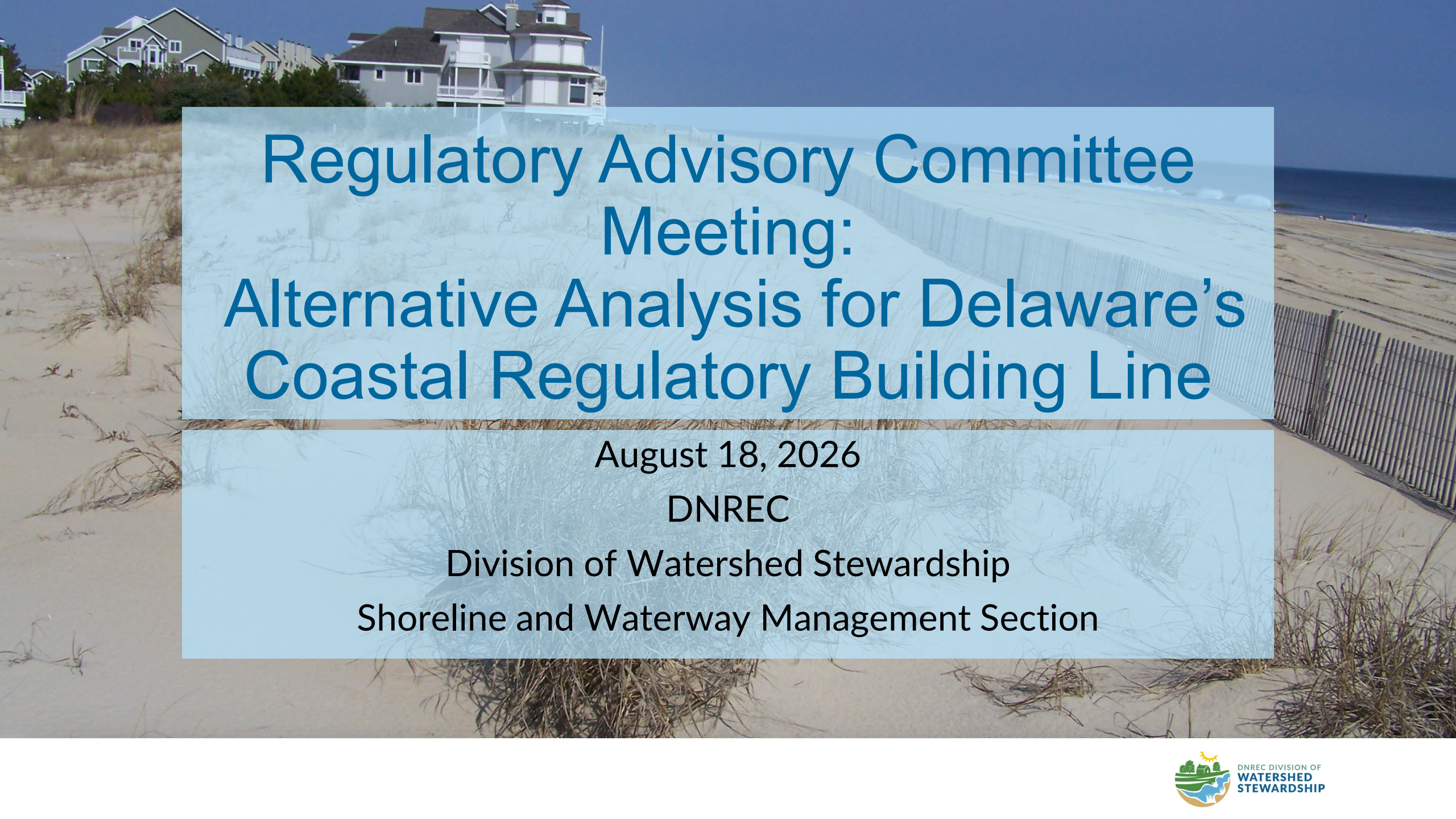


The background image shows a coastal scene. In the upper left, there are several multi-story houses with light-colored siding and dark roofs, situated on a dune. A sandy path leads from the foreground towards the houses. To the right, a long, low, light-colored dune fence runs parallel to the beach. The beach itself is sandy with some sparse vegetation. In the distance, the ocean is visible under a clear blue sky.

Regulatory Advisory Committee Meeting: Alternative Analysis for Delaware's Coastal Regulatory Building Line

August 18, 2026

DNREC

Division of Watershed Stewardship
Shoreline and Waterway Management Section

Natural Barrier Beach System

A natural barrier beach system consists of several interrelated environments, that are created by and continually adapt to the physical forces of the bay or ocean environment. Overtime, the entire system maintains itself.

However, a stabilized barrier beach system, altered by human existence takes a different shape.

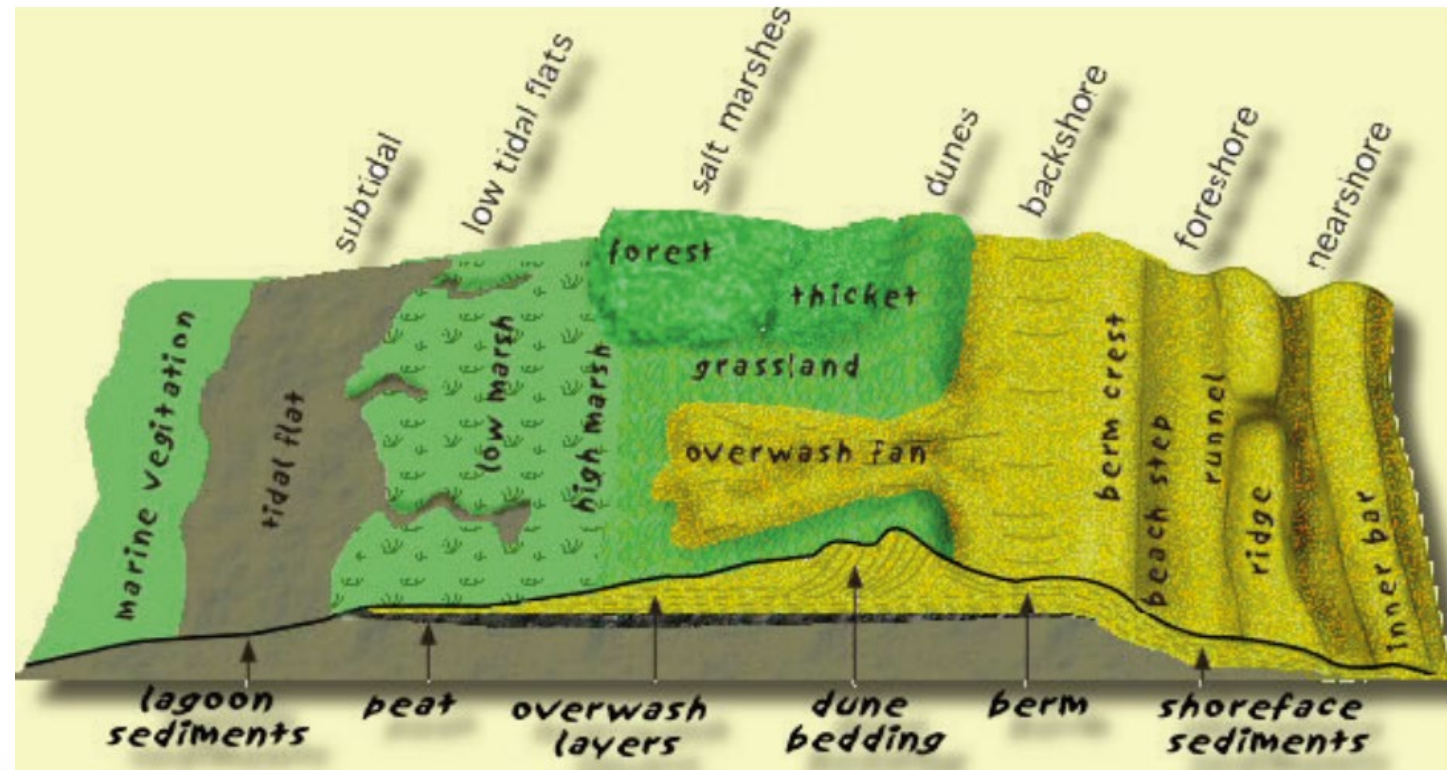


Image from Godfrey, P. J., 1976, Barrier beaches of the east coast: Oceanus, v. 19, n. 5, p. 27-40.

Dunes: the First Line of Defense

Development along the coastline has resulted in the need for a protective beach and dune system.

The State Government recognized this along with the fact that Delaware's beaches are a major asset to the economy of the entire State and took measures to protect and preserve them.



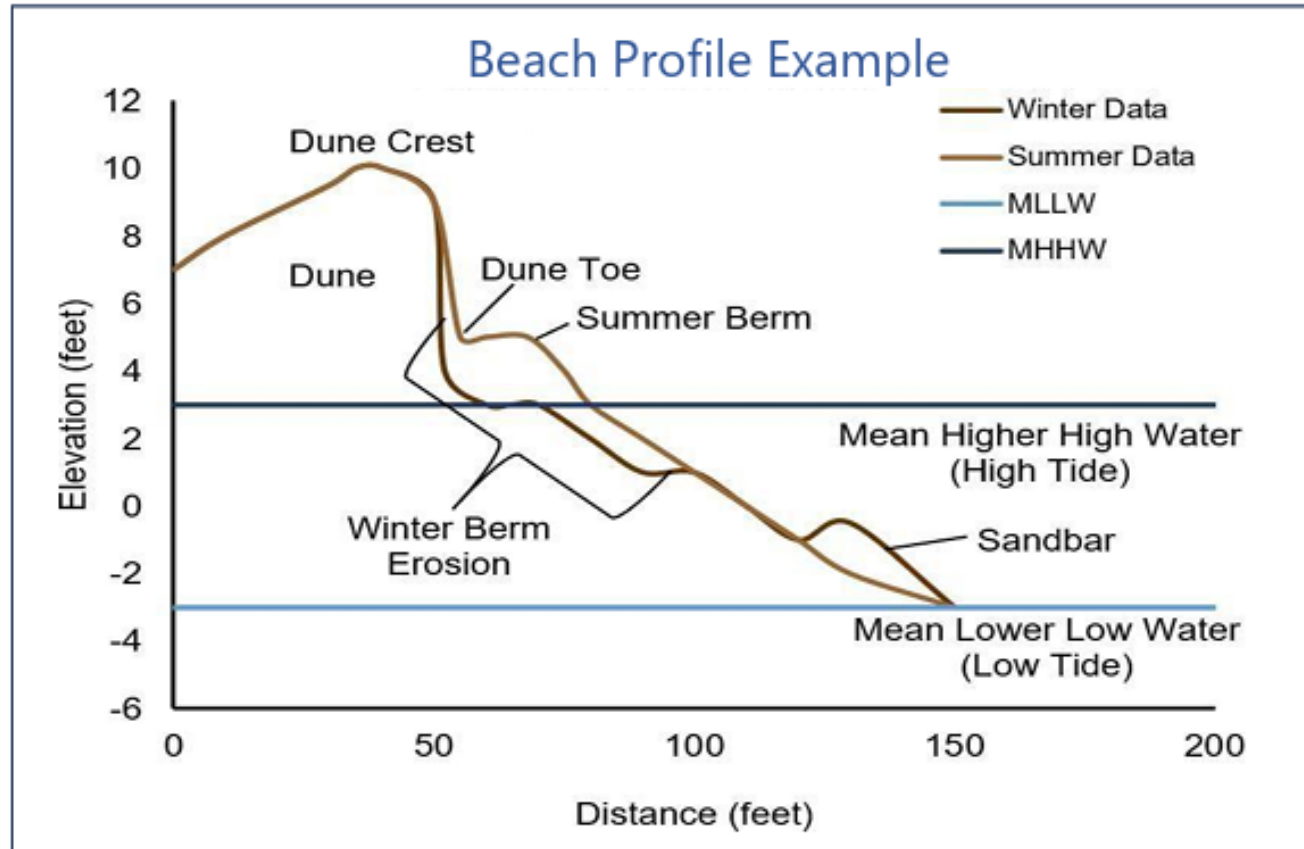


Figure 3: Schematic of a typical beach profile during summer vs winter seasons

From the DNREC beach change reports

<https://documents.dnrec.delaware.gov/Watershed/Shorelines/2024-Delaware-Beach-Change-Report-Ocean-Coast.pdf>

Figure 5-5. Sandy Beach Backed by High Sand Dune with PFD Controlling the VE Zone

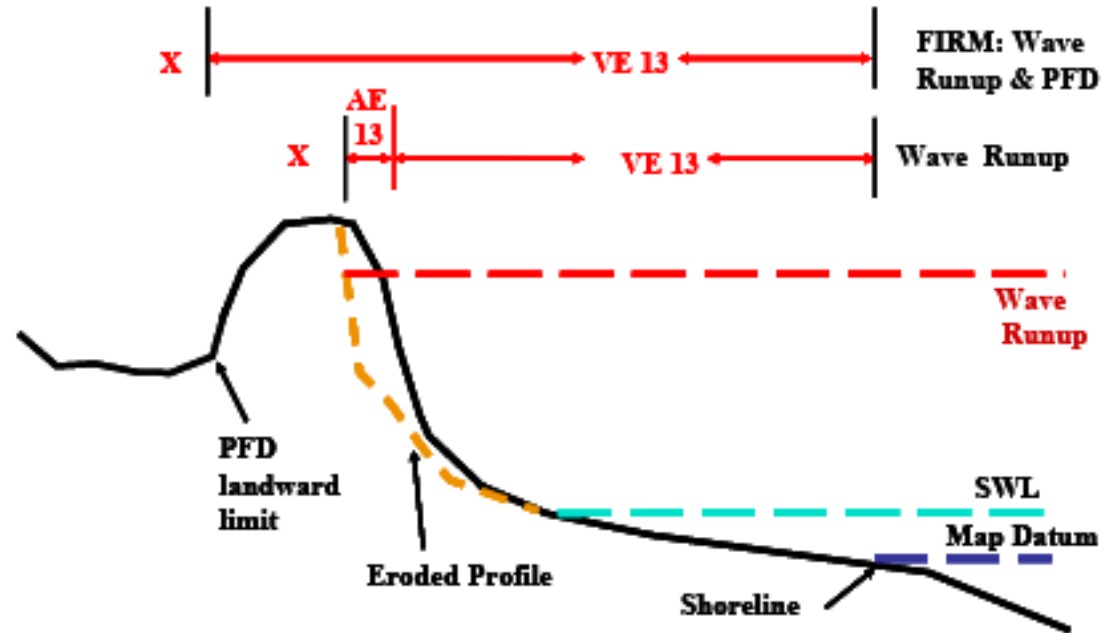
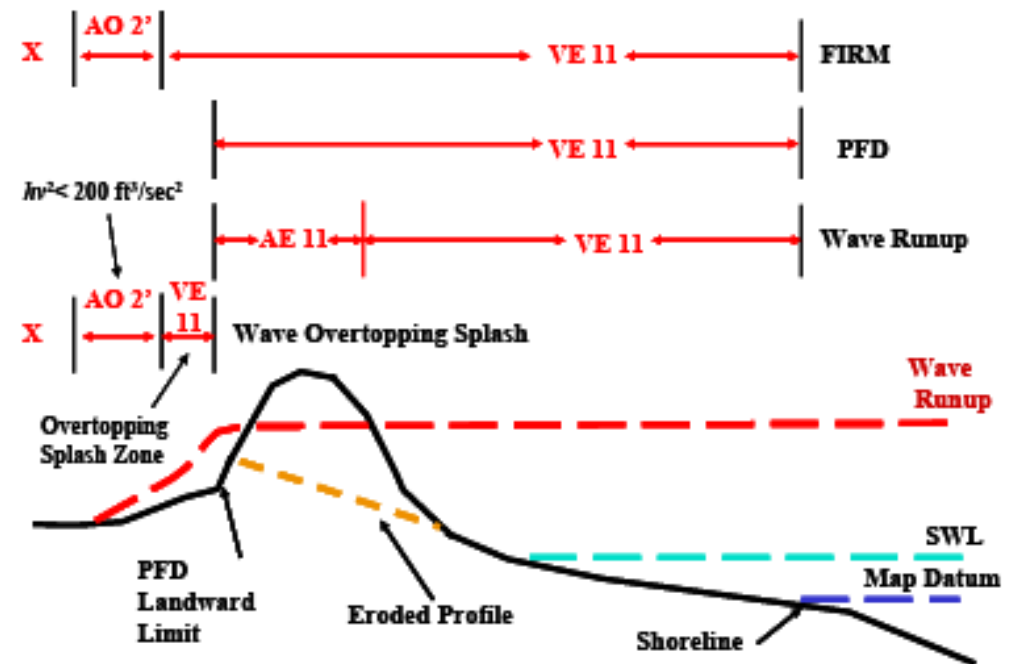


Figure 5-7. Sandy Beach Backed by Low Sand Dune with Overtopping Splash Controlling VE Zone



From FEMA Coastal Floodplain Mapping Guidance document

https://www.fema.gov/sites/default/files/documents/Coastal_Floodplain_Mapping_Guidance_Nov_2019.pdf

The Beach Preservation Act (7 Del. Code, Ch. 68)

General Assembly recognized that Delaware's beaches were rapidly deteriorating due to a combination of both natural processes and continual encroachment of development.

Declared the beaches to be “valuable natural features which provides recreational opportunities and storm protection for persons and property”...

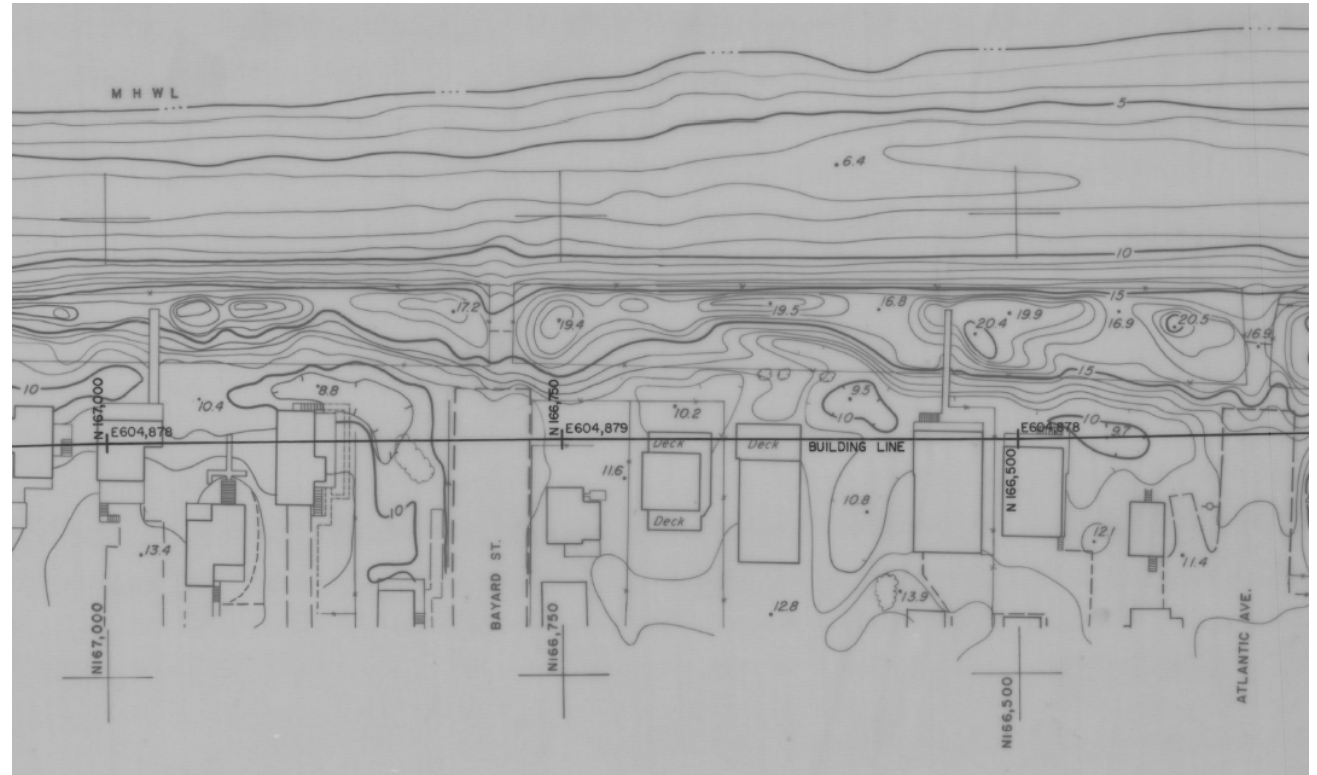


Delaware's Coastal Regulatory Program

- Began with the Beach Preservation Act of 1972, followed by Regulations Governing Beach Protection and the Use of Beaches in 1974
- Current regulations revised in 2016
- Regulations require approvals, such as permits, for construction activities in the defined beach area
- A Building Restriction Line was mapped and went into effect 1981 and has not been remapped since

DNREC Building Line – the “No Build Line”

- Based on 1979 topography
- Incorporated into regulations in 1981
- Use seaward toe of the primary dune and measure a distance landward to find the line
- This allowed for a 75' to 100' buffer from the Delaware Bay or Atlantic Ocean
- Effectively controls construction activity in the beach area by restricting activities that might occur seaward of the line

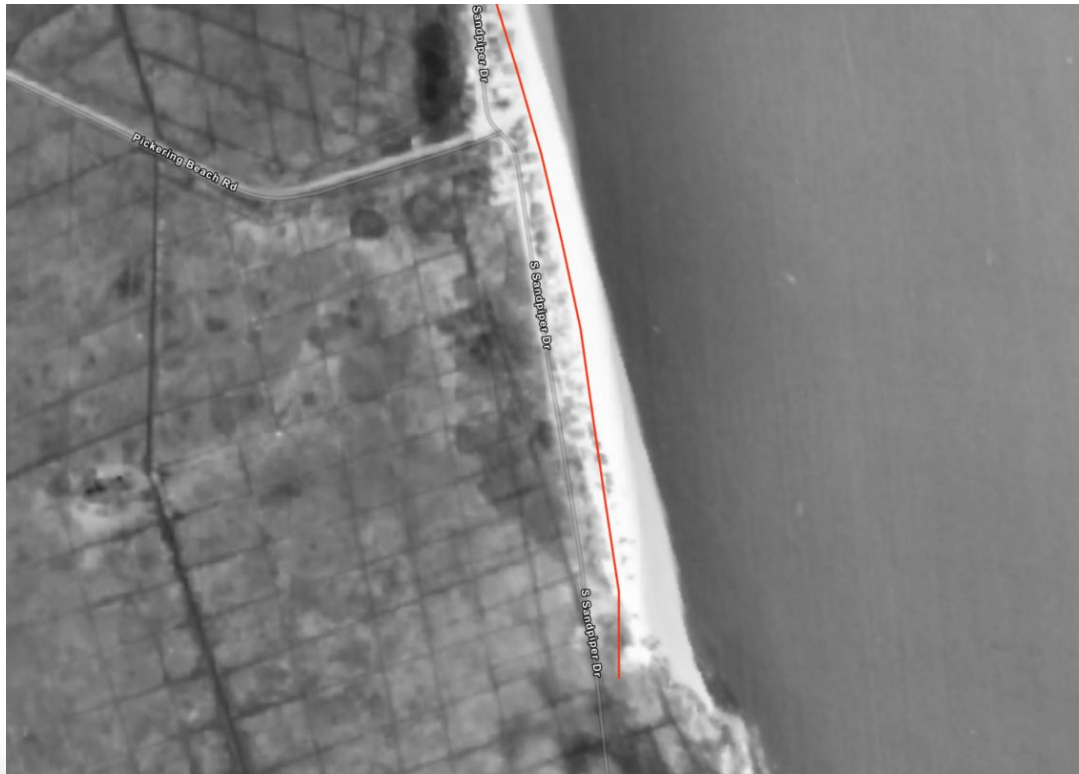


In some areas,
beach
management
efforts have not
kept up with
chronic erosion

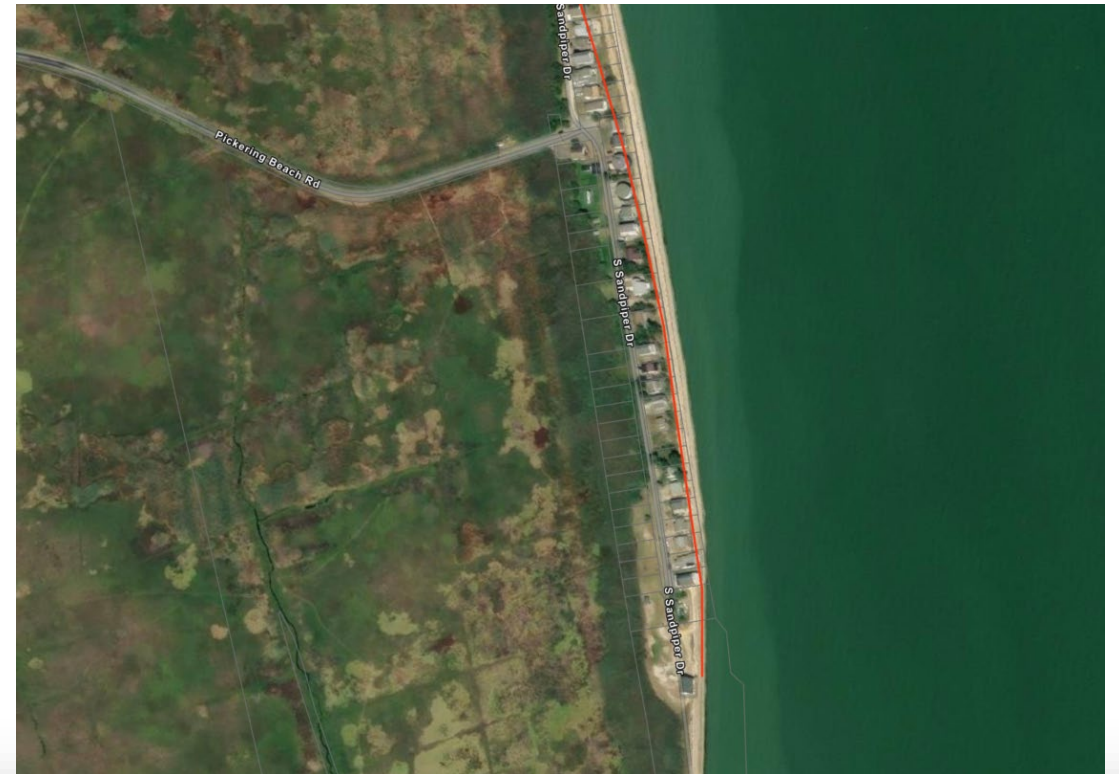


Pickering Beach

1968



Current



Bowers Beach

1968



Current

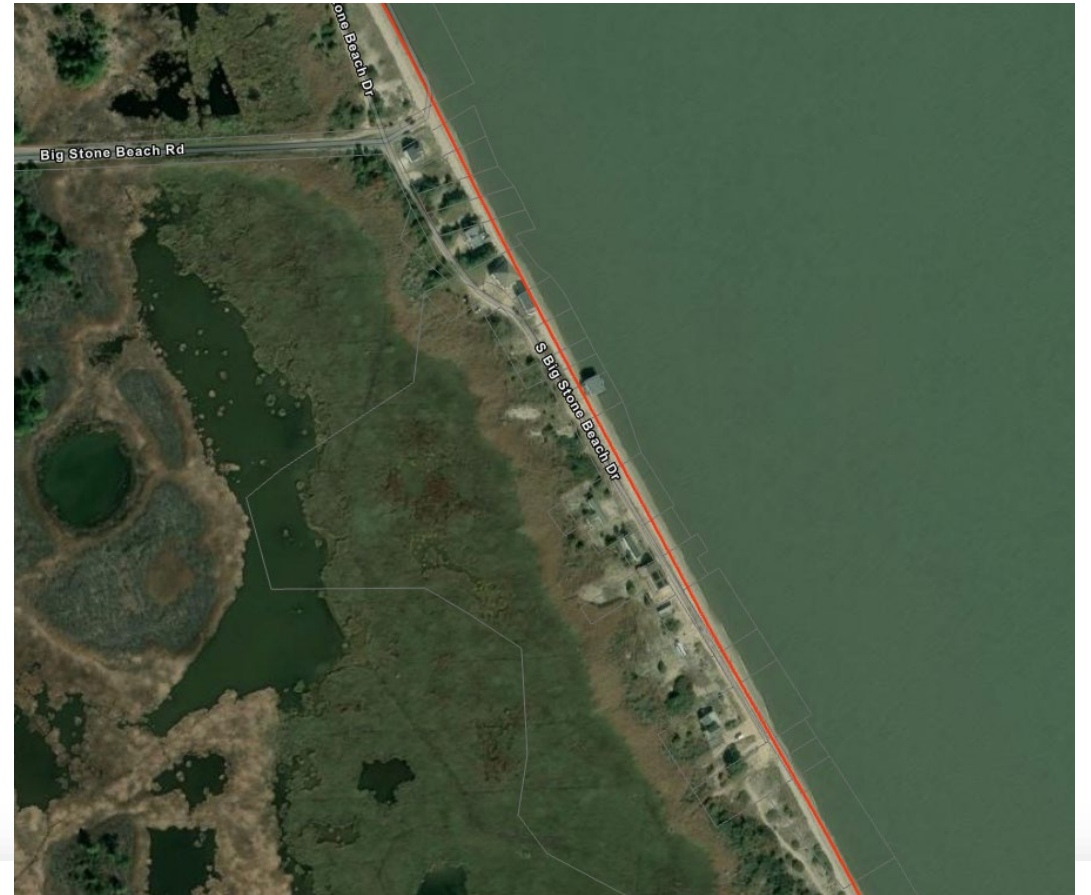


Big Stone Beach

1968

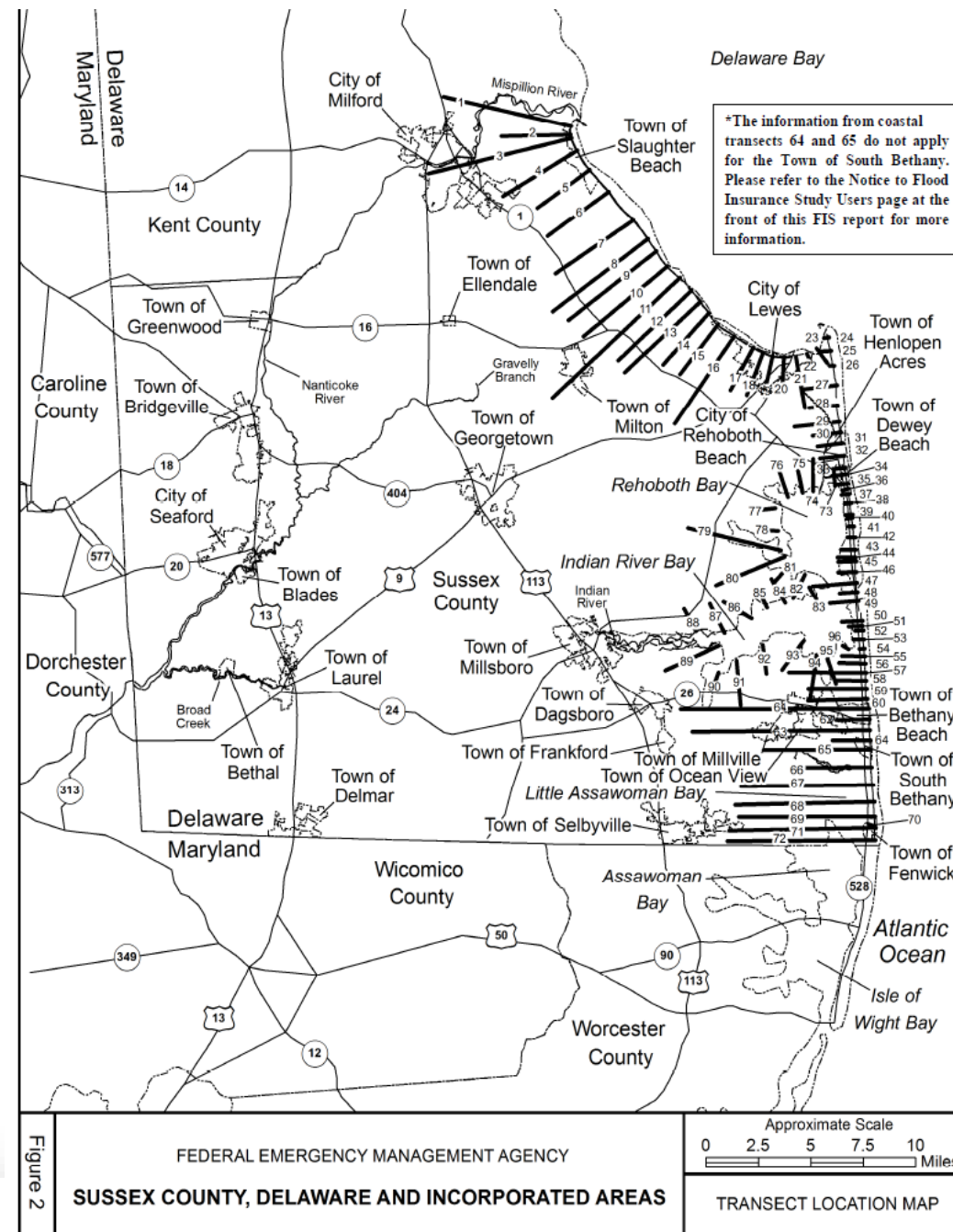


Current



FEMA FIS Coastal Transects for Sussex County

https://msc.fema.gov/portal/downloadProduct?productTypeID=FINAL_PRODUCT&productSubTypeID=FIS_REPORT&productID=10005CV001D

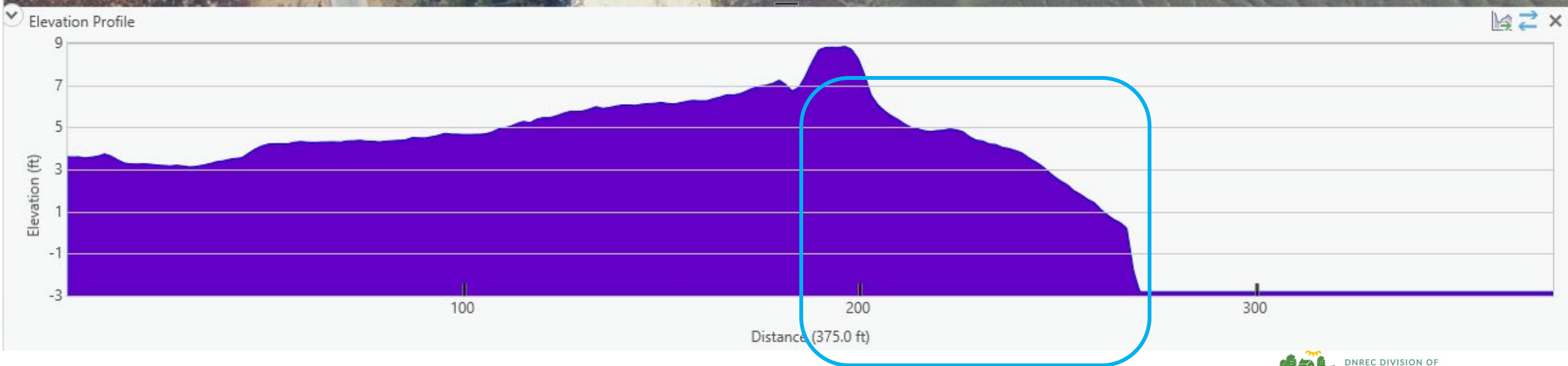


They graph flood profile data and tabulate coastal storm frequencies but do not graph coastal transects in the FIS – I asked our FEMA engineering contact for the data / models.

Transect 19 in Pickering



~ Transect 19 in Pickering
2023 LiDAR in GIS
2024 aerial imagery



South Pickering
2023 LiDAR in GIS
2024 aerial imagery



Distance (290.1 ft)
16

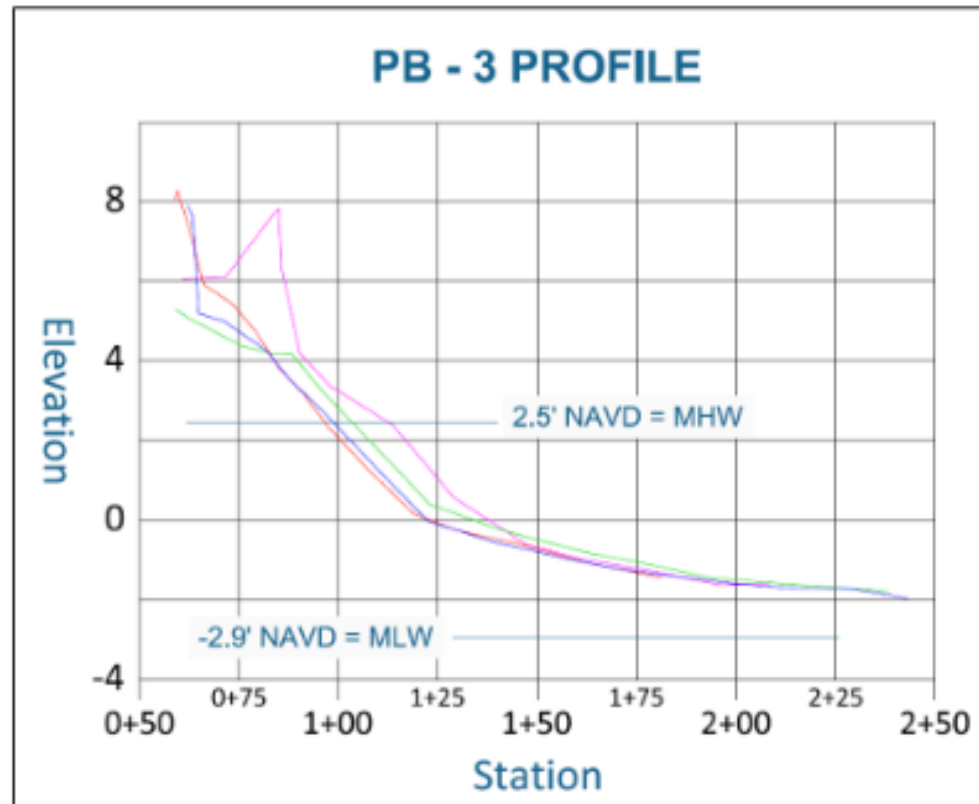


Figure 6B. Beach Profiles at Pickering Beach, Station PB-3
Pink: Summer '23, Green: Winter '24, Red: Summer '24, Blue: Winter '25

From the beach change reports – doesn't capture the full dune



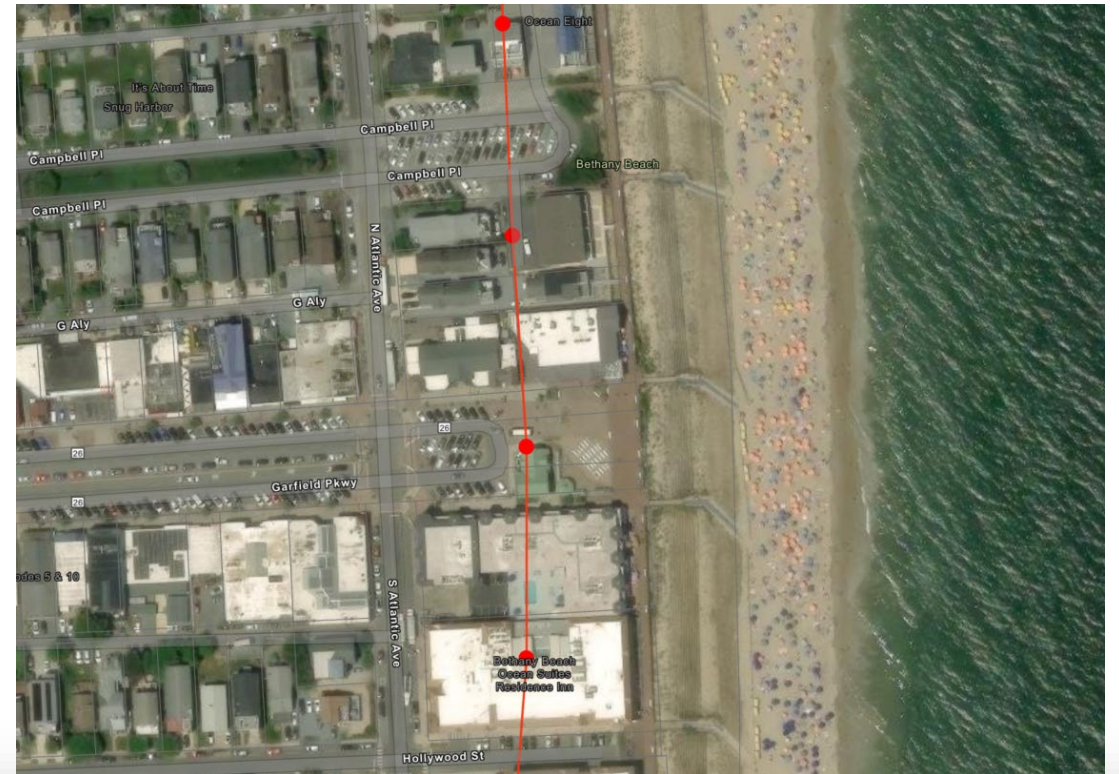
In some areas, beach management efforts have created favorable conditions

Bethany Beach

1968



Current

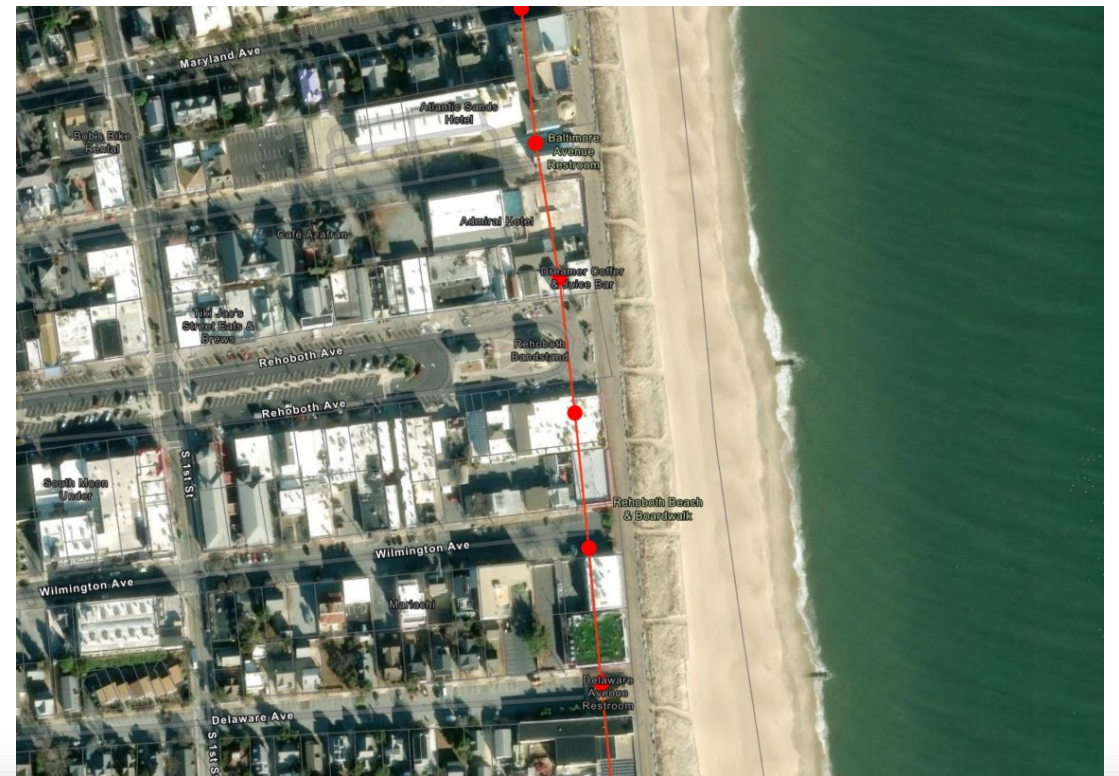


Rehoboth Beach

1968



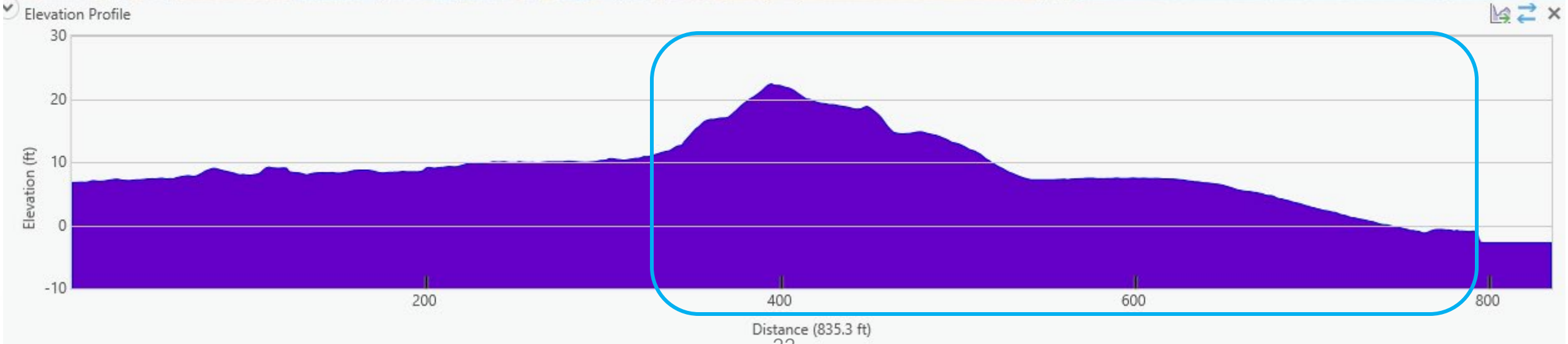
Current



Transect 71 in Fenwick Island



~ Transect 71 in Fenwick
2023 LiDAR in GIS
2024 aerial imagery



Distance (835.3 ft)
22

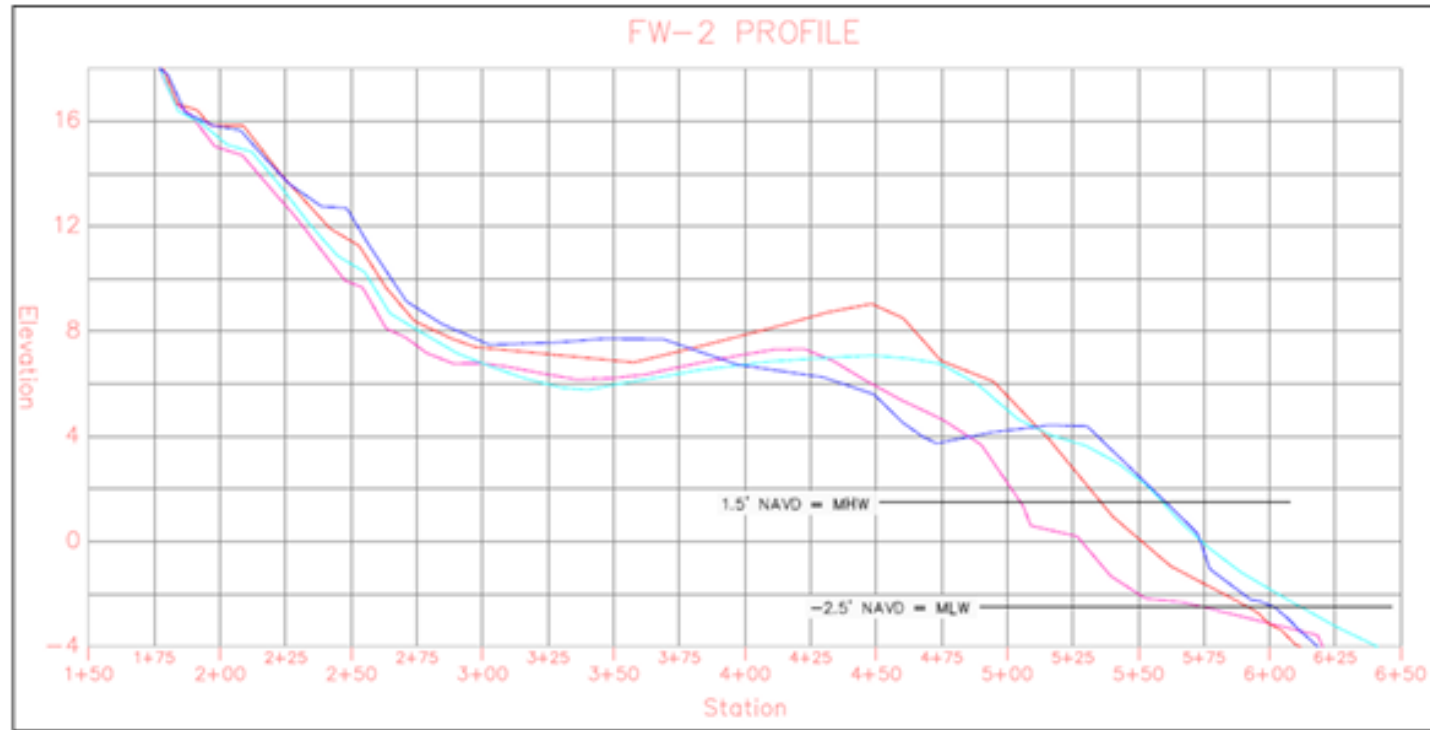


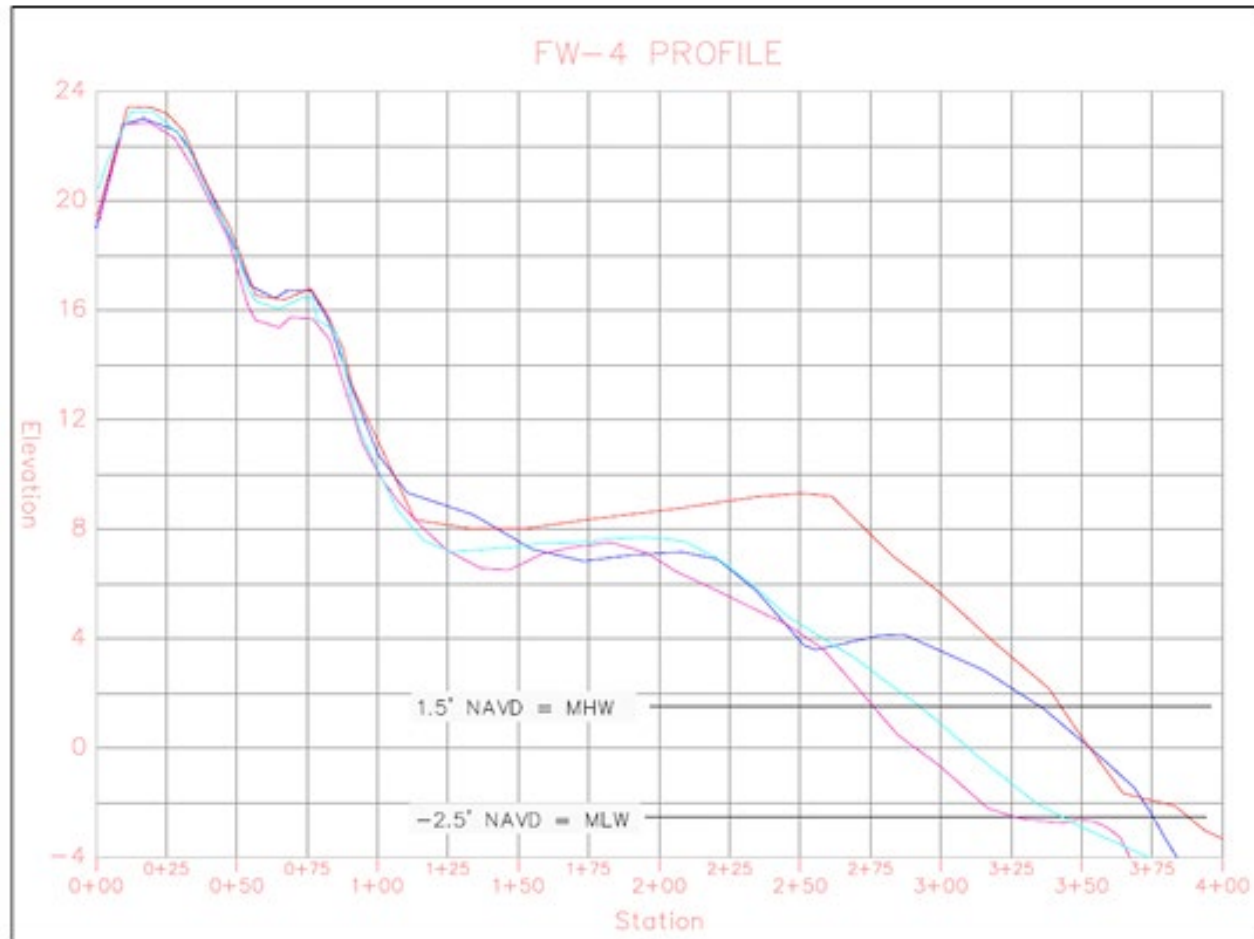
Figure 15C. Beach Profiles at Fenwick Island, LRP FW-2.

Pink: Summer 2022, Cyan: Winter 2023, Red: Summer 2023, Blue: Winter 2024.

From the beach change reports – doesn't capture the full dune
<https://documents.dnrec.delaware.gov/Watershed/Shorelines/2024-Delaware-Beach-Change-Report-Ocean-Coast.pdf>



Figure 15A. LRP lines at Fenwick Island



From the beach change reports – almost captures the full dune
<https://documents.dnrec.delaware.gov/Watershed/Shorelines/2024-Delaware-Beach-Change-Report-Ocean-Coast.pdf>



Figure 15A. LRP lines at Fenwick Island

Beach Nourishment Cycles

- Lewes Beach, Rehoboth Beach, Dewey Beach, Bethany Beach, South Bethany and Fenwick Island are on 50 year agreements with the US Army Corps of Engineers for periodic renourishment when funds are available
- Pickering Beach, Kitts Hummock, Bowers Beach, South Bowers, Slaughter Beach, Broadkill Beach Cape Shores are nourished, but not on a periodic cycle
- Big Stone Beach, Prime Hook, North Shores, Henlopen Acres, Indian Beach, North Bethany are private and not nourished with State or Federal funds
- North Fenwick is bordered by State Park, which currently is not nourished

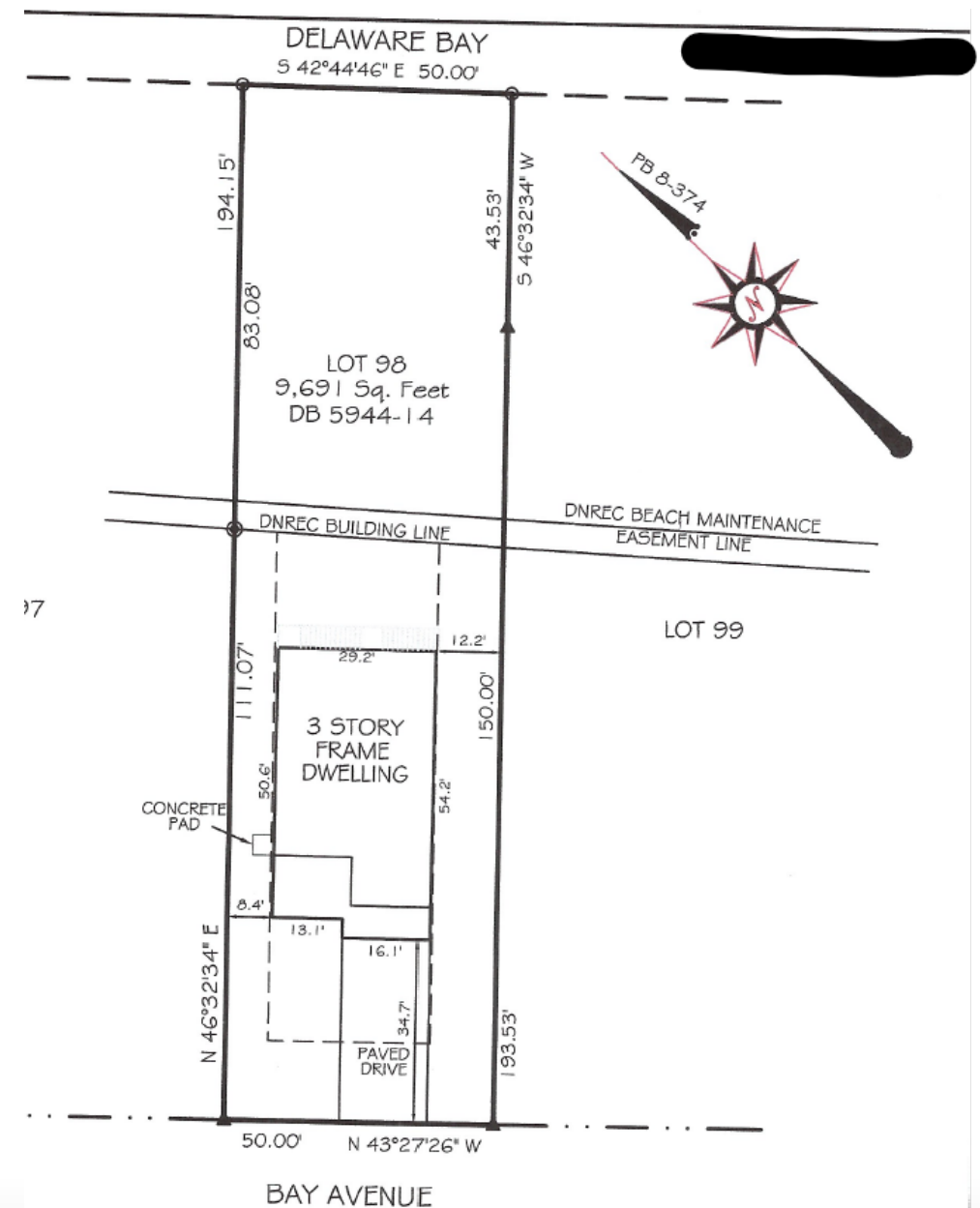


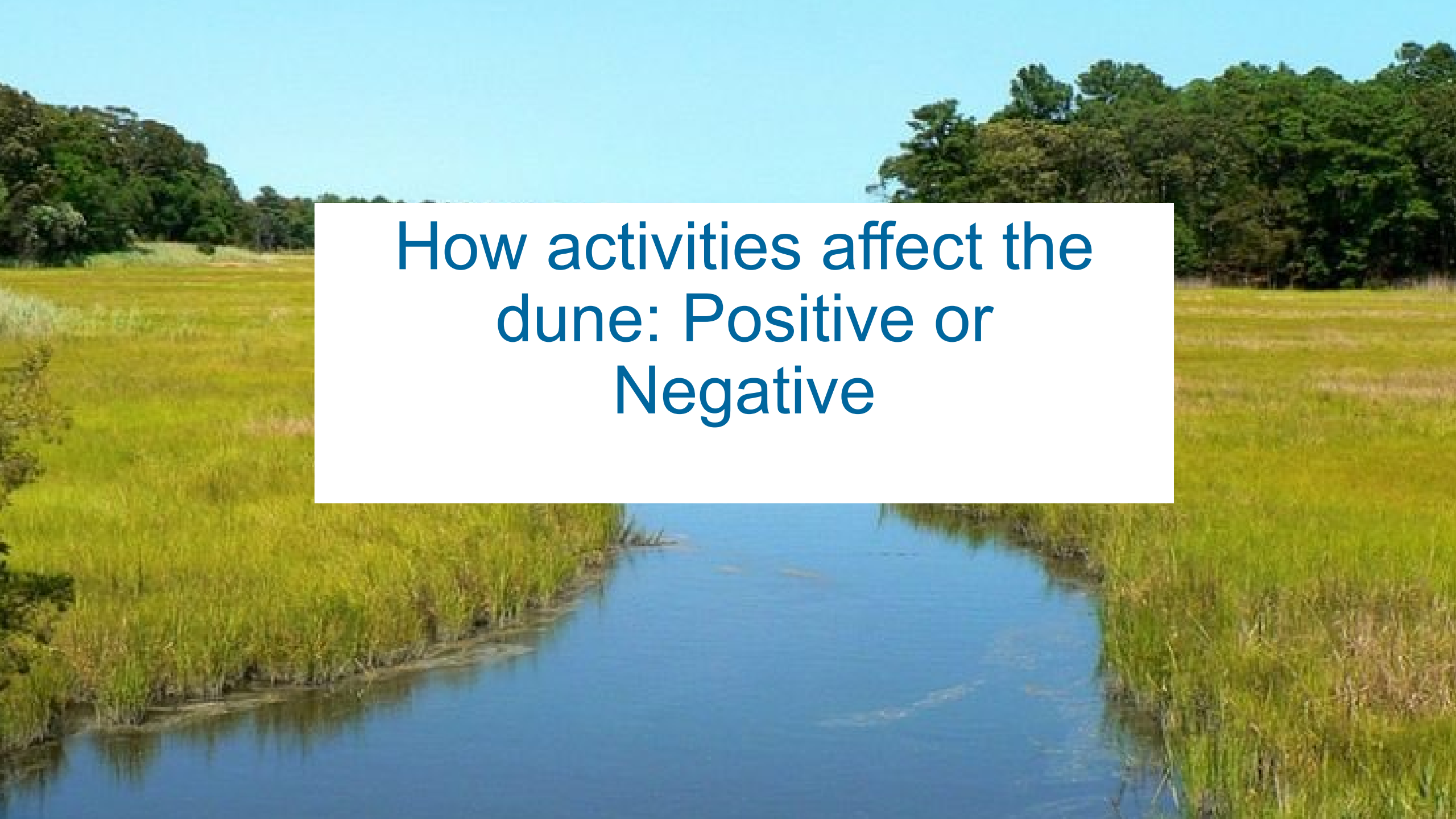
Public vs. Private Beaches

- Private beaches are regulated
- Public funds are only spent on public beaches
- Private beaches tend to face more erosion issues and shoreline recession
- Public Beach is defined as any beach owned in fee simple title by the Federal or State Government or any county, city, town or municipality; or any beach for which the State has obtained an easement or agreement for public use
- Private Beach is any beach that is not public by the above definition

Easement vs. Building Line

- Recorded easements exist on properties at public beaches who receive State or Federally funded beach nourishment
- Varies whether easement is more restrictive than building line
- Some pre-date the building line
- Most prohibit construction within the easement area
- For communities where this exists, could the easement replace the building line?



A coastal landscape featuring a calm body of water in the foreground, reflecting the sky. The water is bordered by lush green grass and reeds. In the background, a dense line of trees stands against a clear blue sky. A white rectangular box is superimposed over the center of the image, containing text.

How activities affect the dune: Positive or Negative

Buildings

Open foundation



Enclosed foundation



Septic Systems and Holding Tanks



Fence



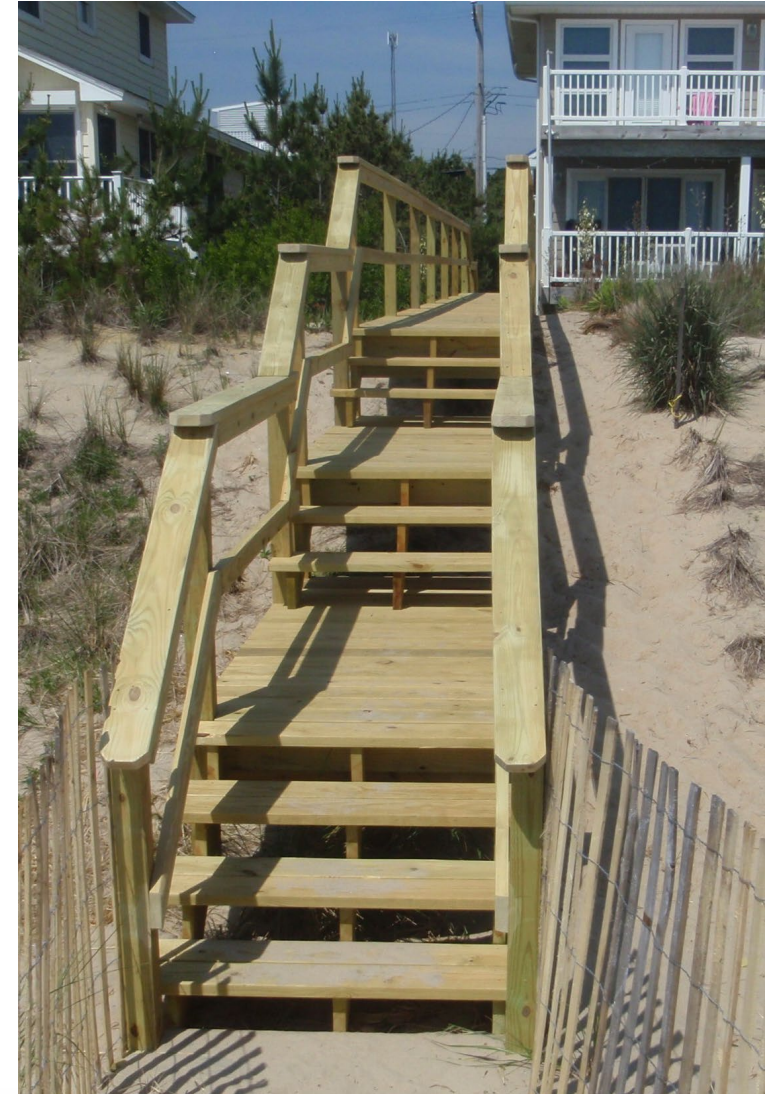
Cantilevered decks



Hardscaping



Dune Crossovers



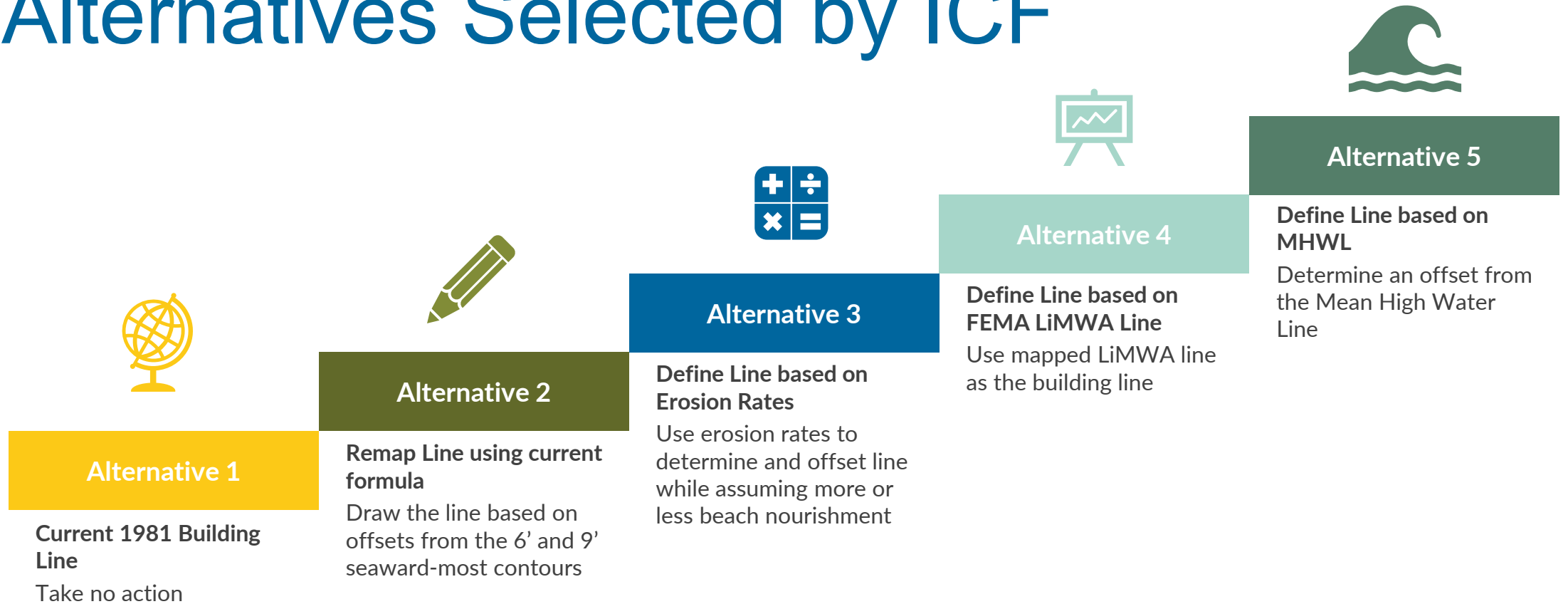
Temporary Structures



Moving Sand



Alternatives Selected by ICF





Alternative 1

- No action
- Keep the current 1981 Building Line

Pros	Cons
Proves efficient in some communities	Outdated in some areas
Is already mapped	Does not account for current or future sea level rise or beach erosion
No regulatory change needed	



Alternative 2

- Use the definition of the Building Line from the current regulations
- The 1981 Building Line using current topography

Pros	Cons
No regulatory change needed	Cannot always find elevation contour
Moves line where seaward toe of dune has moved	Elevation contour doesn't always represent the seaward toe of the dune



Alternative 3

- Uses landward crest of dune as baseline
- Uses 30- yr erosion rates in two scenarios to determine an offset line
- Scenario A – assumes a full level of dune/beach nourishment
- Scenario B – assumes a less level of dune/beach nourishment

Pros	Cons
Considers whether beach nourishment has occurred	Relies on State, Federal or Local Government to continue to nourish beaches



Alternative 4

- Uses FEMA's Limit of Moderate Wave Action Line (LiMWA line)
- LiMWA line is not mapped in all communities, so the road right-of-way was used instead
- If there was no road right-of-way, a 1' contour derived from 2014 LiDAR or 2022 Orthoimagery was used.

Pros	Cons
*Remapped by FEMA every 5 yrs.	Not consistent along coastline
Related to Flood Risk	Requires regulatory change
	Relies on outside source for maps

*In reality, this happens closer to every 15 years, is funding dependent and could disappear with current federal climate

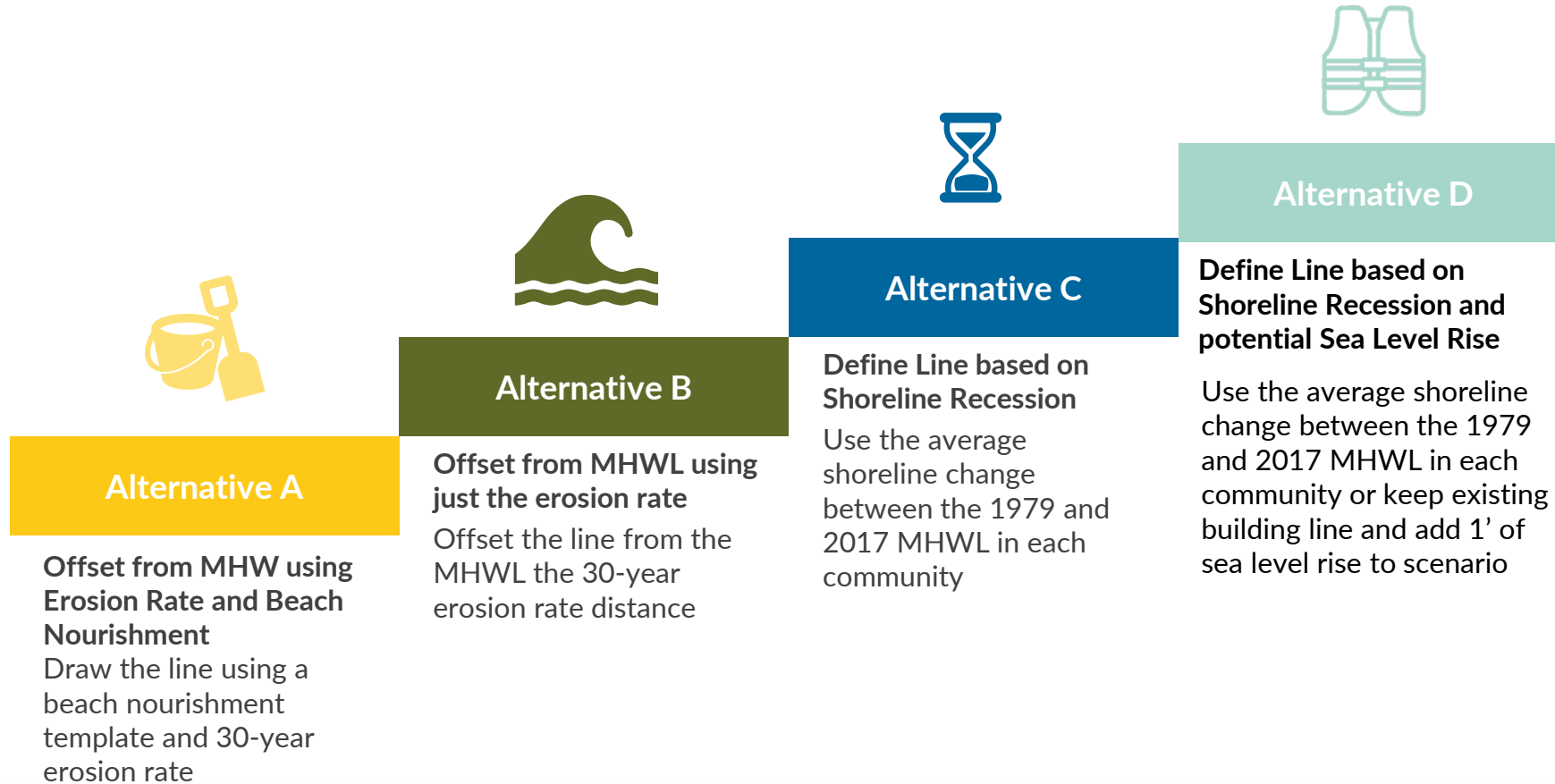


Alternative 5

- Uses an offset from the Mean High Waterline (MHWL) to

Pros	Cons
Determined from an 18-year cycle	Not consistent along coastline
Related to Flood Risk	Requires regulatory change
	Offset is arbitrary

Alternatives Selected by DNREC

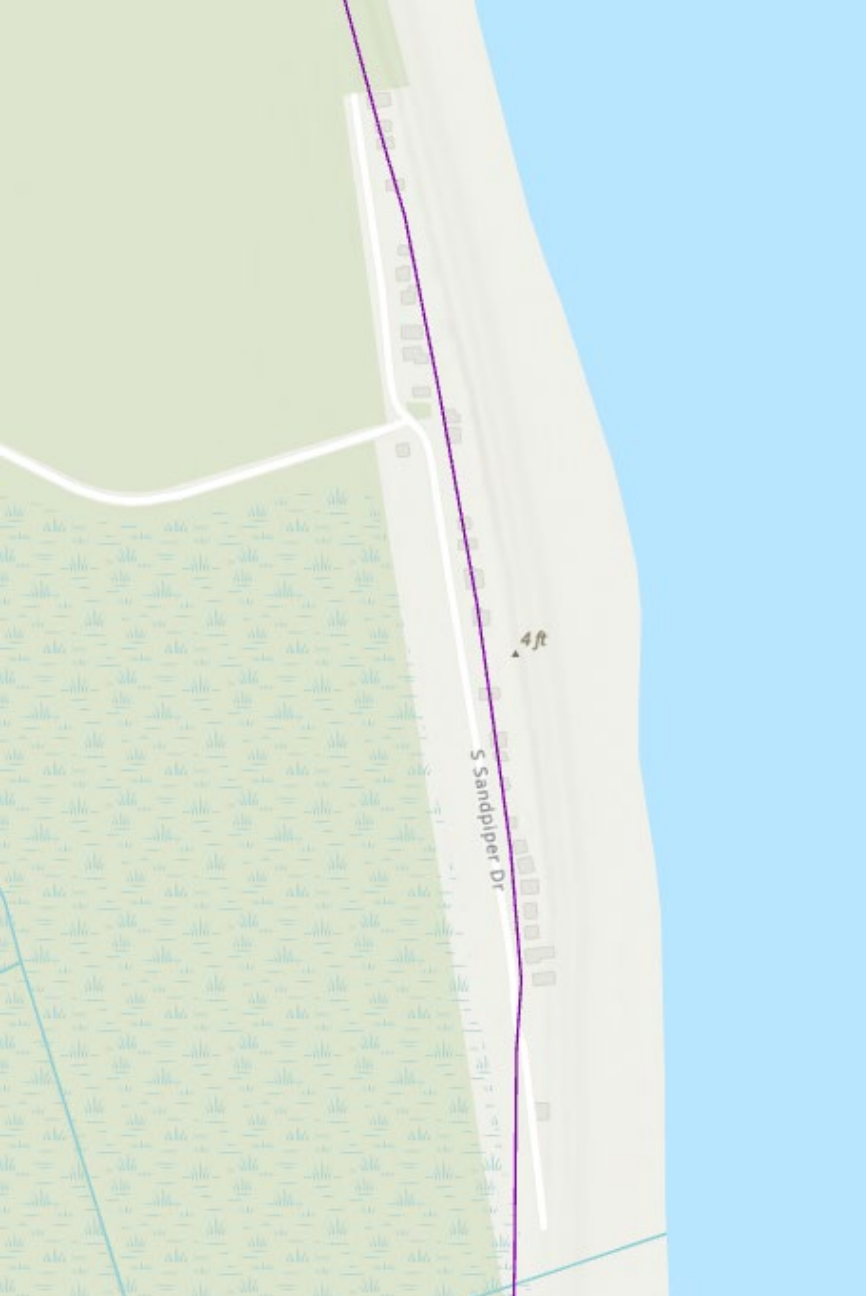




Alternative A

- Used beach nourishment templates from current 50-year projects and proposed 10-year beach management plan
- Added 30-year erosion rate
- Offset the combination from the Mean High Water Line

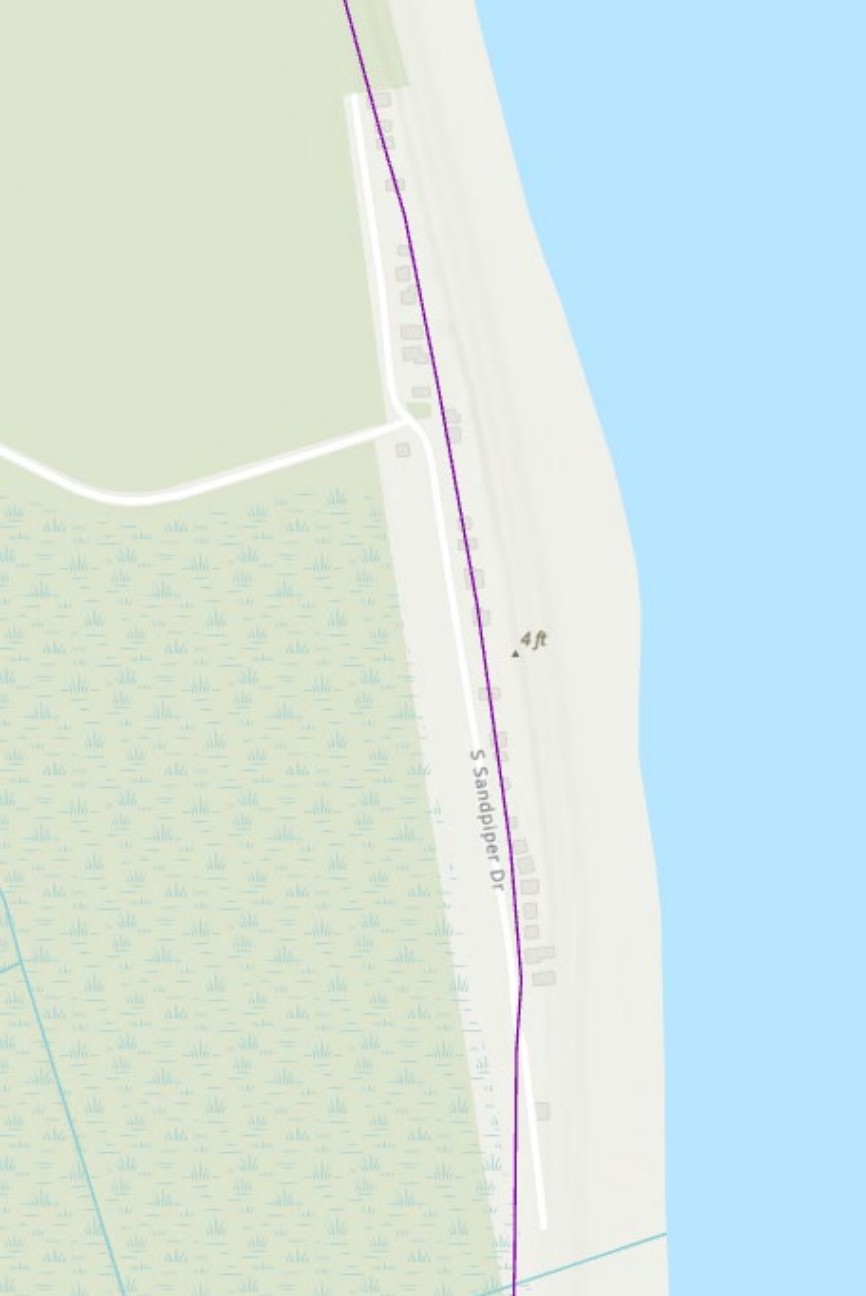
Pros	Cons
Consistent along entire coastline	Not restrictive enough along Ocean Coast
	Too restrictive on Bay Coast
	Requires regulatory change



Alternative B

- 30-year erosion rate offset from the Mean High Water Line

Pros	Cons
Consistent along entire coastline	Not restrictive enough along Ocean Coast
	Too restrictive on Bay Coast?
	Requires regulatory change



Alternative C

- Determined average distance from the MHWL from 1979 to the MHWL from 2017
- Drew offset from current building line based on that distance

Pros	Cons
Shows relative shoreline change since building line was established	Not restrictive enough along Ocean Coast
	Is only mapped within the existing communities
	Requires regulatory change



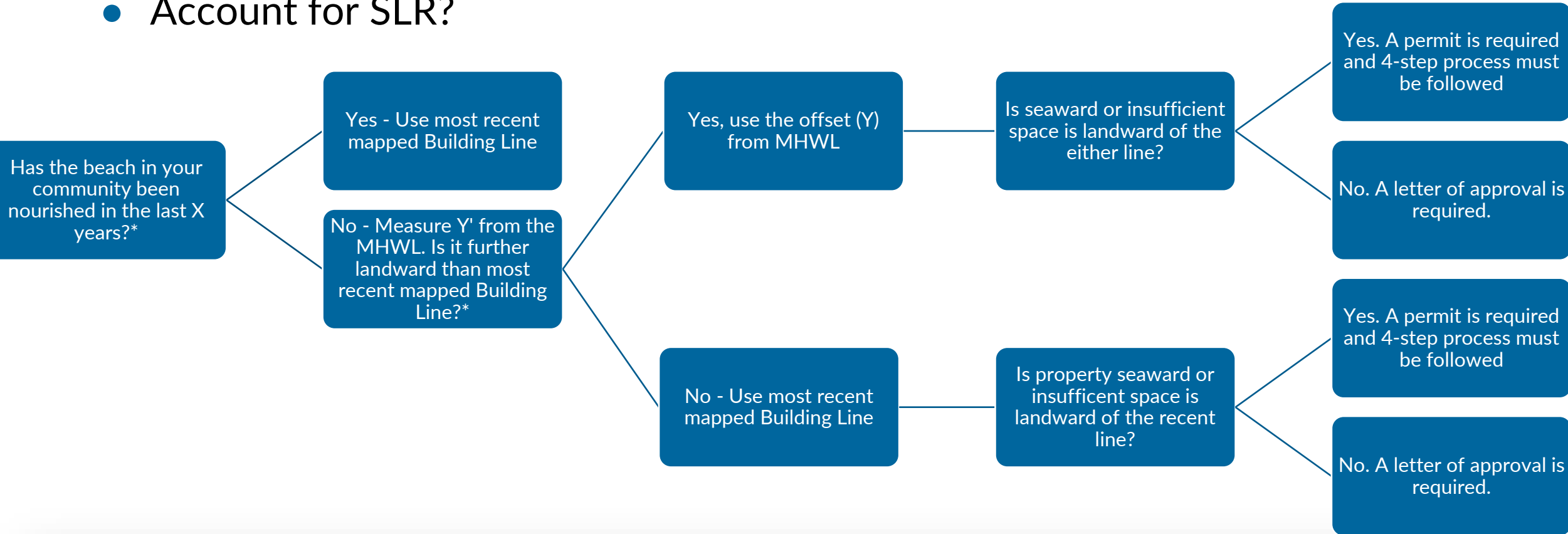
Alternative D

- Took line from Alternative C or existing building line and added potential sea level rise of 1.6'
- 9-18' further inland

Pros	Cons
Takes future conditions into consideration as well as shoreline recession	May not reflect true risk in areas that are nourished
Changes the line in all communities	Is only mapped within the existing communities
	Requires regulatory change
	Pushes development into lower lying areas where inundation is more likely

Now what?

- Account for Shoreline Recession?
- Account for Beach Nourishment?
- Account for SLR?



Thank you!

The Coastal Regulatory Program
Shoreline and Waterway Management Section
Division of Watershed Stewardship

