

# Breezy Point/Neeld Estate Flood Mitigation Plan



Neeld Estate Community Meeting

April 8, 2017

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# Purpose and Objectives of the Plan:

- Identify flood and inundation issues;
- Identify flood mitigation options;
- Make recommendations on mitigation measures, both short and long term, to address potential flooding and inundation impacts; and
- Serve as a planning tool to address flood issues and potential inundation issues.

# Participants:

- Breezy Point/Neeld Estate residents;
- Breezy Point Marina and Breezy Point Beach and Campground (County Park)
- Calvert County Departments of:
  - Community Planning and Building, Environmental Section;
  - Public Safety, Emergency Management Division;
  - Public Works: Engineering and Highways Division, Water and Sewerage Division; and
- Calvert County State Health Department.



## Planning Process Timeline:

- May 16, 2015: Public meeting;
- June 2015-December 2016: Preparation of draft BRNE FMP; and
- March 7, 2017 - Work session with the BOCC to seek BOCC permission to distribute the BPNE FMP for public review including the Maryland State Clearinghouse 60-day review.



April 8, 2017 – Presentation to Neeld Estate and Breezy Point Community

# Breezy Point/ Neeld Estate Flood Mitigation Plan Study Area



Source: Calvert County Government

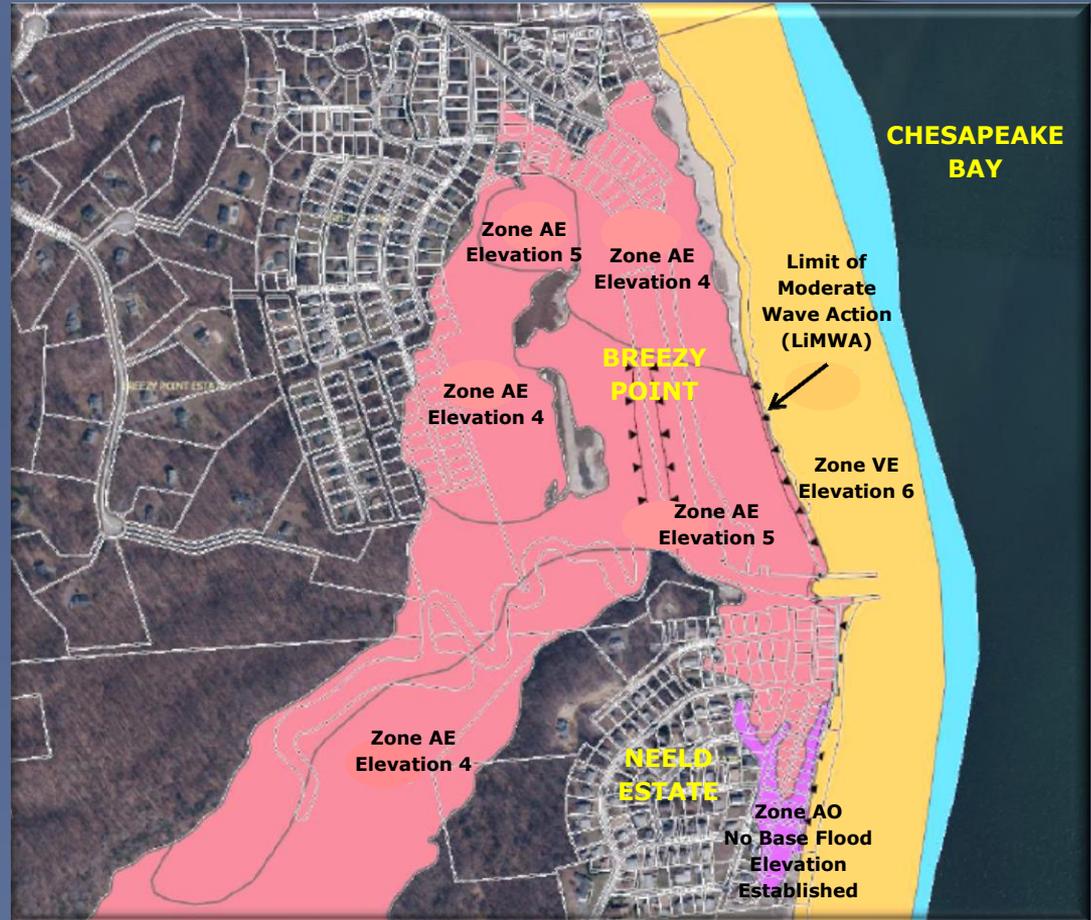
# Flood Vulnerability:

- Neeld Estate is the 5<sup>th</sup> most flood-prone community in the County:
  - 45 structures are flood-prone; and
  - Bay Boulevard, Beach Drive, Lookout Trail, Ridge Road and Shore Drive are flood-prone.
- Breezy Point is the 7<sup>th</sup> most flood-prone community in the County:
  - 23 structures are flood-prone; and
  - Breezy Point Road, Burgess Road, Ridge Road and Willow Street are flood-vulnerable.



Flooding sources: Chesapeake Bay and Plum Point Creek. <sup>6</sup>

# Breezy Point/ Neeld Estate 100-Year Floodplain



Source: Calvert County Government

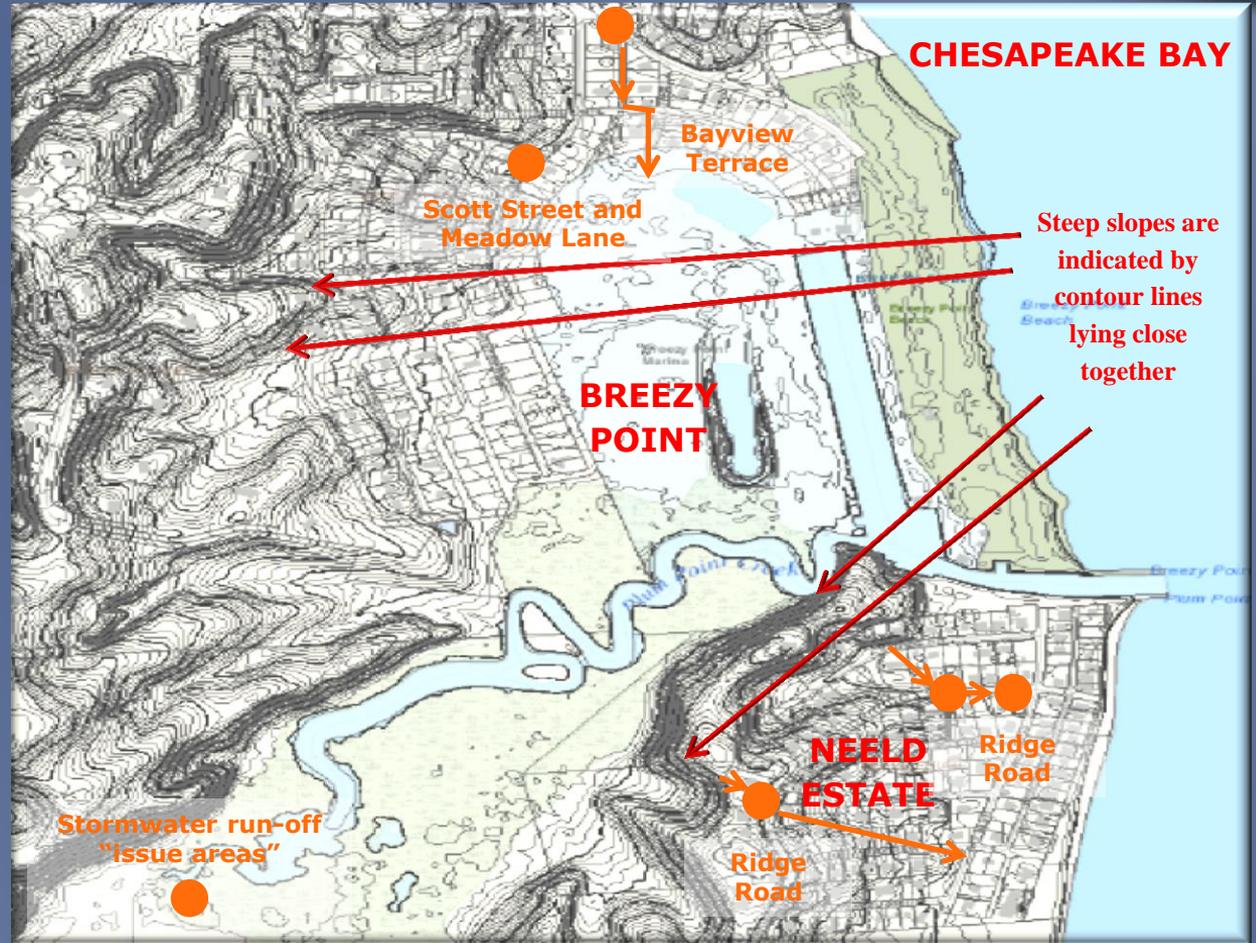
# Contributing Factors:

- Low land elevations compared to base flood elevations;
- A high water table;
- Stormwater run-off from steep slopes west of both communities and inadequate stormwater management;
- Movement of sand (littoral drift) and shoreline erosion;
- Building homes prior to the County's 1984 initial flood regulation implementation and subsequent stricter regulations passed in 2011 and 2014;
- Storm surge; and
- Sea level rise and land subsidence.

# Land Elevations and a High Water Table

- Land elevations are less than 5 feet where flooding occurs;
- AE Zone base flood elevation - 4 and 5 feet above sea level; and
- VE Zone base flood level - 6 feet above sea level.

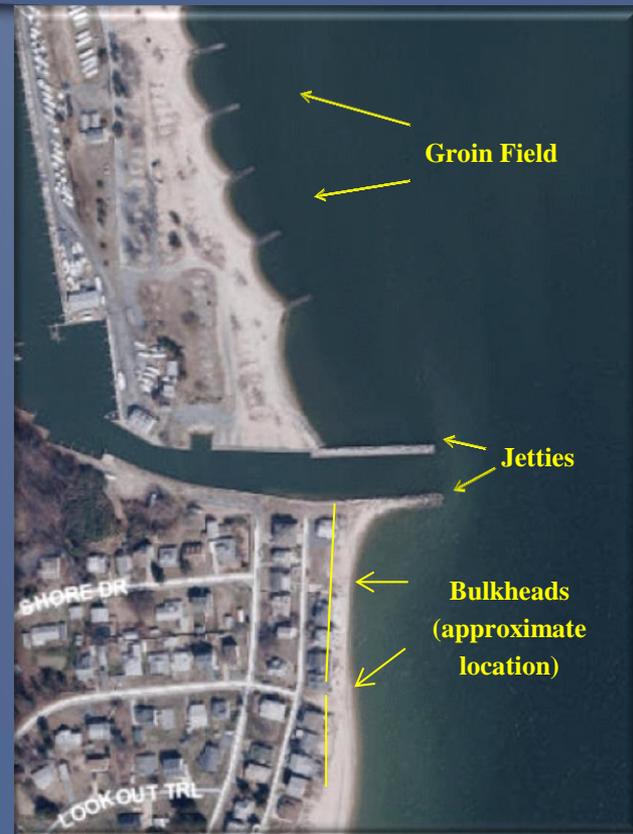
# Stormwater Run-off & Nuisance Flooding Associated with Steep Slopes



Steep Slopes and Stormwater Run-off Issues

Source: Calvert County Government

# Littoral Drift and Shoreline Erosion



Groin Field, Jetties & Bulkhead in the Breezy Point & Neeld Estate

Source: Calvert County Government



Breezy Point & Neeld Estate Historic Shoreline Changes

Source: Source: Department of Natural Resources Coastal Atlas

# Homes Built Prior to the Implementation of Floodplain Regulations

- Many structures were built prior to the adoption of the County's floodplain regulations in 1984.
- In 2011 and 2014, the County adopted new floodplain regulations.
- Over time floodplain regulations have become stricter. For example, the law requires:
  - Increased structure elevation (higher elevation of the first floor above the base flood elevation);
  - Elevation of outside A/C units;
  - Anchoring of fuel tanks;
  - Increased venting requirements, etc.

# Current Storm Surge

## In Breezy Point

- Category 1 hurricanes may flood portions of Breezy Point Road, Burgess Road and Ridge Road; and
- Category 2, 3 and 4 hurricanes may progressively flood larger portions of Bayview Boulevard, Breezy Point Road, Burgess Road, Highview Road, Hillside Place, Meadow Lane and Scott Street.
- In Need Estate, category 1,2,3 and/or 4 hurricanes may progressively flood larger portions of:
  - Bay Boulevard, Bay Parkway, Beach Drive, Cedar Drive, Knoll Road, Lookout Trail, Ridge Road and Shore Drive.



Source: Source: Department of Natural Resources Coastal Atlas

# 2050 2.1-Foot Sea Level Rise Scenario BREEZY POINT

- Portions of Bayview Boulevard, Meadow Lane and Prowse Road; and
- Larger portions of Breezy Point Road, Burgess Road, Ridge Road and Willow Street may become flood-prone.
- Estimated flood-prone structures = 31.



Source: Calvert County Government

# 2050 2.1-Foot Sea Level Rise Scenario NEELD ESTATE

- Portions of Bay Parkway, Cedar Drive and Knoll Road; and
- Larger portions of Bay Boulevard, Beach Drive, Lookout Trail, Ridge Road and Shore Drive may become flood-prone.
- Estimated flood-prone structures = 54.



# 2100 3.4-Foot Sea Level Rise Scenario



Neeld Estate  
October 4<sup>th</sup> 2015

## BREEZY POINT

- Portions of Highview Road, Hillside Place and Shore Drive, and
- Larger portions of Bayview Boulevard, Breezy Point Road, Burgess Road, Meadow Lane, Prowse Road, Ridge Road and Willow Street may experience severe flooding.
- Estimated flood-prone structures = 36.

## NEELD ESTATE

- Larger portions of Bay Boulevard, Bay Parkway, Beach Drive, Cedar Drive, Lookout Trail, Knoll Road, Ridge Road and Shore Drive may experience severe flooding.
- Estimated flood-prone structures = 63.

# Wetland Migration by 2050 & 2100



**New Wetlands by 2050 circled/orange  
(assuming a 1.3-foot rise in sea level)**



**New Wetlands by 2100 circled/dark green  
(assuming a 3.4-foot inundation increase)**

<b>Breezy Point/Neeld Estate Residents' Flooding Concerns – Ranked</b>	Points Given by Residents
#1 Nuisance flooding associated with unmanaged stormwater	182
#2 Sewer service feasibility	167
#3 Neeld Estate Beach erosion	149
#4 Potential costs to Neeld Estate property owners to address Neeld Estate Beach erosion	125
#5 Sewer service-will it happen?	121
#6 Failed septic systems and inadequate lot sizes to accommodate septic systems	117
#7 Rising sea level and associated rising tidal water	89
#8 Lower property values due to flood vulnerability	86

# Recommendations

## #1 Nuisance flooding associated with unmanaged stormwater

- Conduct and implement a stormwater management study for Breezy Point/Neeld Estate.

## #2 Sewer service feasibility and #5 Sewer service – will it happen?

- Residents are encouraged to proceed through the petition process.
- Challenges: land to accommodate system and land application of effluent, and pump stations due to steep slopes west of both communities.

# Recommendations

## #3 Neeld Estate beach erosion and #4 Potential costs to Neeld Estate property owners to address Neeld Estate beach erosion

- Residents are encouraged to work with the owner of the Breezy Point Marina to obtain dredge spoils (from the canal) to replenish the beach.

## #6 Failed septic systems and inadequate lot sizes to accommodate septic systems

- Property owners are encouraged to seek Bay Restoration Funds to upgrade septic systems or install holding tanks, or to hook-up to a new sewage treatment plant.

# Recommendations

# 7 Rising sea level and associated rising tidal water and

# 8 Lower property values due to flood vulnerability

- For new/substantially rehabilitated structures in the 100-year floodplain, elevate and increase freeboard to:
  - 3 feet - 2050 2.1-foot sea level rise (SLR) scenario,
  - 4 feet - 2100 3.7-foot SLR scenario (min.), or
  - 5 feet - 2100 5.7-foot sea level rise scenario (max.);
- Construct amphibious homes/floating neighborhoods; or
- Retreat (demolish structure/land returns to natural state).

# General Recommendations

- Address Tidal Overflow from the Breezy Point Canal Through Stormwater Management Measures;
- Establish a Threshold for Which Traditional Flood Mitigation Actions are No Longer Considered Adequate to Address Flooding and Sea Level Rise; and
- Conduct Outreach to Elected Officials and Residents about Increased Flood-Vulnerability and Sea Level Rise.

# Breezy Point/Neeld Estate Flood Mitigation Plan



**Neeld Estate**  
October 4<sup>th</sup> 2015

Questions?  
Comments?

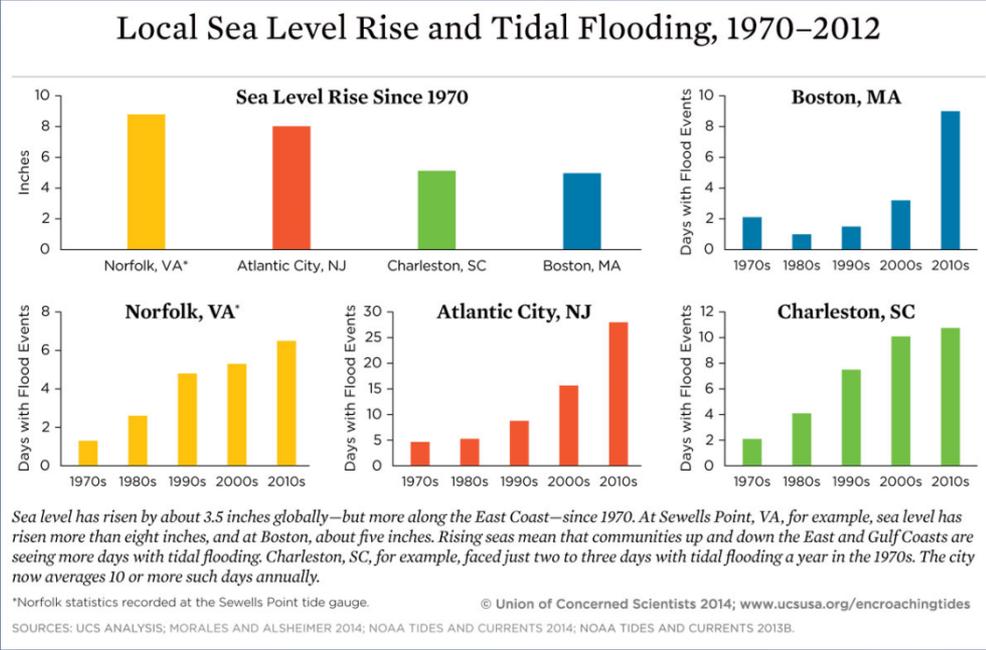
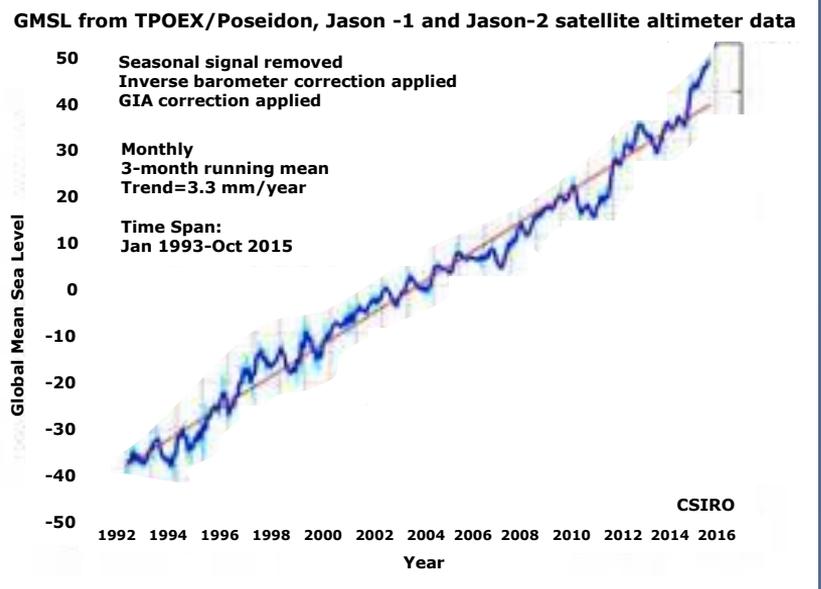


**Neeld Estate**  
October 4<sup>th</sup> 2015



**Neeld Estate October 4<sup>th</sup> 2015**  
Source: Neeld Estate Residents

# Global Sea Level Rise East Coast



- Sea level rise has:
  - Risen 3.5 inches globally.
  - Risen more along the East Coast due to land subsidence: 8 inches at Sewells, VA and 5 inches at Boston, MA.
- Translates into increased days of tidal flooding annually—Charleston, NC faced 2 to 3 days in the 1970s and now it faces 10 days annually.

