,300

Recommendation: Do not allow shallow fill above BFE to exempt a structure from floodplain regulations. (could include natural grade)

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

TABLE (CONTINUED)

SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.6 feet
Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet

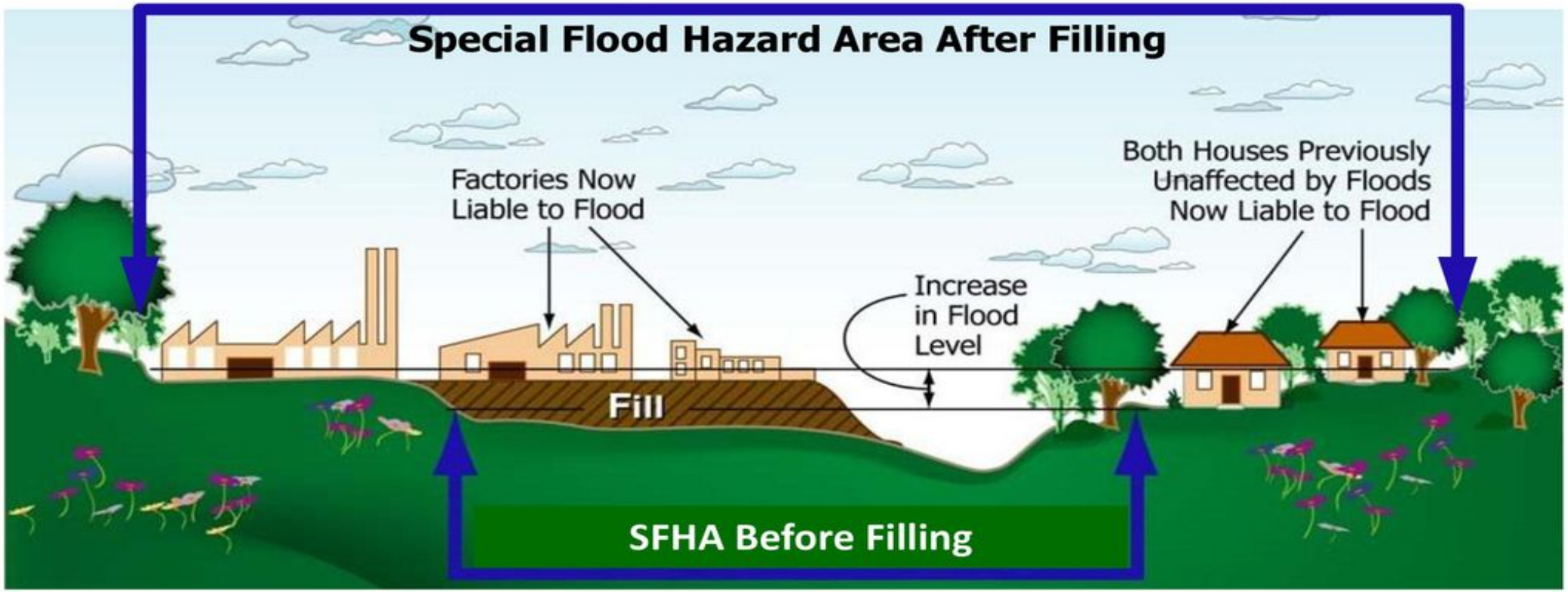
SUBDIVISION WITH LOTS ENTIRELY OUTSIDE OF THE FLOODPLAIN

SUBDIVISION WITH LOTS ORIENTED TO BUILD HOMES OUTSIDE OF THE FLOODPLAIN

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

Recommendation: prohibit encroachment that would cause more than 0.1 foot rise without “compensatory storage”

Today’s Special Flood Hazard Area (SFHA) is Not Necessarily Tomorrow’s Floodplain



If large areas of the SFHA 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

Comments on use of 0.2% annual chance (500 year) flood elevations as a higher standard in Lewes

Starting Stillwater Elevations (ft NAVD88)	
10-percent Annual Chance	5.1 - 6.3
2-percent Annual Chance	6.2 - 7.6
1-percent Annual Chance	6.7 - 8.2
0.2-percent Annual Chance (500-year)	7.9 - 9.9

Significant wave heights 7-8 feet in the Delaware Bay less as you come inland or into marshes (i.e 1-3 feet)

- Only "Stillwater" levels have been determined – no attempt to determine how high the water would get with wave action and runup
- No accounting for dune deterioration/breaching various other risk factors
- 500 – year Stillwater levels only 1.2 – 1.7 feet above current 100-year stillwater level
- Increased precipitation, sea level rise, barrier island/dune breaching, additional development runoff and engineering uncertainty are probably more than 1.2 - 1.7 feet difference so 500 year level may not even get us 100-year storm protection in the not-so-distant future.

My recommendation: Instead use the 1% annual chance (100-year) base flood elevation + freeboard + some additional accounting for sea level rise depending on how long the project is expected to last.

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

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