Town of South Bethany Mapping Update

Introduction

The Federal Emergency Management Agency (FEMA), its mapping partners, and the U.S. Army Corps of Engineers (USACE), along with input and participation by coastal counties and communities, completed a new coastal Flood Insurance Study(FIS) of the entire mid-Atlantic coast. The new coastal analysis and preliminary Flood Insurance Rate Map (FIRM) for Sussex County, Delaware including the Town of South Bethany, was intially completed in early 2013, then revised in 2014 and 2015.

Results of the New CoastalAnalyses

The FIRM panels previously produced for this area were dated January 6, 2005 and where based on coastal analysis prior to 1995. Many advancements in storm modeling as well as the scientific community's understanding of how storms behave and how they impact storm surge and erosion, contribute to better mapping and depicting the level of risk with the new analysis.

January 2013

The initial results of the new coastal modeling produced a Base Flood Elevation (BFE[1]) of 10 feet for oceanfront homes along Ocean Drive, which was depicted on a 2013 preliminary FIRM. The drop in the BFE along the oceanfront from the 2005 FIRM was based on the results from the USACE storm surge study combined with applying FEMA standard methodologies for determining overland flooding inundation.

April 2014

In April 2014, a concern was raised (and submitted to FEMA) that the results depicted on the 2013 preliminary FIRM along the oceanfront, underestimated the real risk and were inconsistent with observed flooding events in the past. This was supported by the Delaware Department of Natural Resources and Environmental Control (DNREC), who supplied information on past flooding events. FEMA determined that a reanalysis was appropriate to adequately account for extensive erosion of the beach during extreme events that were not accounted for in the 2013 preliminary FIS.

May 2015

The new preliminary FIS for the Town of South Bethany dated May 18, 2015 includes an updated analysis of coastal risk from the Atlantic Ocean and inland bays. For the west part of the Town, flooding occurs mostly from inland bays and the 2005 FIRM listed the BFE at 5 feet within a Zone AE[2]. The results of the new coastal modeling produced a BFE of 6 feet within a Zone AE due to flooding from inland bays, which is depicted on the 2015 preliminary FIRM. For oceanfront homes along Ocean Drive in the east part of the Town, the 2005 FIRM listed the BFE at 12 feet within a Zone VE [3]. The revised analysis resulted in a Zone VE with a BFE of 13 feet for oceanfront homes along Ocean Drive within the Town of South Bethany.

The new information, combined with updated data, models and methodologies explain the changes in BFE from that developed from the analysis depicted on the 2005 FIRM.

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[1] The Base Flood Elevation (BFE) is the height in feet above a certain datum, in this case North American Vertical Datum of 1988 (NAVD 88), that flood waters have a 1 percent annual chance of reaching or exceeding in any given year.

[2] Zone AE in coastal areas is defined by wave heights of less than 3 ft.

[3] Zone VE is defined by wave heights of 3 ft. or greater, or by the Primary Frontal Dune (PFD). A PFD is a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms.

Differences in BFEs at the Corporate Limits

The revised analysis results in what appears to be a sharp difference in the BFE within the VE Zone along the oceanfront at the northern and southern borders of the Town, as represented on the May 2015 preliminary FIRMs. The BFE is determined from various modeled components, as shown in the Figure 1. SWEL is the stillwater elevation.

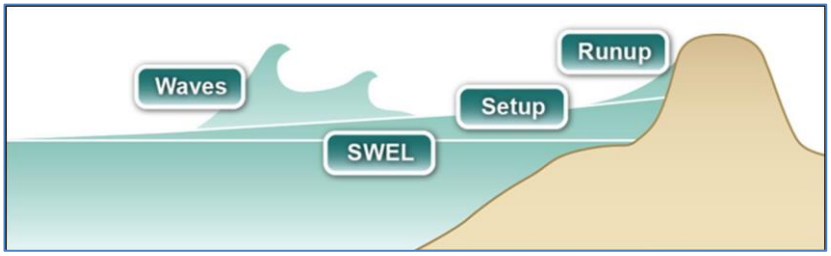


Figure 1

Physical characteristics of Ocean Drive and the terrain along the shoreline affect the magnitude of erosion and runup. Extensive beach erosion within the Town results in steeper slopes and significant wave runup, and thus a higher BFE. South of the Town, where the BFE transitions from 13 feet to 10 feet, there is the undeveloped Fenwick Island State Park. The physical characteristics within the park, including milder beach profile slopes along the shoreline, produce modeling results that show less erosion and runup, and therefore a lower BFE than within the Town.

At the north part of Town, the BFE shifts from 10 feet to 13 feet going south because within the Town, Ocean Drive and the oceanfront houses are closer to the shore, and the terrain is more vulnerable to erosion. Beach profile elevation data in this location both before and after the storm events Ida in 2009 and Sandy in 2012 shows significant erosion and steeper slopes resulting from erosion in the areas where the revised analysis results in a BFE of 13 feet. Figure 2 shows the locations where the BFE transitions between 10 feet and 13 feet along Ocean Drive within the Town.

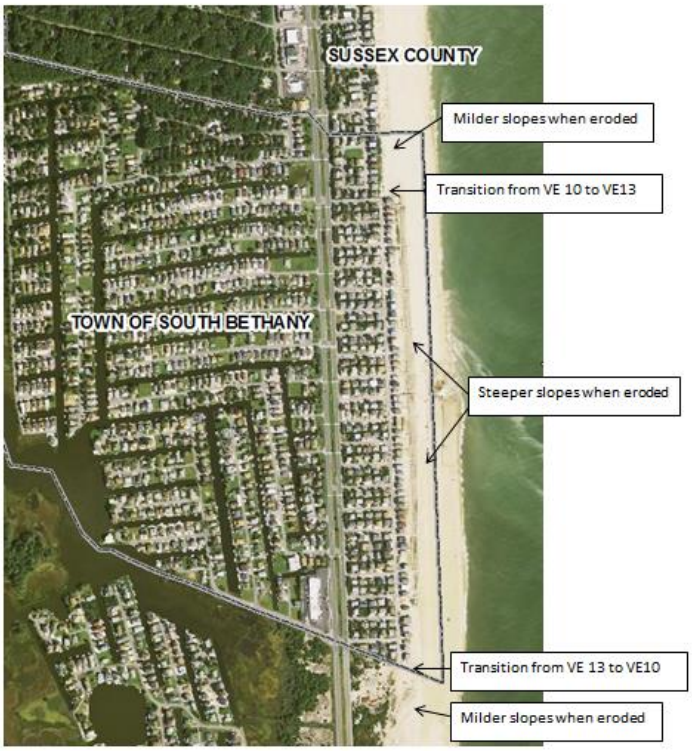


Figure 2

Past and Current Regulatory Actions

FEMA revised the 2013 preliminary FIRM in August 2014 to account for the revised analysis. The Town of South Bethany received a Letter of Final Determination (LFD) from FEMA on September 16, 2014 stating that the Special Flood Hazard Areas on the revised August 2014 preliminary FIRM were final and would become effective six months after the LFD, on March 16, 2015. In December 2014, the Town requested more time from FEMA to review and comment on the August 2014 changes.

On February 25, 2015, FEMA rescinded the LFD for the Town of South Bethany. The FIRMs for Sussex County still went into effect on March 16, 2015. However, the SFHA for the Town of South Bethany depicted on the January 6, 2005 FIRMs was incorporated into panels 100050C514K and 100050C518K for the March 16, 2015 Sussex Countywide FIRM. In other words, there were no changes to the SFHA within the corporate limits of South Bethany between the January 6, 2005 and the March 16, 2015 FIRMs. If there are any recent changes to flood insurance for property owners within the Town, it is not due to the FIRM that became effective on March 16, 2015. Figure 3 depicts the history of mapping changes for FIRM 100050C518.

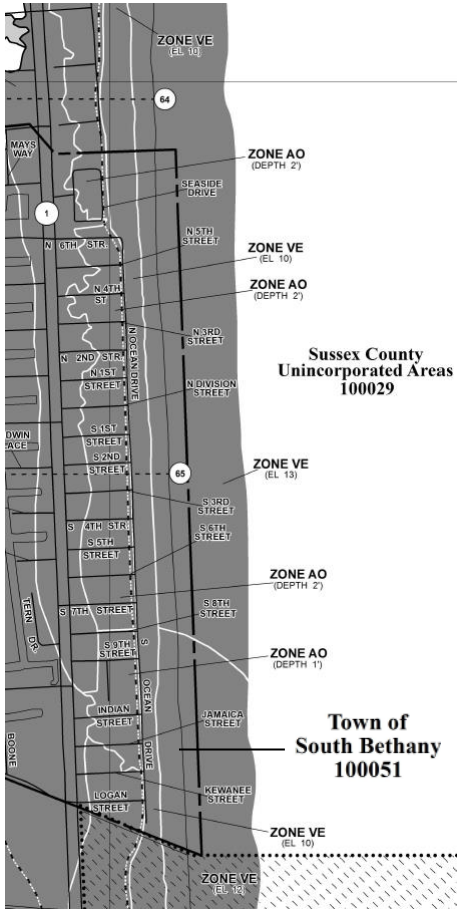
On May 18, 2015, FEMA issued new FIRM panels that reflect the updated coastal analyses for the Town. A new statutory process has been initiated, which will include a 90 day appeal period this is expected to start in the fall of 2015. The new FIRM panels may impact flood insurance rates so it is important that citizens review not only their current policy, but also understand their property's potential increased risk to flooding. For more information about what homeowners can do and what resources are available, visit https://www.fema.gov/protecting-homes/coastal-resources-homeowners-renters-business-owners-general-public.

Timeline of FIS Regulatory Activities for the Town of South Bethany

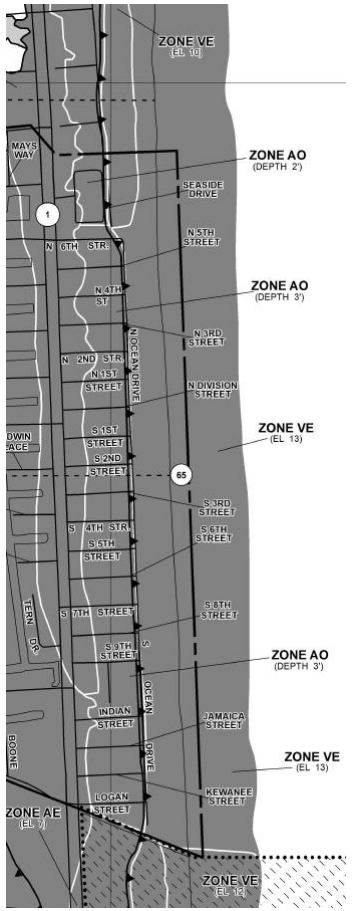
Activity	Date
Effective date for Sussex County	March 16, 2015
Preliminary Issuance for Town of South Bethany for New Coastal Study	May 18, 2015
Final CCO Meeting	May 21, 2015
Open House Meeting	June 12, 2015
Submit Flood Hazard Determination Notice to Federal Register	Mid July 2015
Estimated Federal Register Publication	September 2015
Estimated Start of the Appeals Period	Fall 2015
Estimated End of Appeals Period	Early 2016
Estimated Letter of Final Determination	Spring 2016
Estimated Effective Date for Town of South Bethany	Fall 2016

FEMA

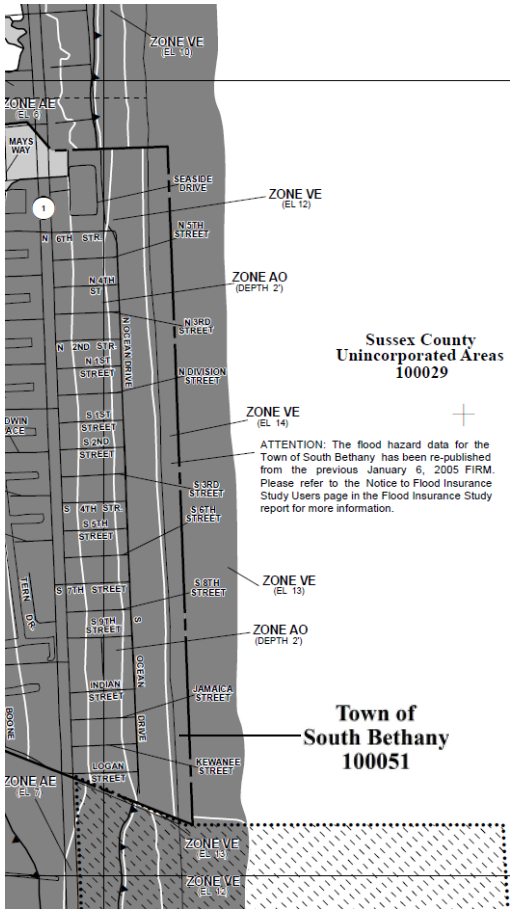
Changes to the Town of South Bethany FIRM panel 100050C518



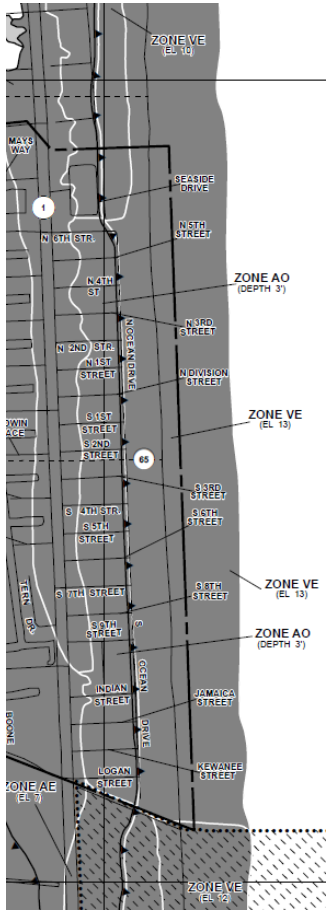
2013 Preliminary FIRM



2014 Revised Preliminary FIRM



March 16, 2015 Effective FIRM



May 18, 2015 Preliminary FIRM

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

513 (EL 987) — Base Flood Elevation line and value; elevation in feet*

Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

ZONE X — OTHER FLOOD AREAS

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

ZONE X — OTHER AREAS

Areas determined to be outside the 0.2% annual chance floodplain.

Floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Limit of Moderate Wave Action prior to 2014

Limit of Moderate Wave Action after 2014

Figure 3