

Living Shorelines in Coastal New Hampshire



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Wagon Hill Farm Eastern Portion 2017



Observed Erosion Most Tidal Cycles

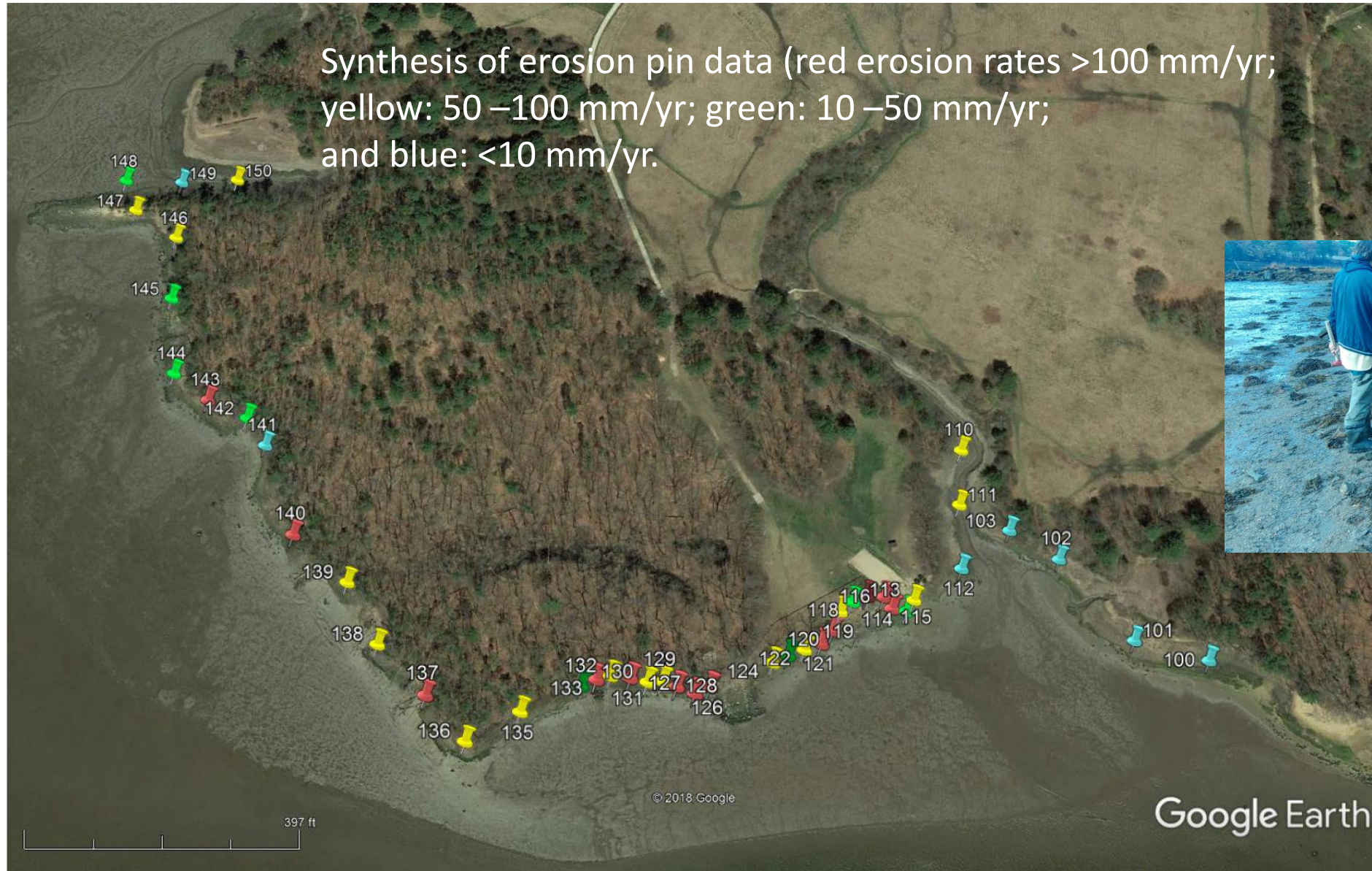


90°F 08/28/2016 01:47PM WHF BEACH

Change from 1992 to 2015



WHF 2-Year Erosion Pin Results



Living Shoreline Definition

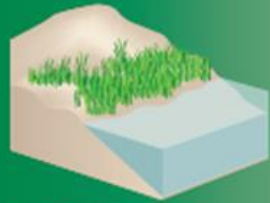
- *Living shorelines maintain continuity of the natural land–water interface and reduce erosion while providing habitat value and enhancing coastal resilience. (NOAA, Guidance for Considering the Use of Living Shorelines, 2015)*
- *Living shorelines maintain the continuity of natural land-water interface and provide ecological benefits which hard bank stabilization structures do not, such as improved water quality, resilience to storms, and habitat for fish and wildlife. (COE NWP, 2016) – Focus is EROSION*

Ranges of Options

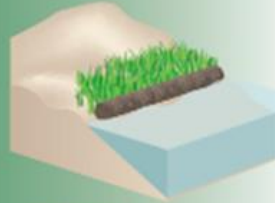
GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

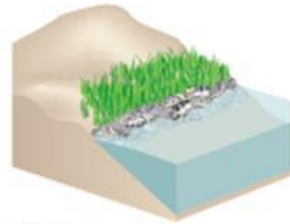
Living Shorelines



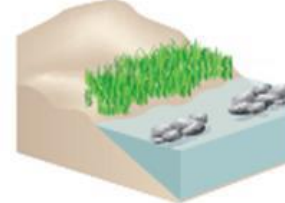
VEGETATION ONLY -
Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.



EDGING -
Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.

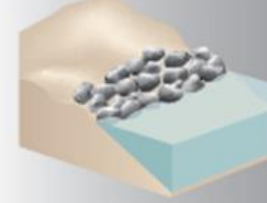


SILLS -
Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.

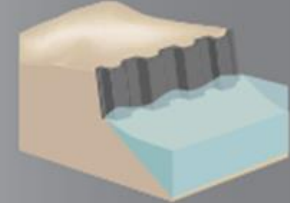


BREAKWATER -
(vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.

Coastal Structures



REVETMENT -
Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



BULKHEAD -
Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.

Wagon Hill Farm Issues and Data Collection

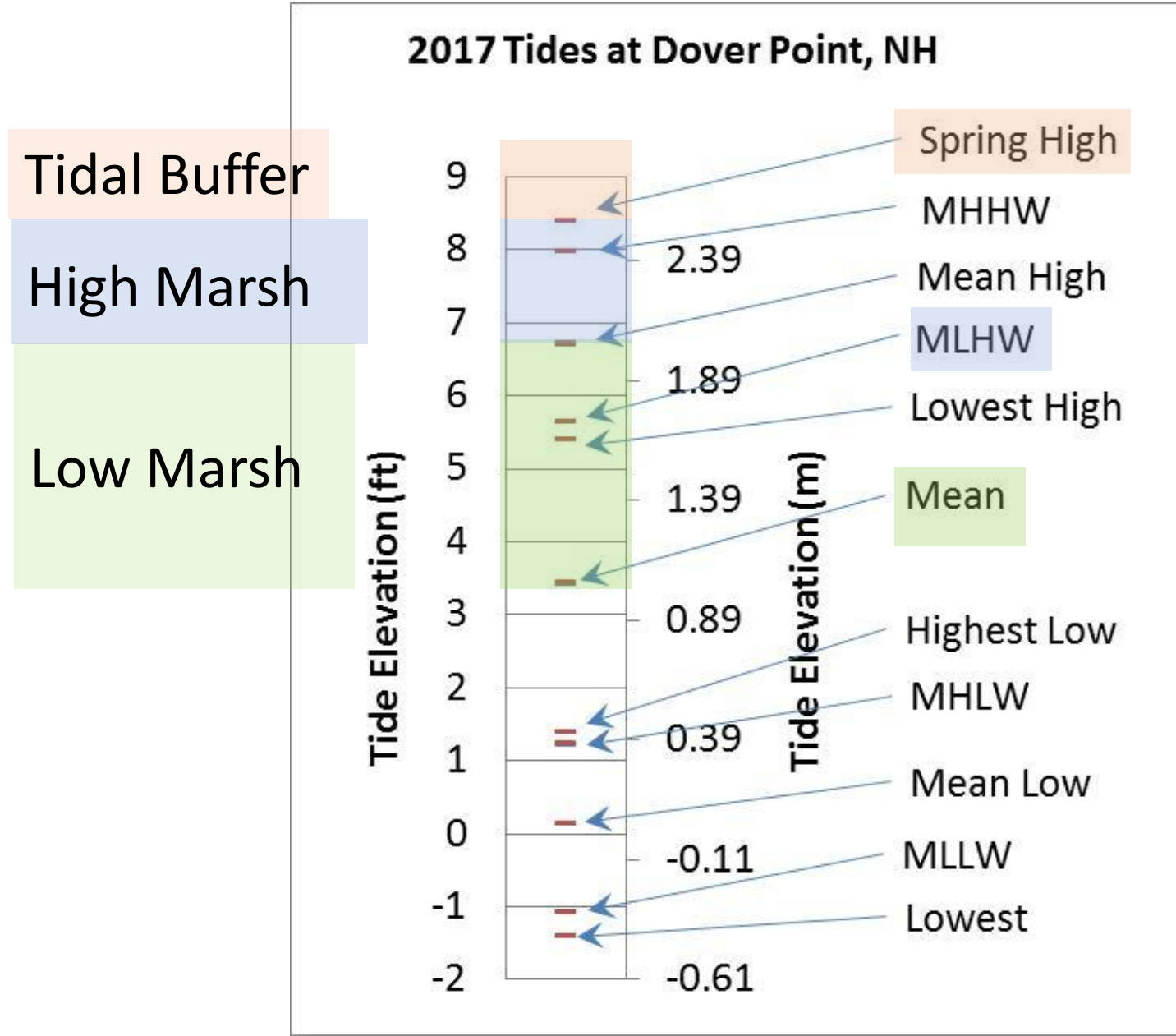
Potential Causes of Erosion

- Waves
- Increased foot /pet traffic
- Decreased light
- Increased Sea Level
- Ice Damage
- Plant disease or herbivory
- Lack of Sediment supply
- Eroded shoreline promotes erosion cycle
- Stormwater

Data Collection

- [to eliminate potential causes and inform design]*
- High intensity water levels
 - Wildlife cameras
 - Light meters
 - Water level recorders
 - Wildlife cameras
 - Observations
 - Trial structure
 - Erosion pins

The Zones



Video



Before



After



Final Design

