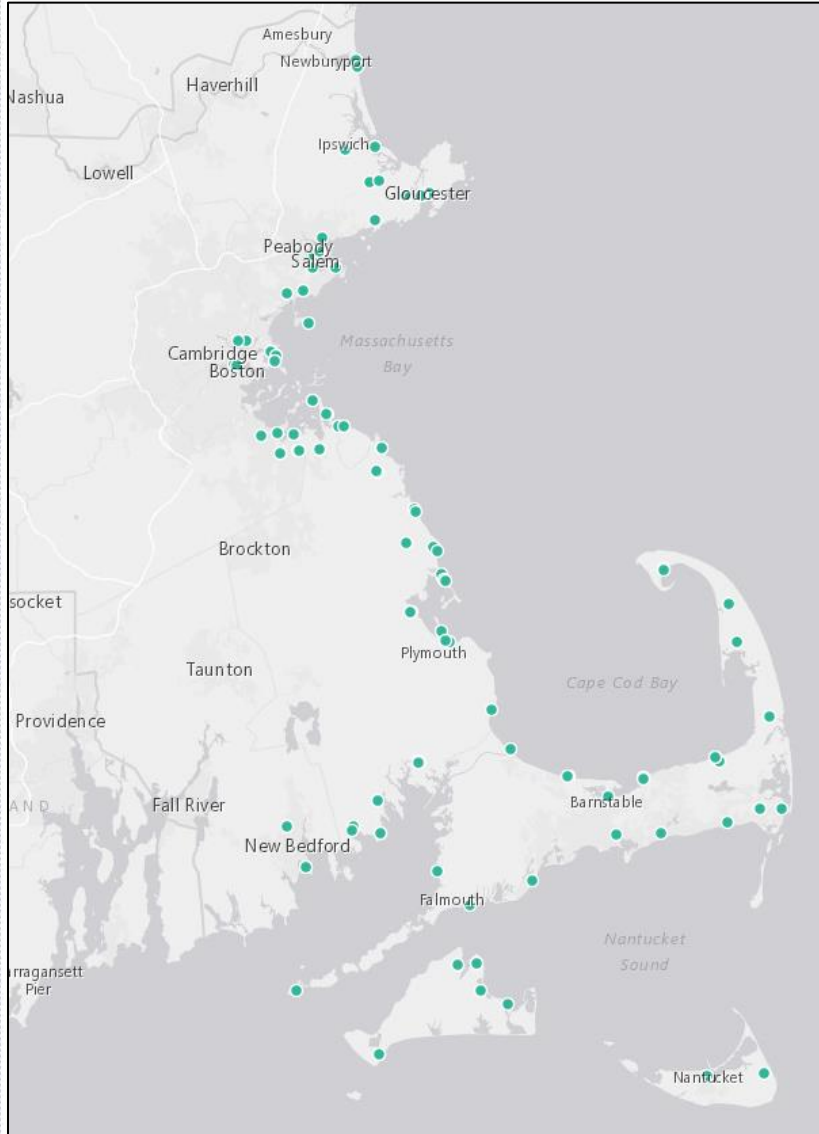


# ***Building Shoreline Resiliency in Marshfield & Duxbury Through Beach and Dune Nourishment***



***January 20, 2021***

# Overview



## ***CZM Coastal Resilience Grant Program***

*Questions & Comments:  
Greg Guimond  
Marshfield Town Planner  
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*Valerie Massard  
Duxbury Town Planner  
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# ***Project Goals & Funding***

- *Environmental permitting*
- *Public education*



Beach & dune  
nourishment at  
critically eroded  
beaches

*Project Funding: CZM Coastal Resiliency Grant*

*Project Cost: \$281,318*

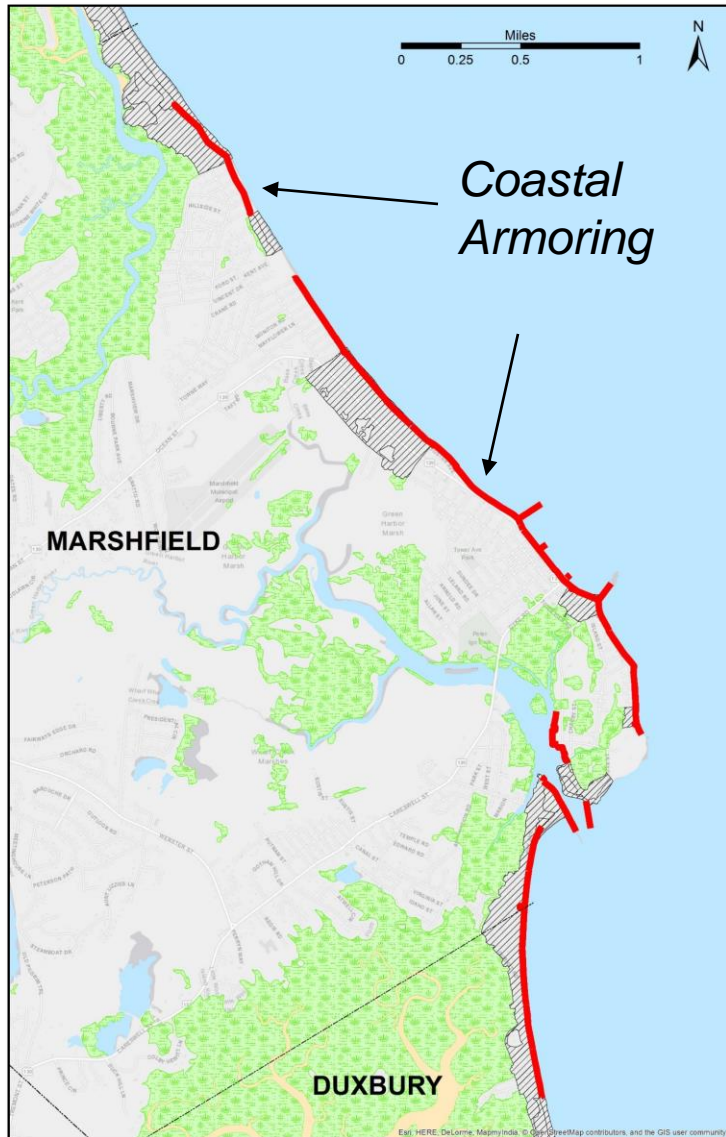
*Grant Award: \$210,922*

*Town Match: \$70,396 (cash & in-kind services)*

*Grant Awarded: September 2020*

*Study Completion: June 30, 2022*

# Existing Beach Conditions



## Coastal armoring

- Marshfield – 83%
- Duxbury – 91%

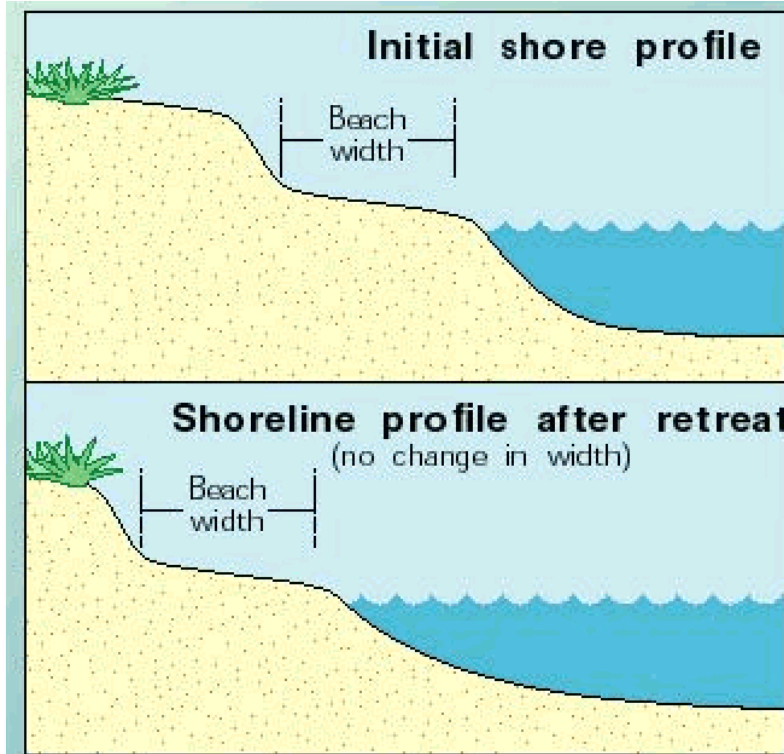


Source: CBS Boston

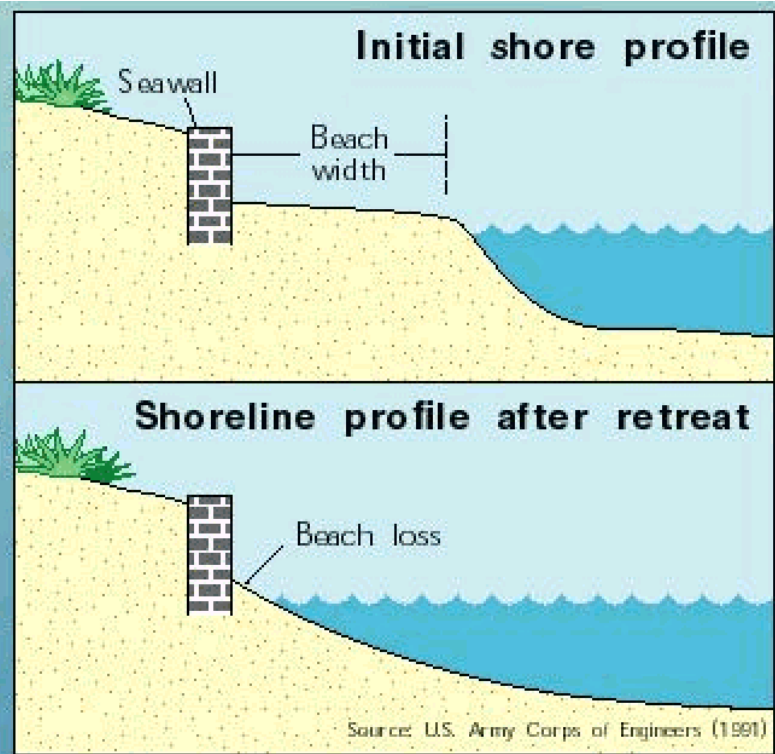
# Coastal Armoring Impacts

- *Benefits: last line of defense for erosion*
- *Disadvantage: adversely impacts fronting beaches*

*Natural beaches:  
maintain beach width & elevation*



*Armored shorelines:  
beach narrows & elevation drops*



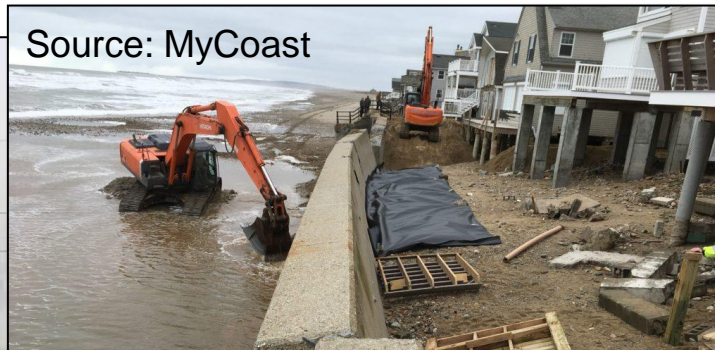
Source: U.S. Army Corps of Engineers (1991)

# Coastal Armoring Impacts (cont.)

- *Lower beach elevation* → *deeper water during storms*
- *Deeper water* → *larger waves impacting the walls*
- *Larger waves* → *more overtopping*
- *More overtopping* → *increased damage*



Source: Wicked Local



Source: MyCoast



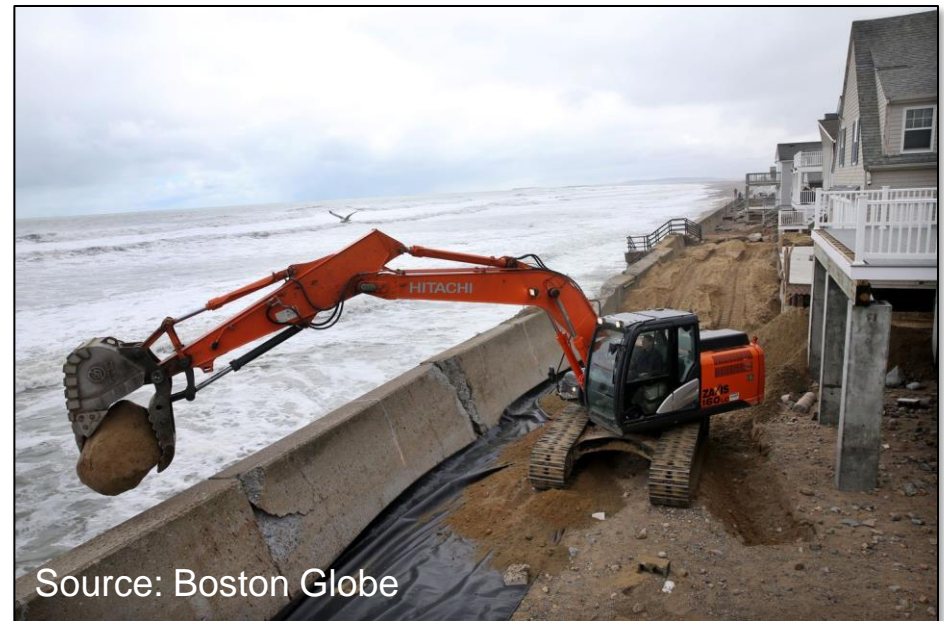
Source: Patriot Ledger



Source: Patriot Ledger

# ***Current Management Approach***

- *Maintain/repair shore protection structures*
- *Elevate/buy out structures*
- *Regulate development in high hazard areas*
- *Planning studies – MVP, CZM resiliency, etc.*



# Costs Associated with Status Quo

Town	Projected Costs Over Next 30 Years			
	FEMA Repetitive Loss Claims	Seawall Repairs	Storm Related Public Services	Total
Marshfield	\$15.1 million	\$49.5 million	\$7.3 million	\$71.9 million
Duxbury	\$5.0 million	\$15.9 million*	\$5.5 million	\$26.4 million

\* doesn't include costs for annual maintenance

- *Continued overtopping & damage to properties*
- *Continued risks to public safety*
- *Continued seawall damage*
- *Increased costs to repair/replace/maintain walls*
- *Potential loss of tax revenue*
- *Loss of beach for storm damage protection*
- *Loss of beach for recreation and wildlife habitat*
- *Decline in tourism*

# Sites Selected for “Soft” Solutions

- *Dune nourishment*
  - *Rexhame Public Beach*
  - *Winslow Ave. Beach*
- *Beach & dune nourishment*
  - *Fieldston & Sunrise Beaches*
  - *Bay Ave & Gurnet Rd Beaches*



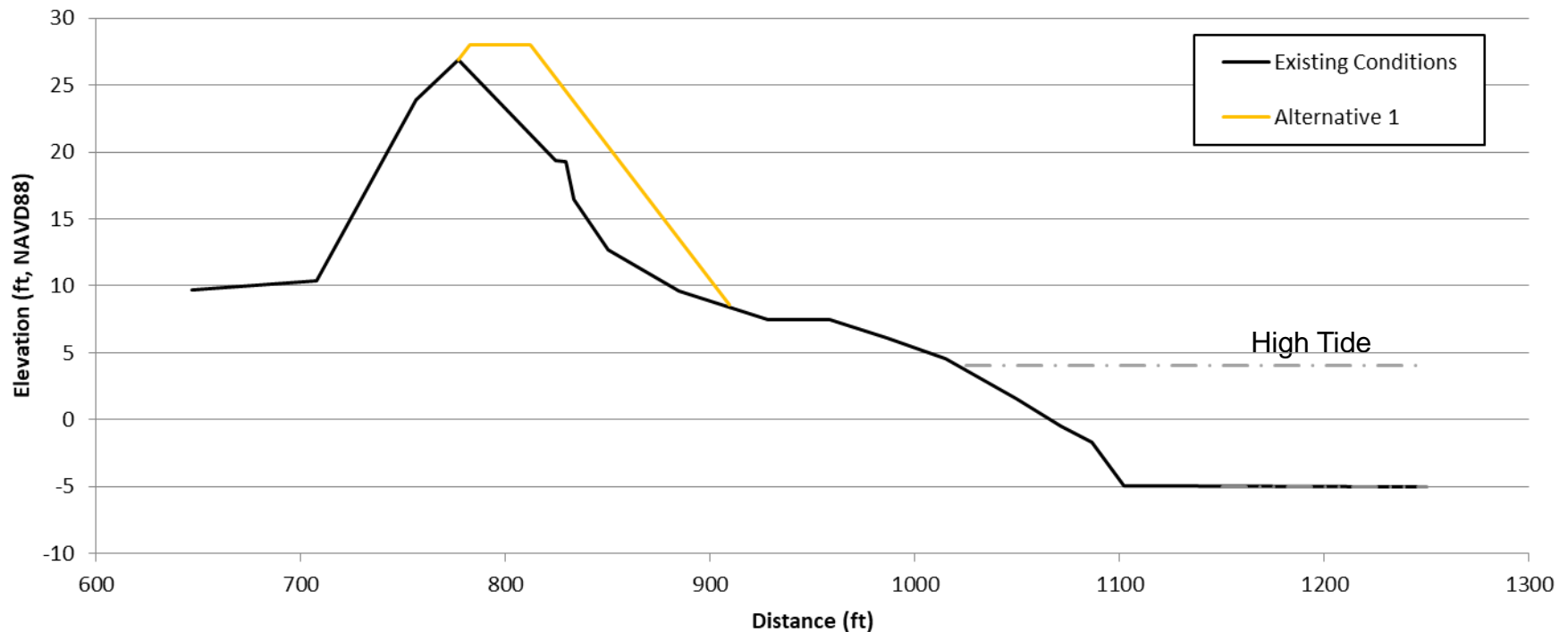
# Rexhame Public Beach



# Rexhame – Cross Section

- Rexhame Public Dune Design*  
*30 ft wide dune crest at elevation 28 ft; 1:5 slope to beach*

**Transect 3 - Rexhame Public Beach**



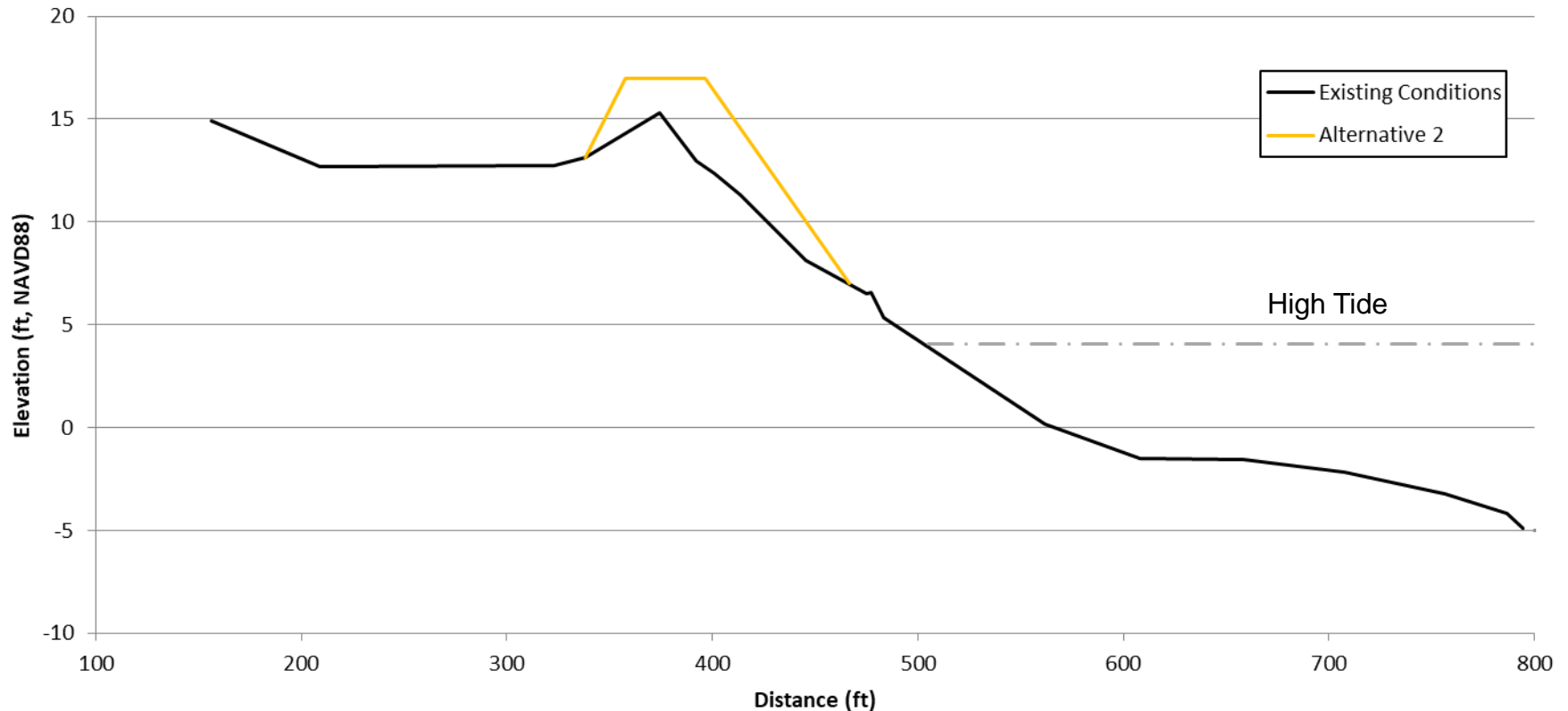
# ***Winslow Ave. Beach***



# Winslow Ave. – Cross Section

- *Winslow Ave. Dune Design*  
*40 ft wide dune crest at elevation 17.0 ft; 1:7 slope to beach*

**Transect 9 - Winslow Ave Beach (Kent Ave)**



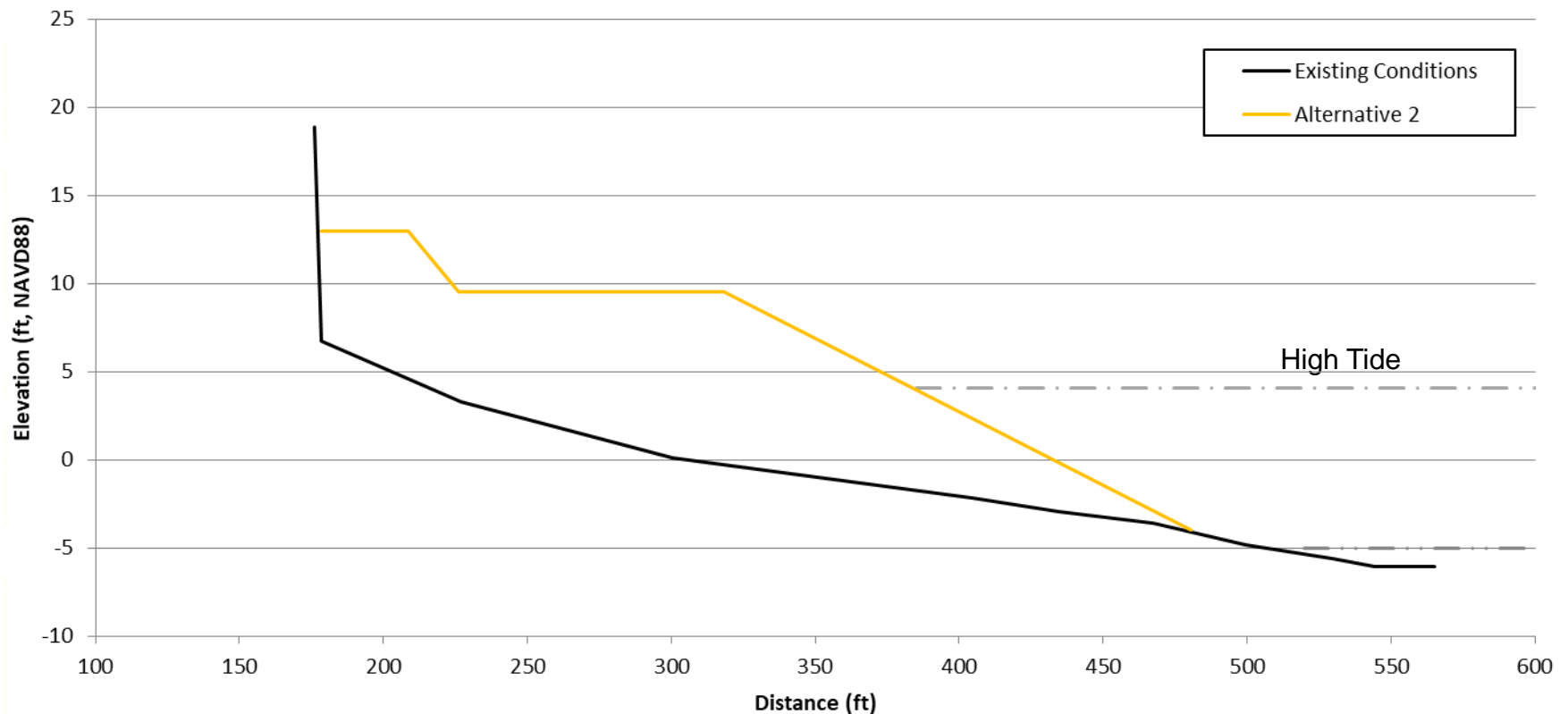
# *Fieldston & Sunrise Beaches*



# Fieldston & Sunrise – X Section

- Fieldston/Sunrise Dune & Beach Design**  
*30 ft wide dune crest at elevation 13 ft; 90 ft wide berm at elevation 9.0 ft; 1:12 slope to natural grade*

**Transect 12 - Sunrise Beach (11th St)**



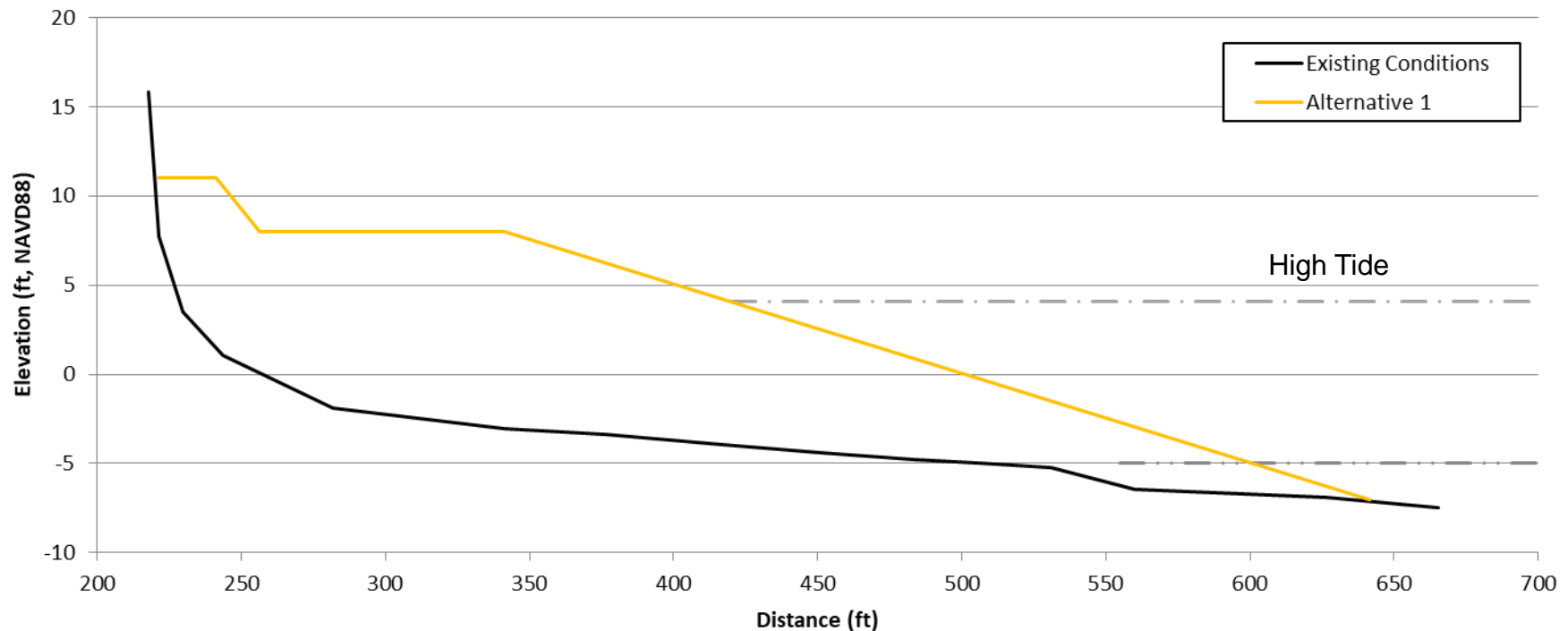
# *Bay Ave/Gurnet Rd Beaches*



# Bay Ave/Gurnet Rd – X Section

- Bay Ave/Gurnet Rd Dune and Beach Design**  
*20 ft wide dune crest at elevation 11 ft; 85 ft wide berm at elevation 8.0 ft; 1:20 slope to natural grade*

**Transect 19 - Bay Ave Beach**



# Property Ownership

- *Nourishment proposed on private properties*
  - *northern end of Rexhame Public Beach*
  - *Fieldston & Sunrise Beaches (66 Marshfield)*
  - *Bay Ave & Gurnet Rd Beaches (22 Marshfield/65 Dux)*
- *Requires public access easements*
  - *allows public use of beaches nourished using public \$*
  - *letters to property owners recently mailed*
  - *requires all property owners to sign easements*



# *Next Steps*

## *Permitting Requirements*

- *MEPA Environmental Impact Report (EIR)*
- *Marshfield & Duxbury Conservation Commissions*
- *Mass DEP Waterways*
- *Mass Coastal Zone Management*
- *US Army Corps of Engineers*
- *Permits expected by mid 2022*

## *Towns Seek Funding Construction*

- *Earliest possible construction – winter 2023*

# Questions & Comments

*Greg Guimond - Marshfield Town Planner*

[GGuimond@townofmarshfield.org](mailto:GGuimond@townofmarshfield.org)

*Valerie Massard - Duxbury Town Planner*

[Massard@town.duxbury.ma.us](mailto:Massard@town.duxbury.ma.us)

*Answers to Frequently Asked Questions:*

[www.Marshfield-ma.gov/planning-department](http://www.Marshfield-ma.gov/planning-department)

[www.town.Duxbury.ma.us/planning-department](http://www.town.Duxbury.ma.us/planning-department)

# Sources of Nourishment Material

- Sources compatible with existing beaches
- Option 1 – upland source trucked to the sites
- Option 2 – beneficial reuse from dredging projects

*Green Harbor dredging (~ 30,000 cy/yr)*

*South River dredging*

*Federal dredging projects*

- Option 3

*offshore  
borrow  
site(s)*

