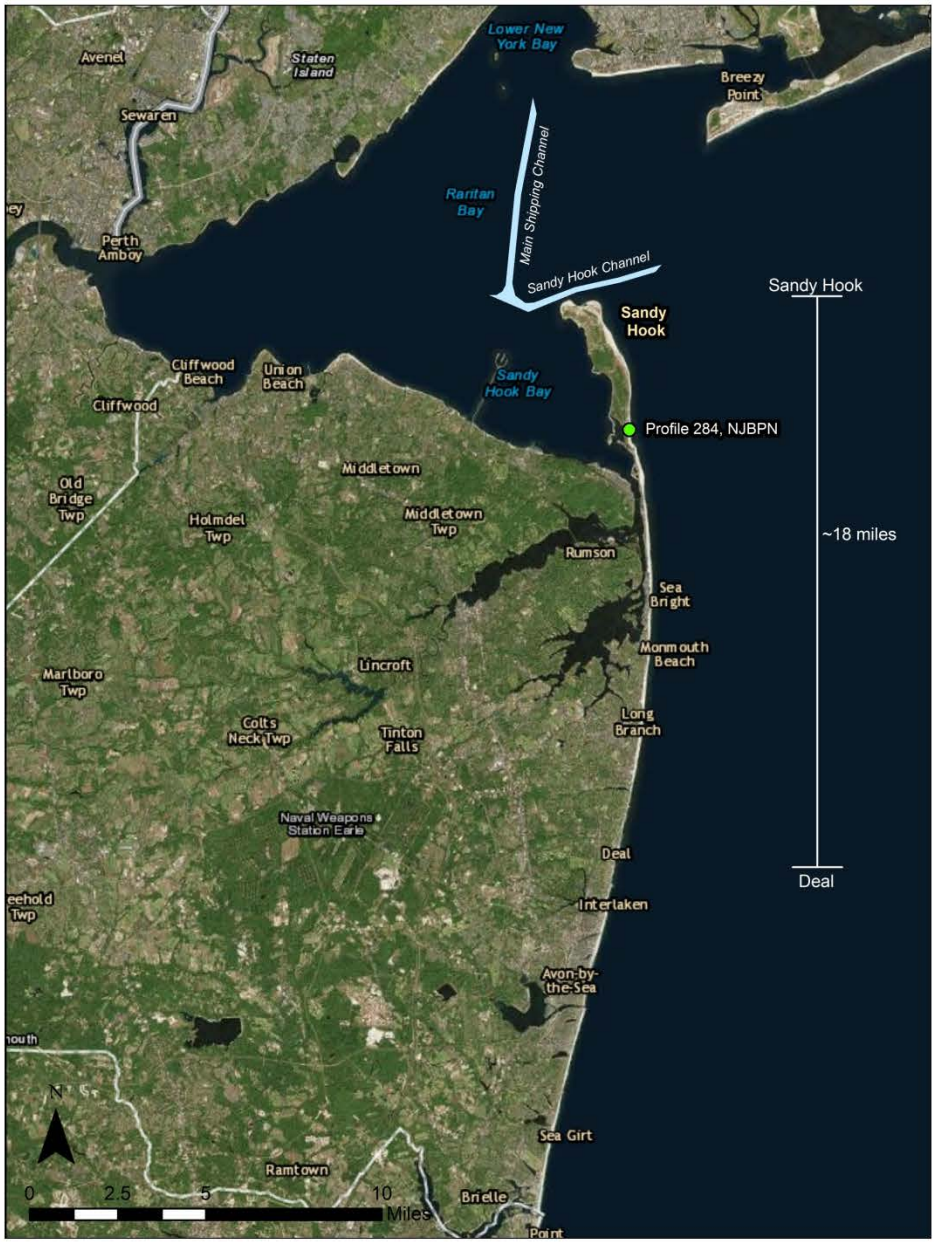
Sandy Hook
Federal Navigation Channel
Regional Sediment Management

18 June 2015

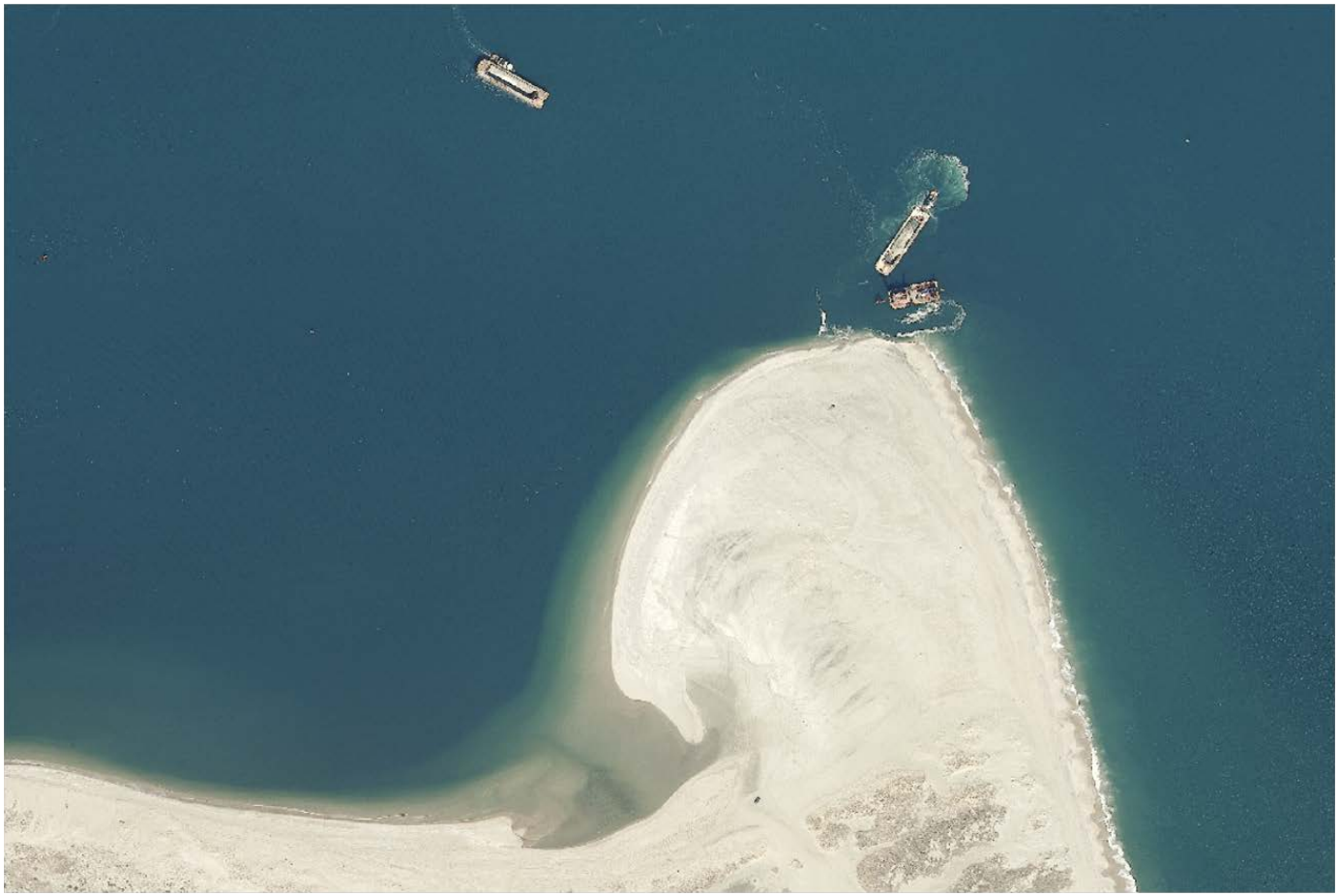
Study Area

Study Area

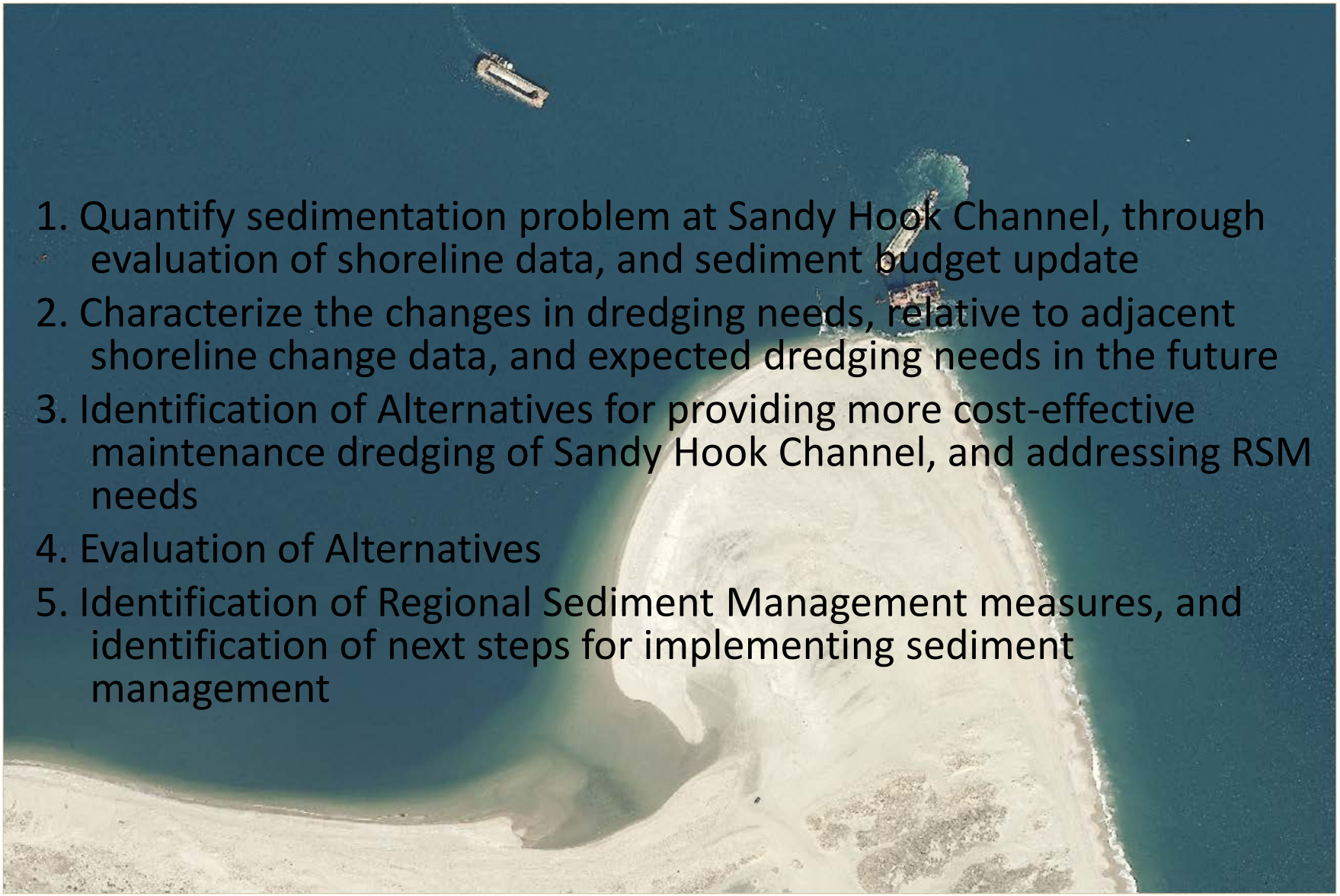

Lower New York Bay
Staten Island
Avenel
Sewaren
Breezy Point
Raritan Bay
Main Shipping Channel
Sandy Hook Channel
Perth Amboy
Sandy Hook
Sandy Hook
Cliffwood Beach
Union Beach
Sandy Hook Bay
Cliffwood
Profile 284, NJBPN
Middletown
Old Bridge Twp
Middletown Twp
Holmdel Twp
Rumson
~18 miles
Sea Bright
Monmouth Beach
Lincroft
Marlboro Twp
Long Branch
Colts Neck Twp
Tinton Falls
Naval Weapons Station Earle
Deal
Deal
Interlaken
Avon-by-the-Sea
Sea Girt
Ramtown
Brielle
0 2.5 5 10
Miles

Problem Statement

1) Characterize problems impacting Sandy Hook Channel
2) Identify solutions to address shoaling problem
3) Identify other regional areas that can benefit from excess material

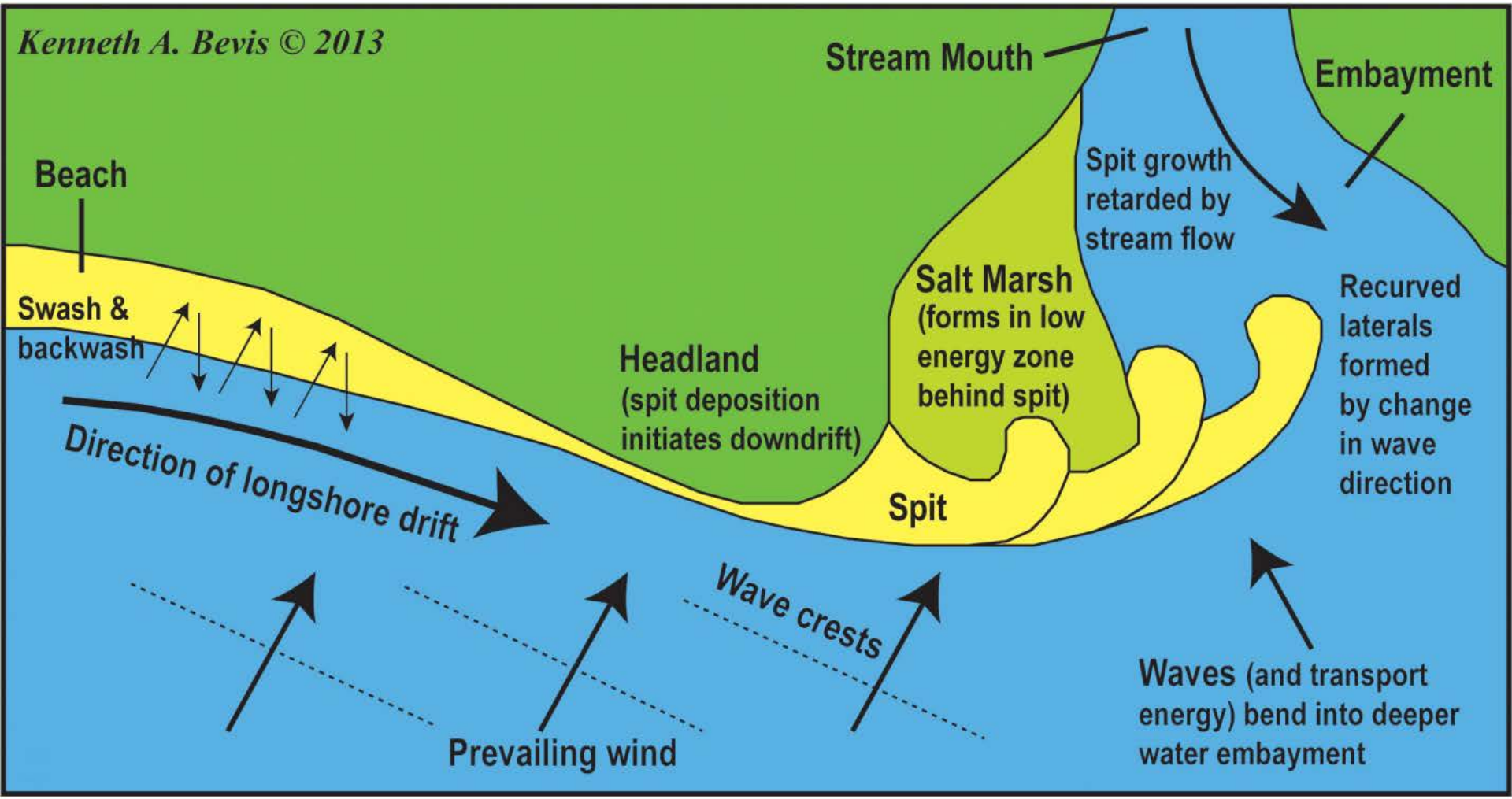


Tasks

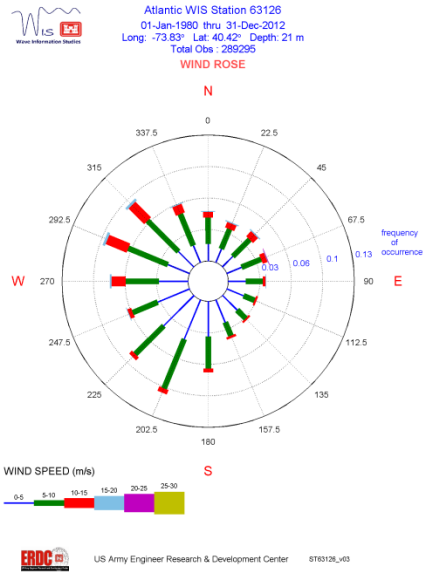


1. Quantify sedimentation problem at Sandy Hook Channel, through evaluation of shoreline data, and sediment budget update
2. Characterize the changes in dredging needs, relative to adjacent shoreline change data, and expected dredging needs in the future
3. Identification of Alternatives for providing more cost-effective maintenance dredging of Sandy Hook Channel, and addressing RSM needs
4. Evaluation of Alternatives
5. Identification of Regional Sediment Management measures, and identification of next steps for implementing sediment management

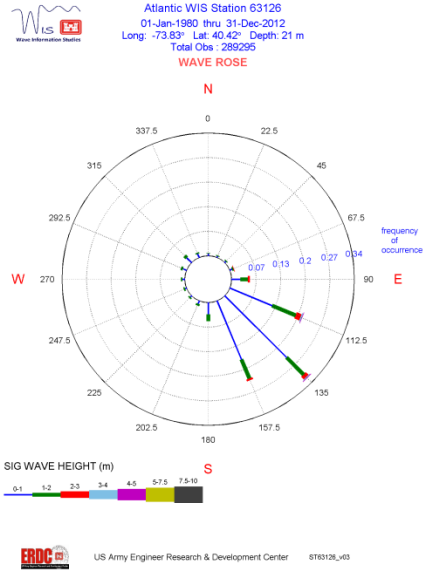
Typical Spit Growth



WIS Wind & Wave Roses

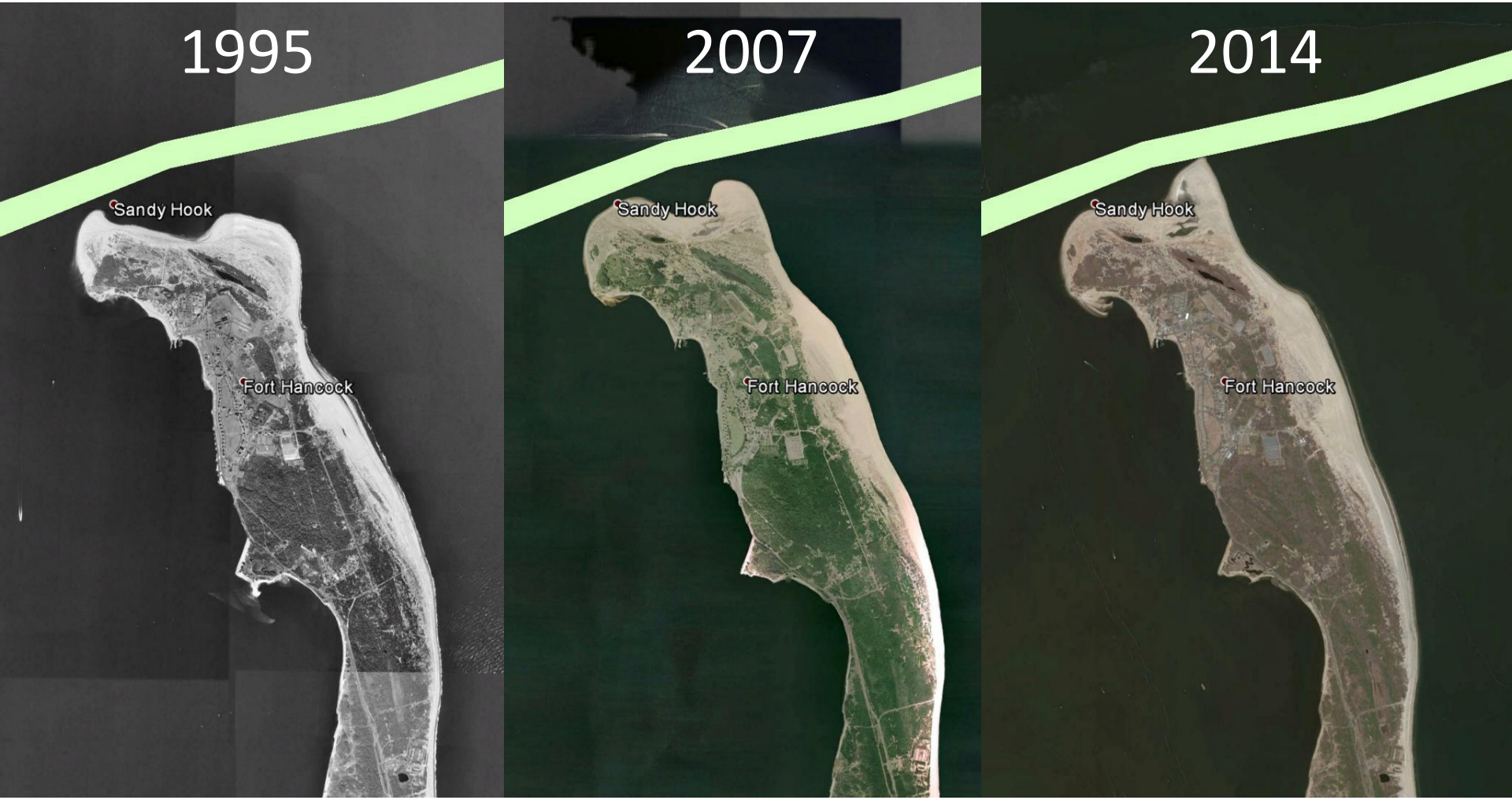


Wind Rose

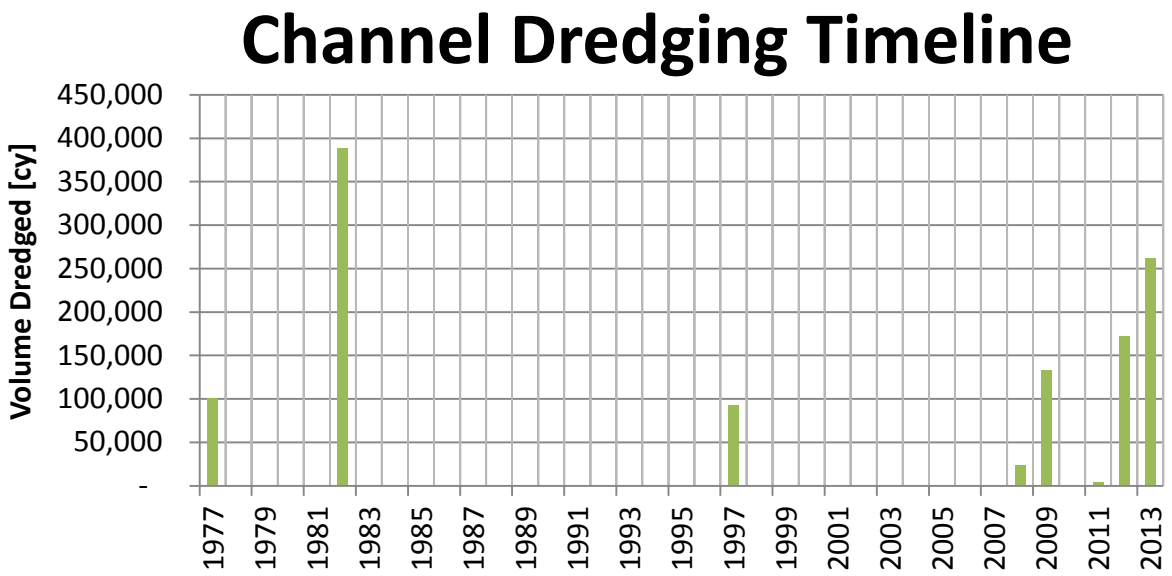


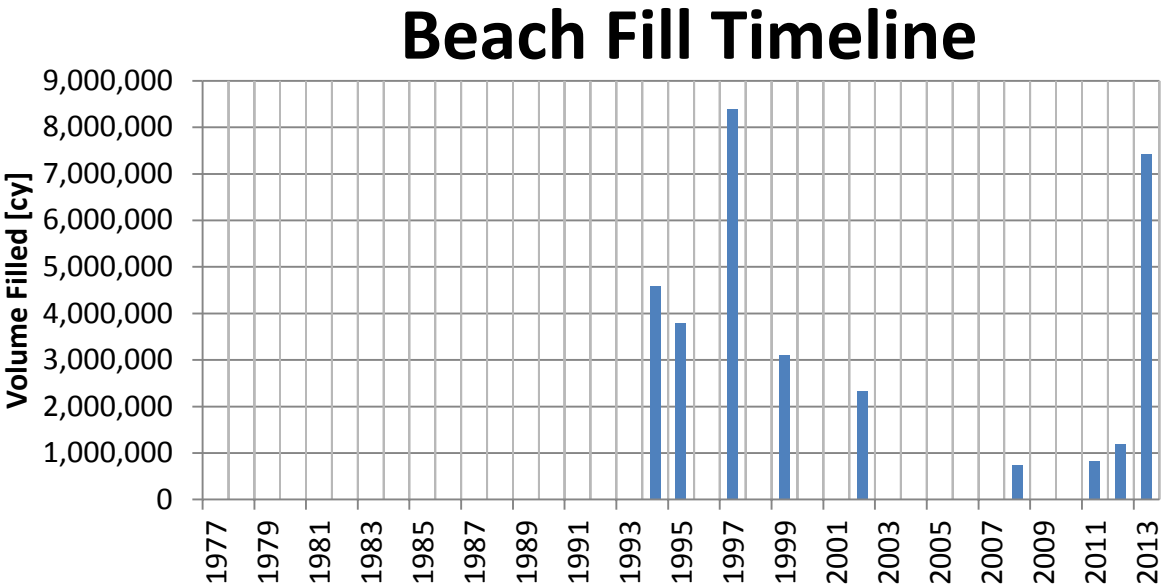
Wave Rose

Growth of Sandy Hook

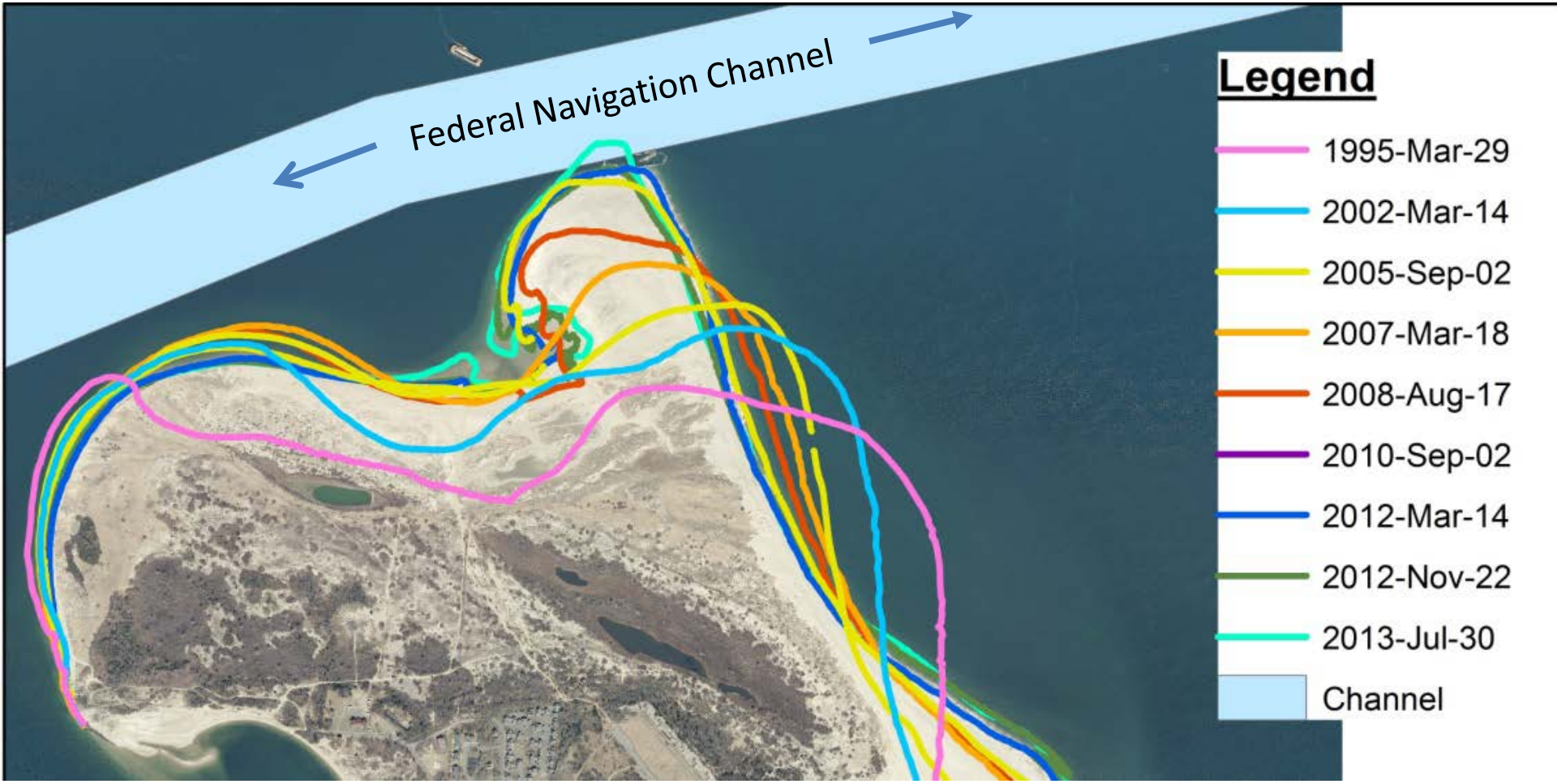


Channel Dredging Vs. Beach Fill



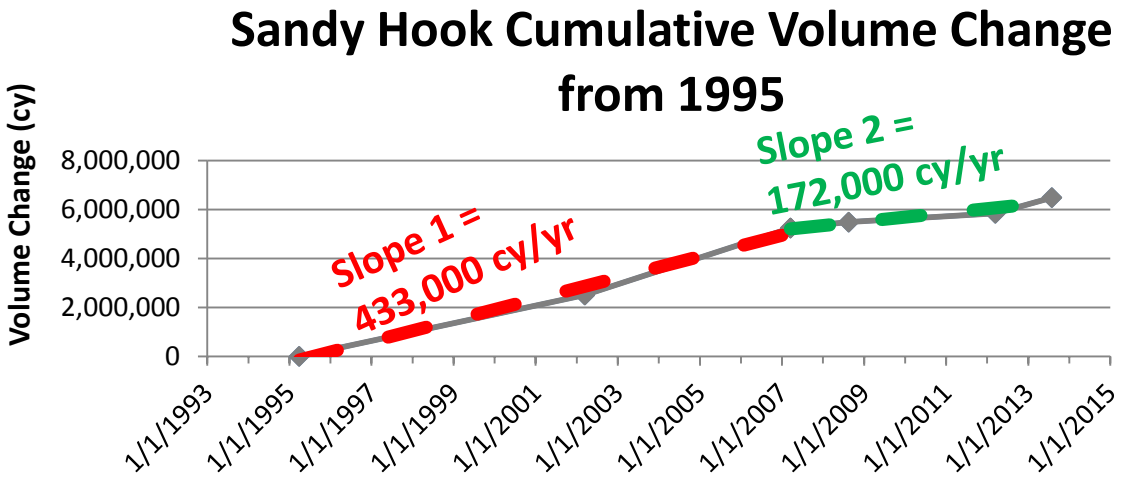


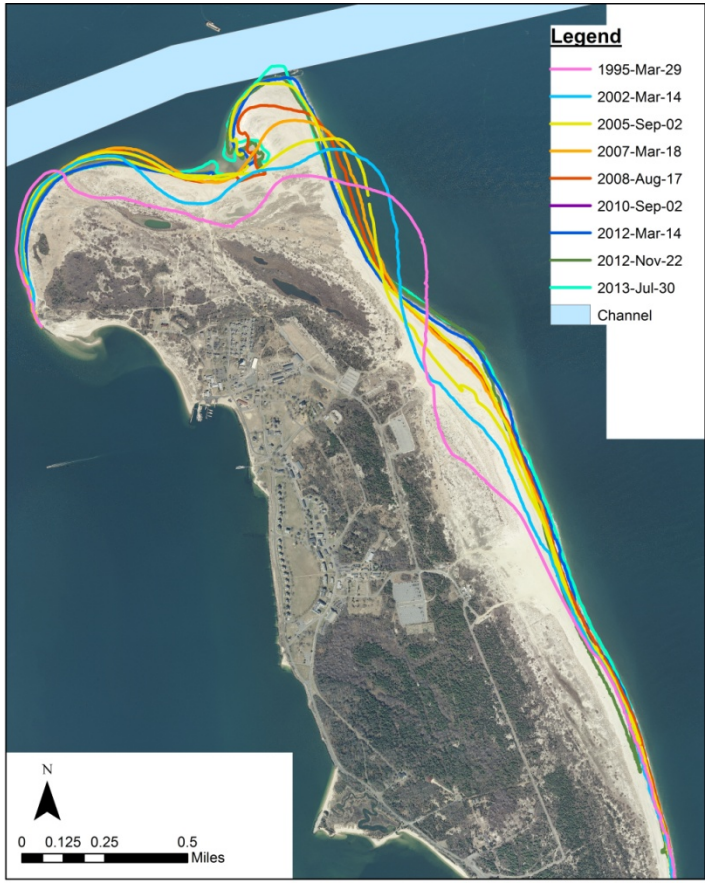
Shoreline Change Analysis



Sandy Hook Shorelines from 1995 to 2013

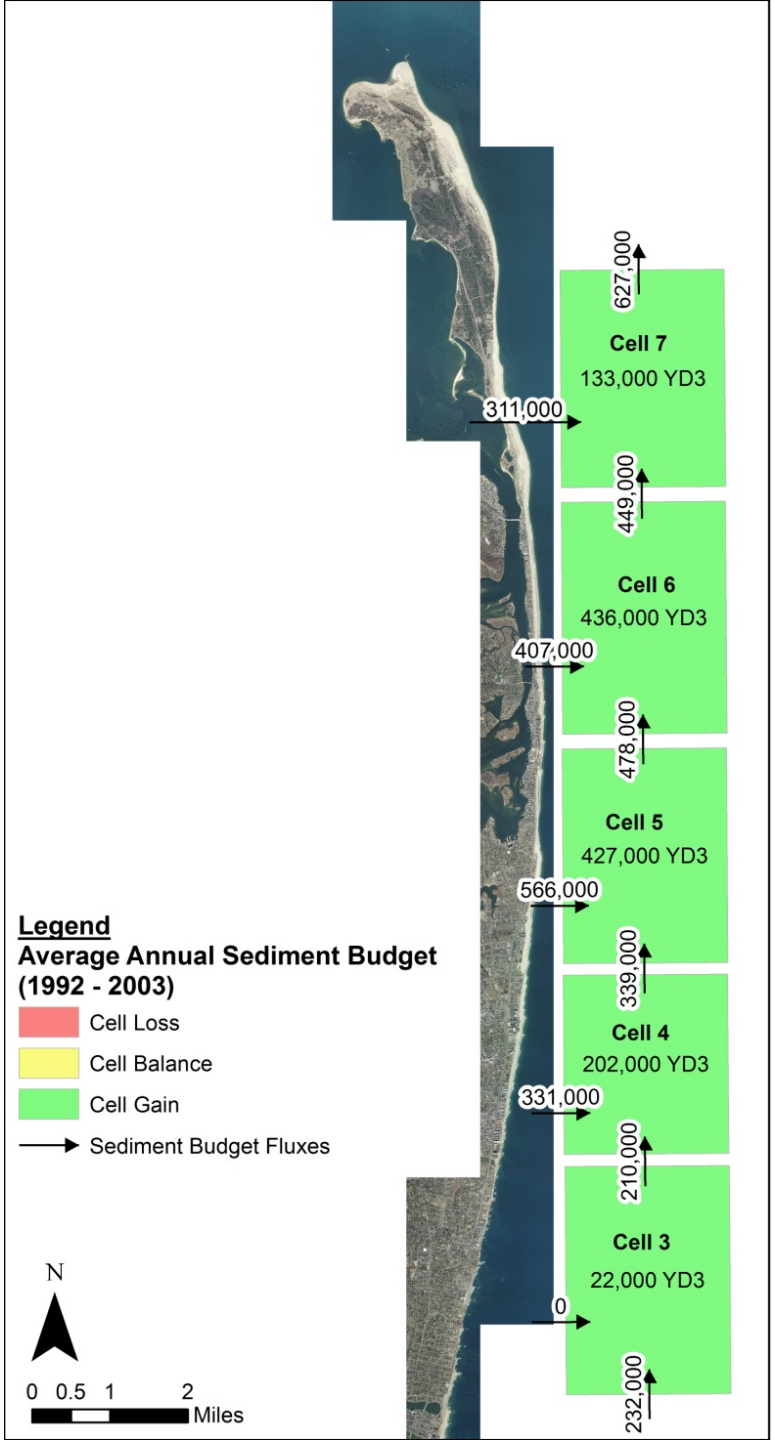
Growth of Sandy Hook Spit





REGIONAL SEDIMENT BUDGET 1992 - 2003

- Sediment budget for New Jersey Coast provided by NAN
- Period from 1992 to 2003
- Deal Lake to Sandy Hook
- Need to update
- Include tip of Sandy Hook
- Used SBAS to draw sediment budget in GIS

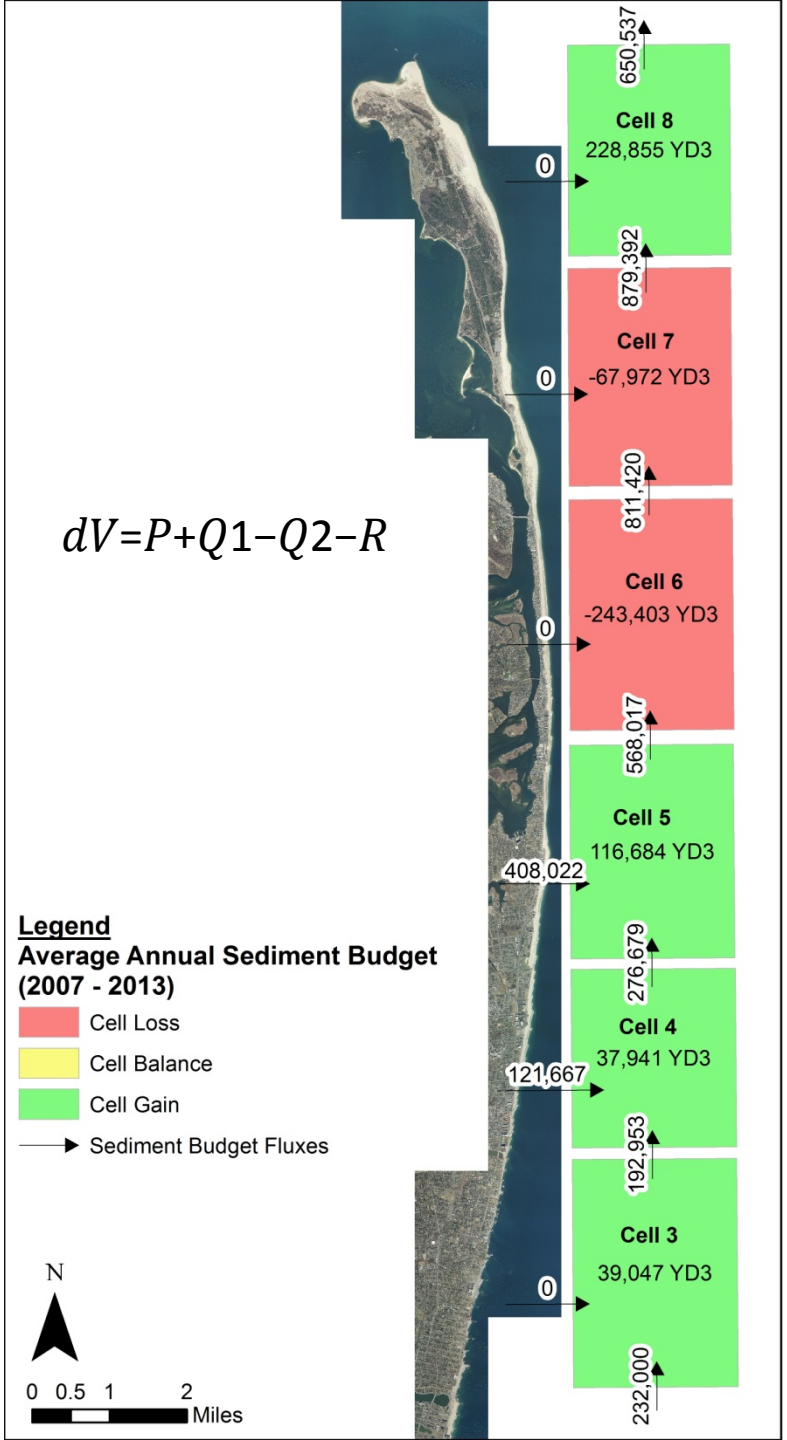


REGIONAL SEDIMENT BUDGET 2007 - 2013

- Updated sediment budget for New Jersey Coast
- DSAS to calculate shoreline change
- Period from 2007 to 2013
- Cells 6 & 7 erosive
- Cell 8 (Sandy Hook) growing
- 650,000 cy potentially entering channel

Beach Fill Volumes between 2007 - 2013

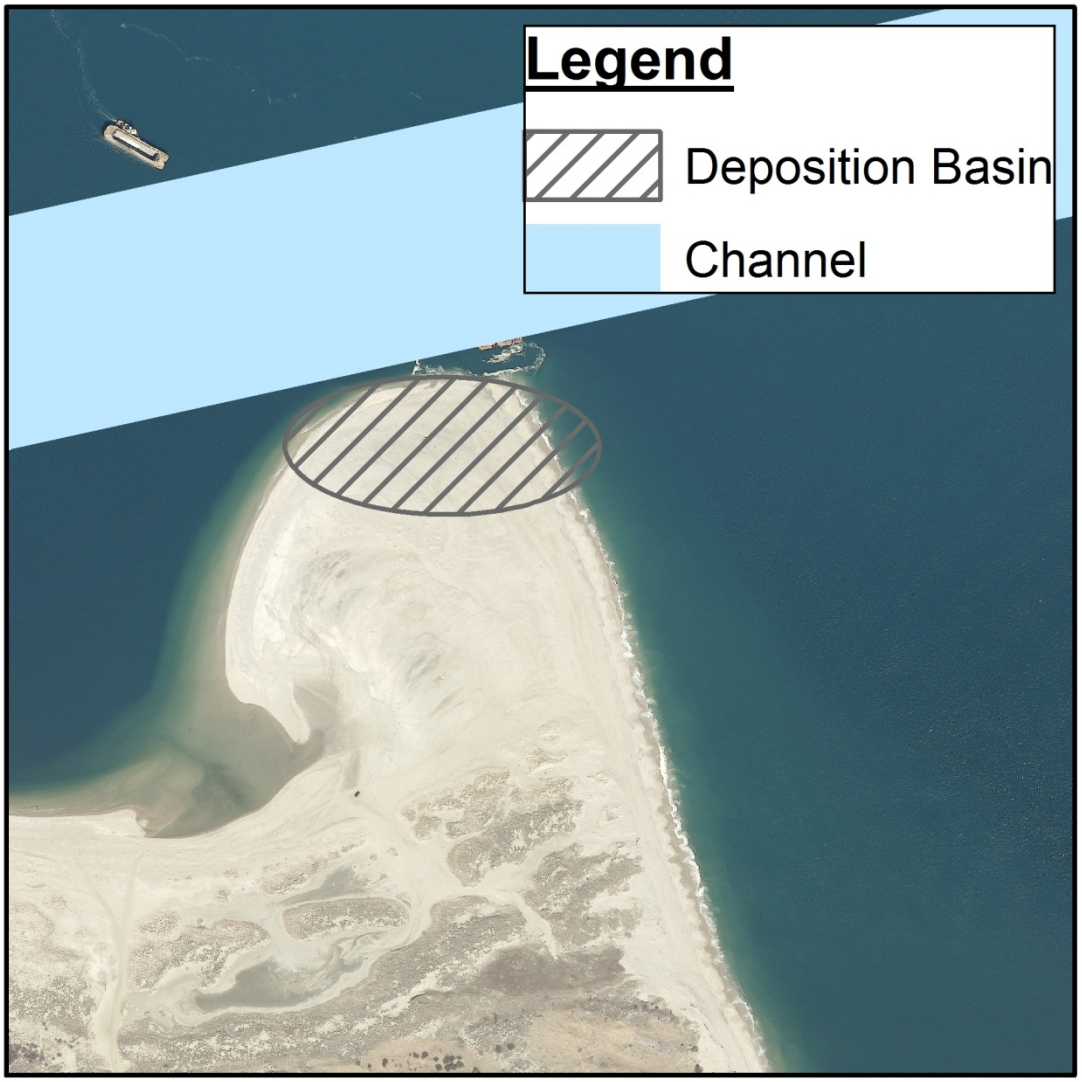
Cell Number	Dates of Fill	Fill Volume (cy)	Total Fill Volume (cy)	Average Annual Fill Volume (cy/y)
4	Nov 2008-Jan 2009	730,000	730,000	121,667
5	Nov 2011-Jan 2012	820,000	2,448,132	408,022
	Nov 2012-Jan 2013	1,201,415		



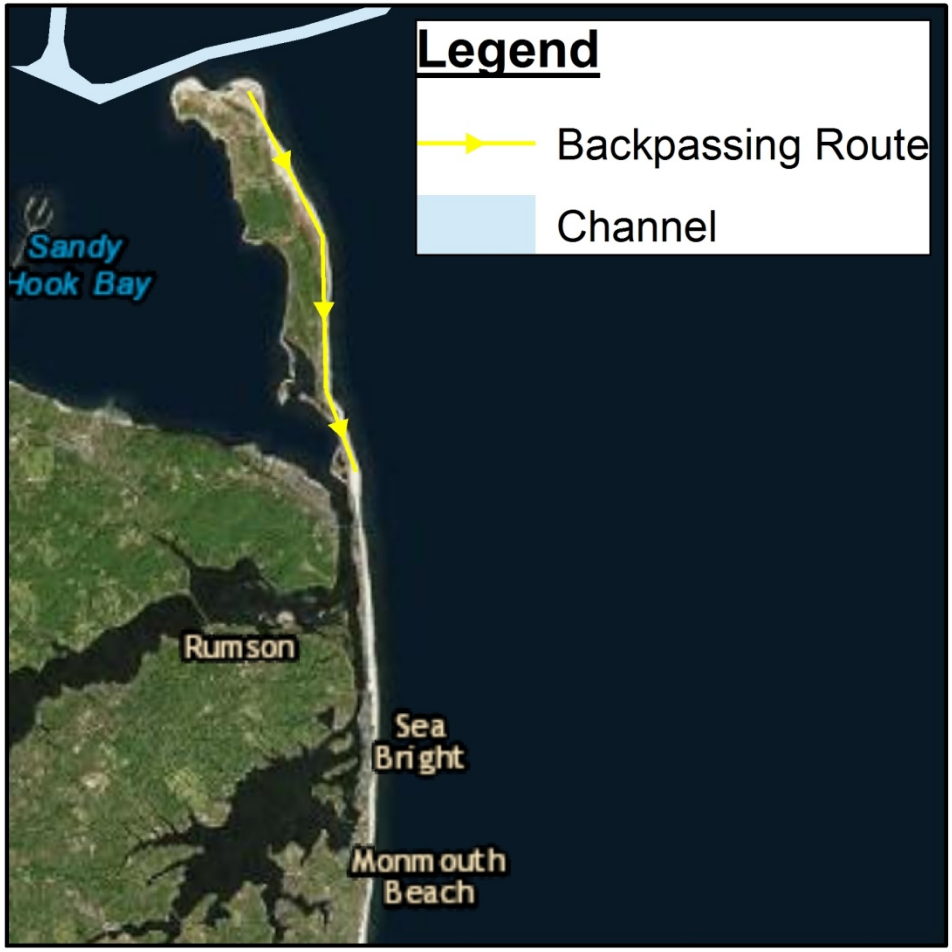
Results of Shoreline Change Analysis

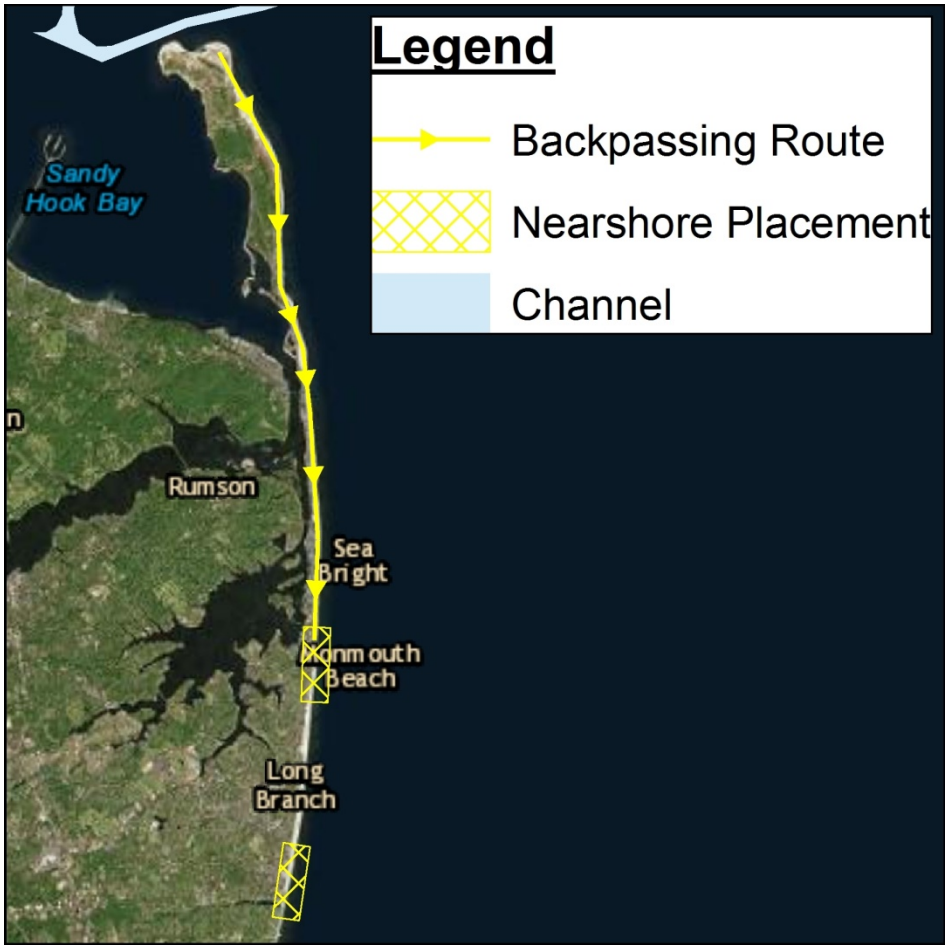
- Growth of Sandy Hook is inevitable
- Beach fill and renourishment adding to available sand supply
- Shoaling rates have increased, may continue to increase
- Approximately 200,000 cy entering channel each year
- Potential to increase to 600,000 cy/yr

ALTERNATIVE: Deposition Basin

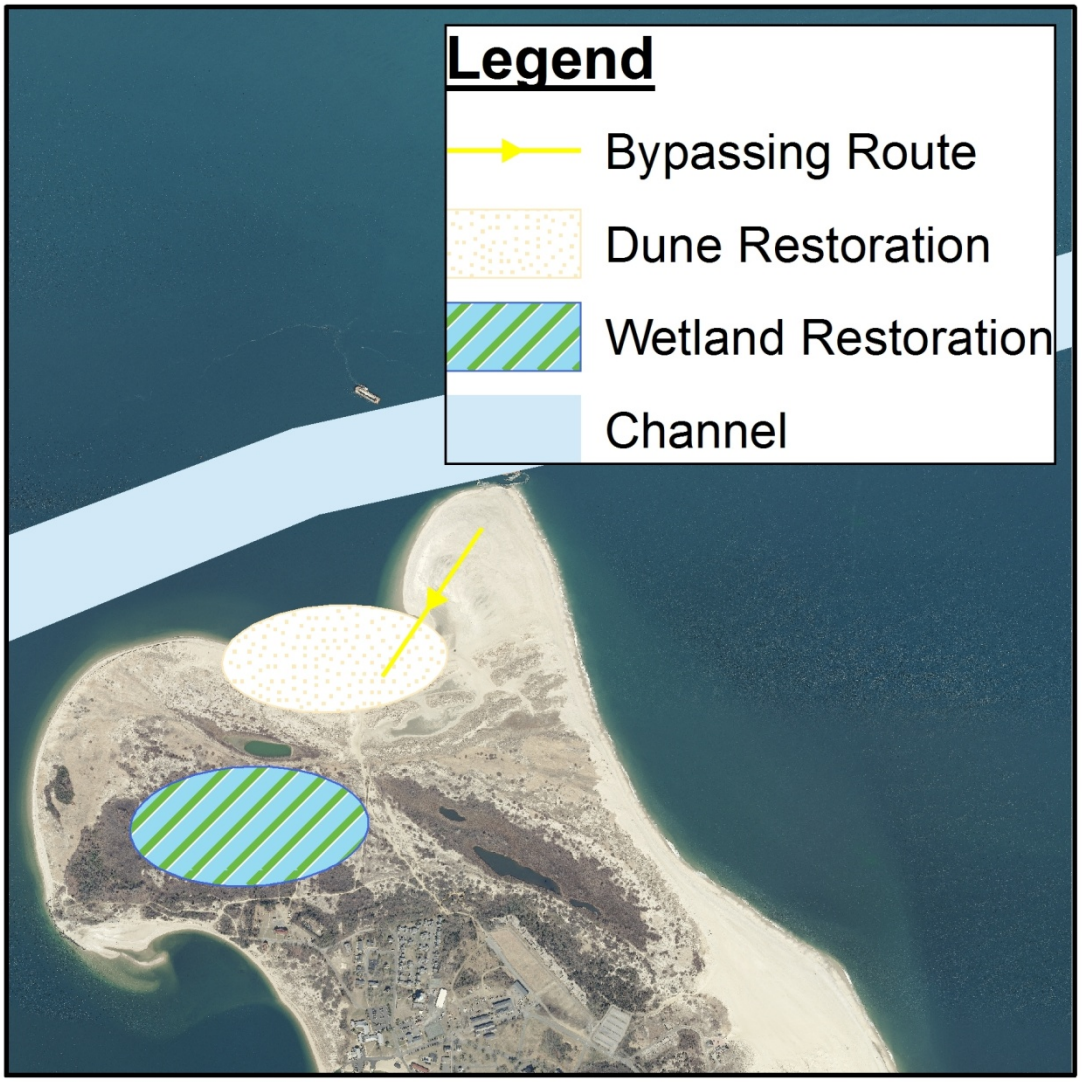


ALTERNATIVE: Backpassing

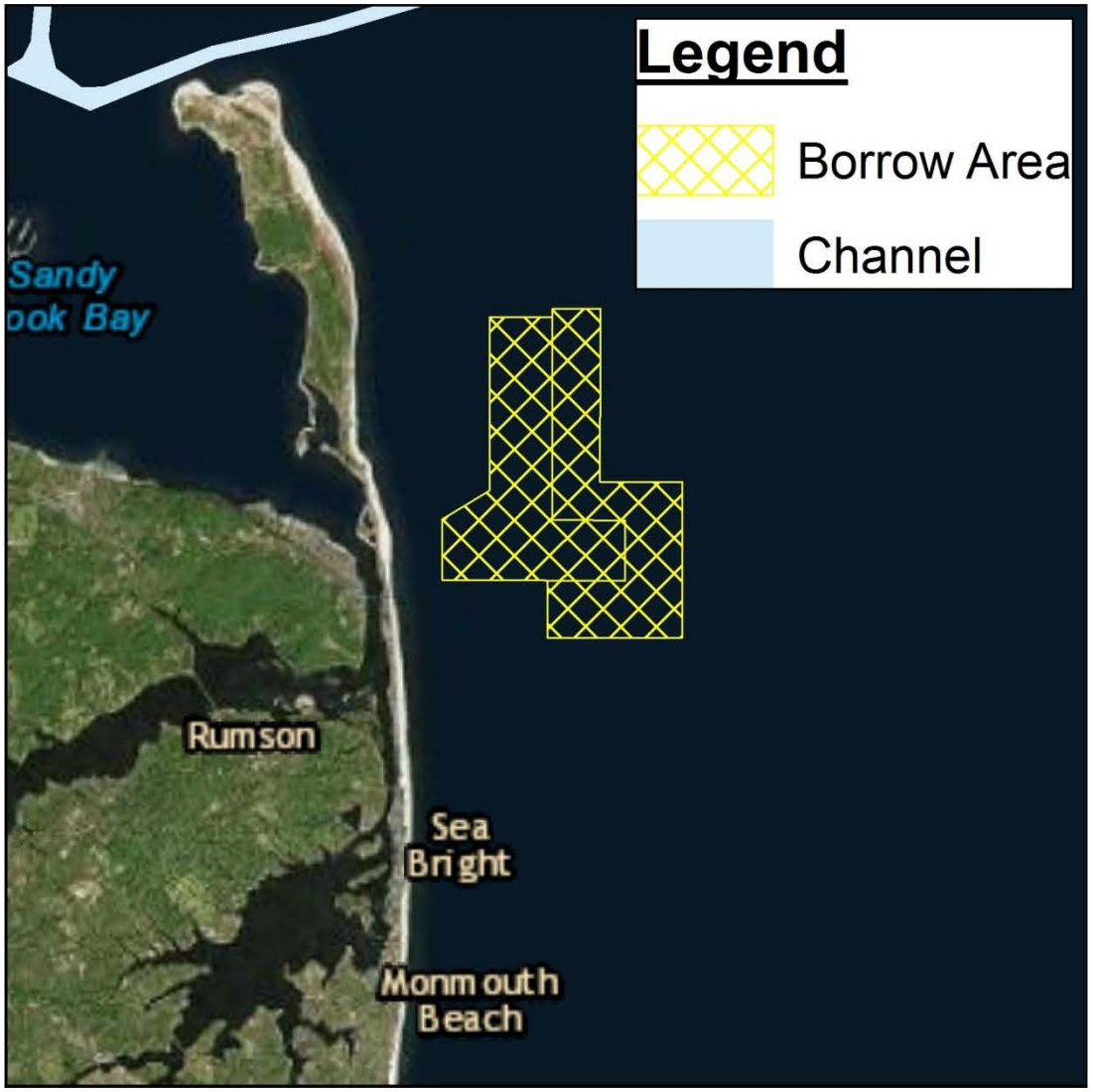




ALTERNATIVE: Bypassing



ALTERNATIVE: Stockpile in Borrow Area



NEXT STEPS

- **PROGRAMMATIC**
  - IDENTIFY APPLICABLE AUTHORITIES
  - IDENTIFY FUNDING SOURCES
  - COORDINATE STAKEHOLDER INVOLVEMENT
- **TECHNICAL**
  - CONDUCT ADDITIONAL SEDIMENT SAMPLING
  - DETERMINE REQUIRED DESIGN CRITERIA
- **ECONOMICS**
  - DETERMINE FUTURE WITHOUT PROJECT CONDITION
  - CALCULATE LIFE-CYCLE COST SAVINGS
- **ENVIRONMENTAL**
  - DEVELOP BEST MANAGEMENT PRACTICES
  - IDENTIFY REQUIRED ENVIRONMENTAL PERMITS

Thank You