

## VIMS Living Shoreline Design Training for Marine Professionals

### Pre-Workshop Learning

This has been a challenging year dealing with the changes Covid has brought about. We have had the challenge of converting our full day, hands-on workshops into online learning. Because we cannot cover everything that we typically try to include in the course in a 2-hr zoom workshop, we have created some material for you to review before the class or to just have on hand if needed.

#### **Prior to the Workshop**

The workshop will include a discussion of a potential project. Please review the attached Robin Grove site information presentation so that you can participate in the discussion.

Pages 3-17 in this document

#### **Information on Living Shoreline Topics**

It is not necessary to review this information prior to the workshop, but they can provide additional understanding of topics to be covered.

*Presentations:* Available on the VIMS SSP Living Shoreline Design Webpage under the 2021 Course arrow  
[https://www.vims.edu/research/departments/physical/programs/ssp/shoreline\\_management/living\\_shorelines/class\\_info/index.php](https://www.vims.edu/research/departments/physical/programs/ssp/shoreline_management/living_shorelines/class_info/index.php)

Description, location and use of tools to do a site evaluation: [Site Parameter Tools Presentation](#)

Additional site evaluation parameter considerations and non-structural living shoreline options.  
[Site\\_Evaluation\\_Nonstructural Considerations](#)

#### *Reading*

The Living Shoreline Design Guidelines discuss habitat-friendly shore protection methods.  
<https://scholarworks.wm.edu/reports/833/>

#### *Videos*

These videos were created from talks given in various venues. Some of the material is overlapping, but each one touches on the projects from a slightly different perspective. Presently, they are unlisted Youtube videos, but they will eventually be added to the Shoreline Studies Program website.

Planning and Methods for Shoreline Management in Chesapeake Bay – Introduces shoreline management in Chesapeake Bay and discusses the process used to develop site specific management. Presented to the Virginia Association of Surveyors, February 2021 <https://www.youtube.com/watch?v=qXdWx3X7T34> (50:20)

Shoreline Management and Living Shoreline Resiliency- Discusses the latest research on performance of sills and breakwaters and how to make the system resilient. Presented at a VIMS CCRM online workshop, August 2020  
<https://www.youtube.com/watch?v=ur9XaVJScVU> (28:06)

Concept to Construction – Poor sound recording quality, presented at the 2017 Living Shoreline Design Workshop, 2017 [https://www.youtube.com/watch?v=Tm\\_8BJJ0rtk](https://www.youtube.com/watch?v=Tm_8BJJ0rtk) (26:51)

#### *Website*

The Shoreline Studies Program's Living Shoreline Design Guidance webpage is being revised. Presently, the material from the 2010 and 2017 courses are listed. The material created for the 2021 class will be added.  
[https://www.vims.edu/research/departments/physical/programs/ssp/shoreline\\_management/living\\_shorelines/class\\_info/index.php](https://www.vims.edu/research/departments/physical/programs/ssp/shoreline_management/living_shorelines/class_info/index.php)

Coastal Gems – Public Lands database <http://www.coastalgems.org/>

Shoreline Change Map Viewer

[https://www.vims.edu/research/departments/physical/programs/ssp/gis\\_maps/index.php](https://www.vims.edu/research/departments/physical/programs/ssp/gis_maps/index.php)

Adapt Virginia Website - Shoreline Recommendations and Resiliency information <http://adaptva.com/>

## **York River, Middle Peninsula, and Piankatank River Management Plans by VIMS, Shoreline Studies Program**

### **County Plans**

Gloucester County Shoreline Management Plan <https://scholarworks.wm.edu/reports/256/>

Mathews County Shoreline Management Plan <https://scholarworks.wm.edu/reports/178/>

James City County Shoreline Management Plan <https://scholarworks.wm.edu/reports/368/>

York County Shoreline Management Plan <https://scholarworks.wm.edu/reports/241/>

### **Site-Specific Plans**

Captain Sinclair’s Recreational Area Shoreline Management Plan <https://scholarworks.wm.edu/reports/584/>

Colonial National Historic Park Shoreline Management Plan: Phase II York River Shoreline and Swanns Point, James River Shoreline <https://scholarworks.wm.edu/reports/243/>

Hog Island Shore Protection and Habitat Restoration Living Shoreline Project

New Point Comfort Lighthouse Mathews, Virginia Site Assessment Plan <https://scholarworks.wm.edu/reports/264/>

Pamunkey Indian Reservation Shoreline Management Plan <https://scholarworks.wm.edu/reports/2041/>

Penniman Spit Living Shoreline Protection Plan

Shore Zone Management Planning for Middle Peninsula Chesapeake Bay Public Access Authority Properties <https://scholarworks.wm.edu/reports/1835/>

Targeted Living Shoreline Management Planning for Virginia State Parks in Chesapeake Bay Summary Report <https://scholarworks.wm.edu/reports/1926/>

Werowocomoco Shoreline Management Plan <https://scholarworks.wm.edu/reports/2042/>

### **Management Planning Guidance**

Shoreline Management In Chesapeake Bay <https://scholarworks.wm.edu/reports/581/>

Living Shoreline Design Guidelines for Shore Protection in Virginia’s Estuarine Environments <https://scholarworks.wm.edu/reports/833/>

# Living Shoreline Design Training

*Organized By*

***C. Scott Hardaway, Jr.  
Donna Milligan***

*Shoreline Studies Program*

***Karen Duhring***

*Center for Coastal  
Resources Management*

*Pre-Workshop Learning*

## Project Design Discussion

*Presented by  
Donna Milligan*

**March 2021**



*This project was funded by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant # NA19NOS4190163 Task 92.02*



# Project Location

*Robin Grove Park  
Town of Colonial Beach*

*38°14'28.07"N  
76°57'50.98"W*

*An eroding shoreline has created public access issues and concerns about silting in the adjacent marina's channel.*



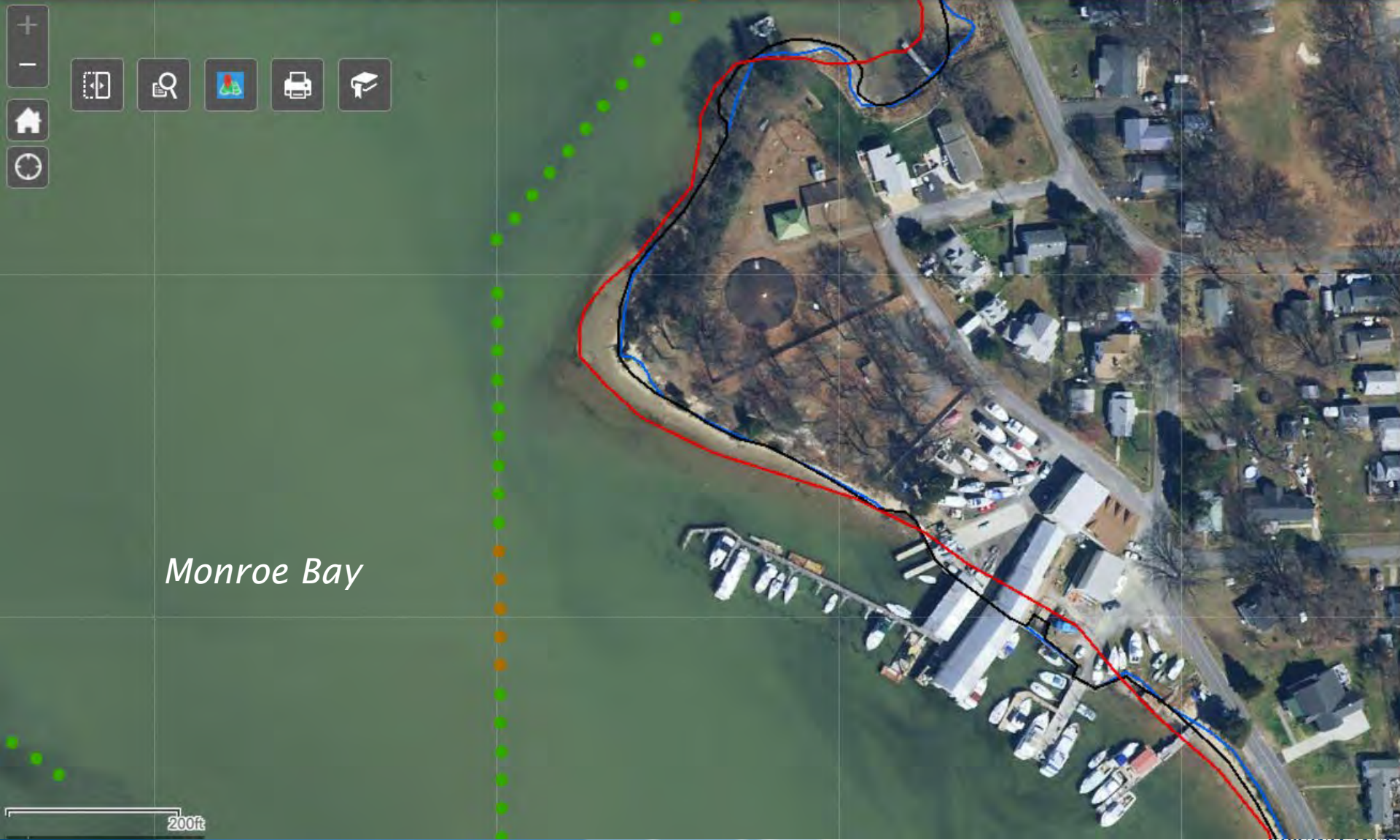
Google Earth

# Boundaries of the Robin Grove



*Google Map image of Robin Grove Park*

# Shoreline Change

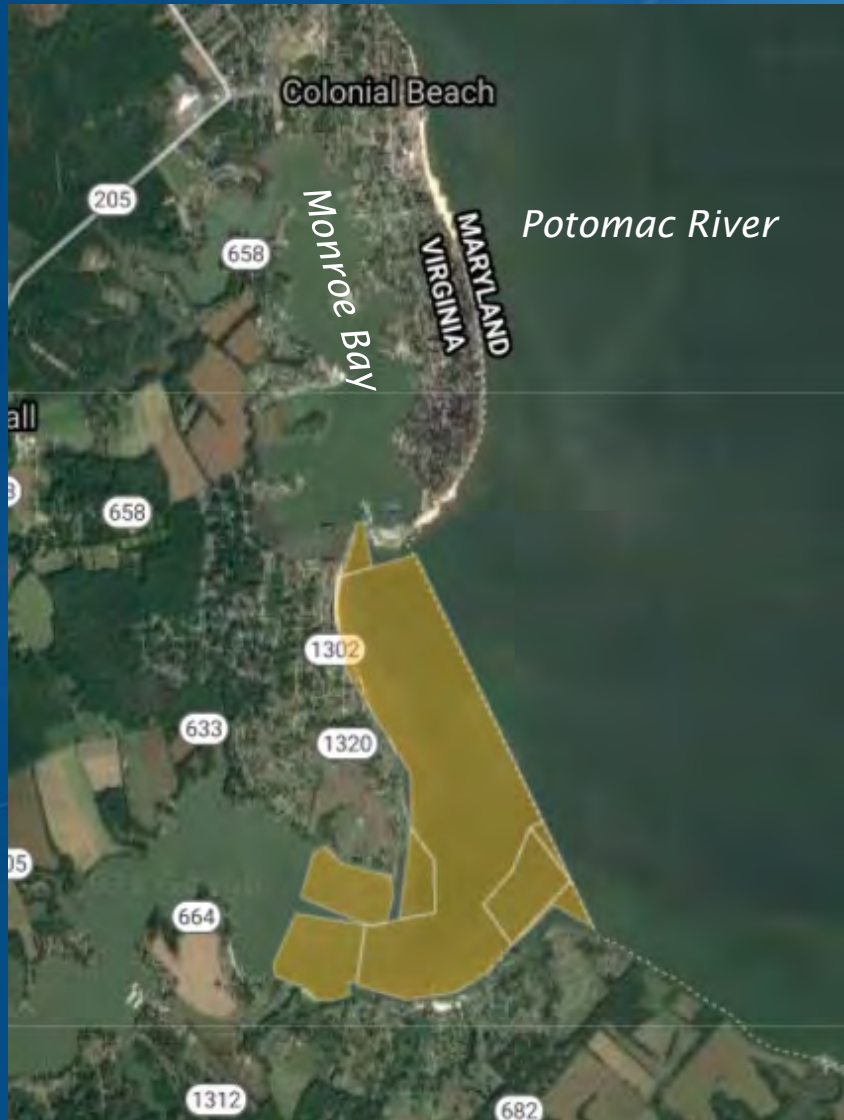


Monroe Bay

### Layer List

- 1937/38 Bay Shoreline
- 1949 Ocean Side Shoreline
- 2009 Bay Shoreline
- 2017 Bay and Ocean Side Shorelines
- End Point Shoreline Change Rates
  - EPR\_Pts\_1937\_2009
  - EPR Points 1937/38 and 2017
    - Very High Accretion: > +10 (ft/yr)
    - High Accretion: +10 to +5 (ft/yr)
    - Medium Accretion: +5 to +2 (ft/yr)
    - Low Accretion: +2 to +1 (ft/yr)
    - Very Low Accretion: +1 to 0 (ft/yr)
    - Very Low Erosion: 0 to -1 (ft/yr)
    - Low Erosion: -1 to -2 (ft/yr)
    - Medium Erosion: -2 to -5 (ft/yr)
    - High Erosion: -5 to -10 (ft/yr)

# Location of Private Oyster Leases



*No private oyster leases occur in Monroe Bay*

[https://webapps.mrc.virginia.gov/public/maps/chesapeakebay\\_map.php](https://webapps.mrc.virginia.gov/public/maps/chesapeakebay_map.php)

# Existing Conditions



*Fence and park*



*Shoreward fence and wooded bank on Northwest facing shore.*



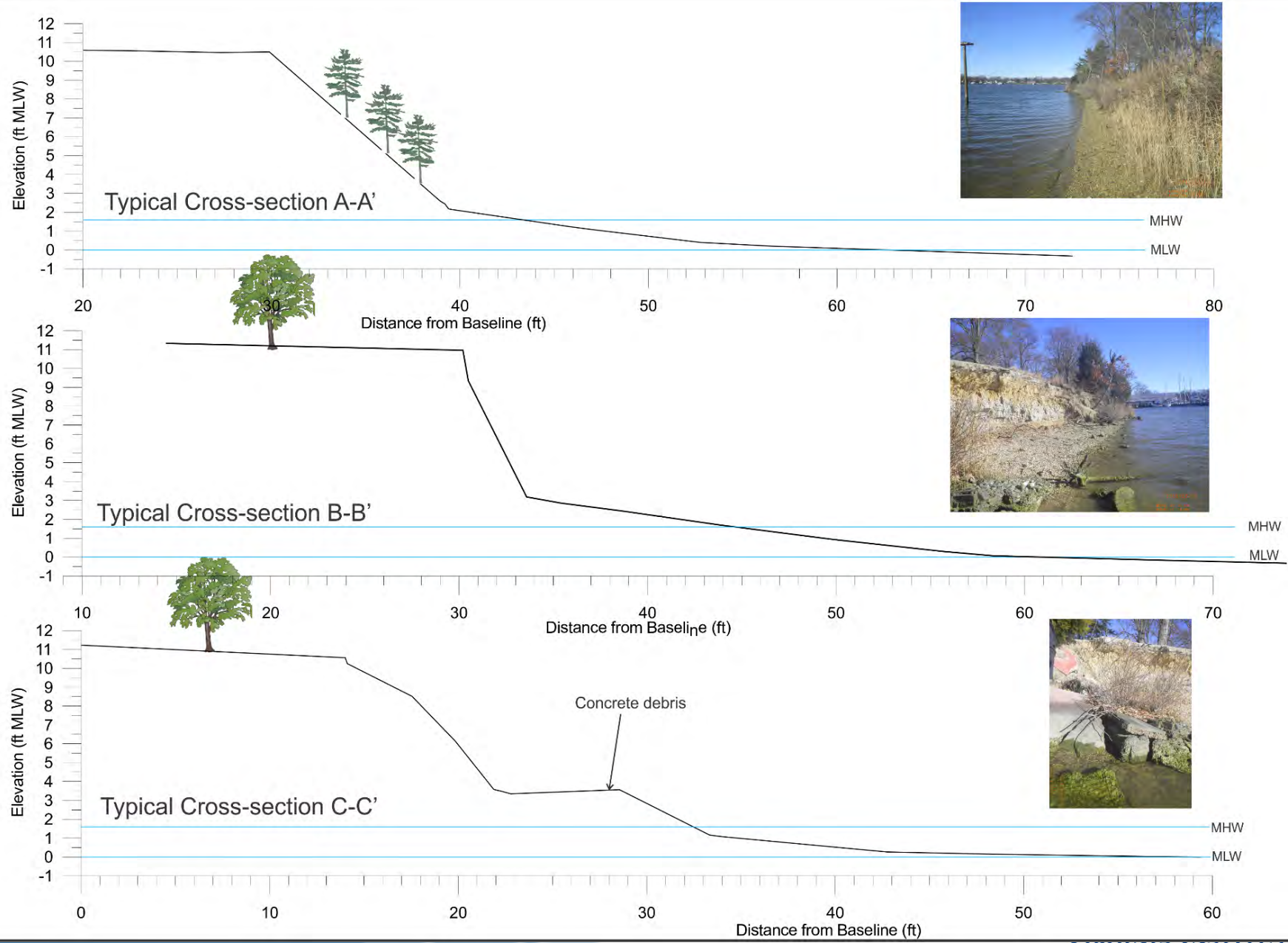
*View from the Marina*



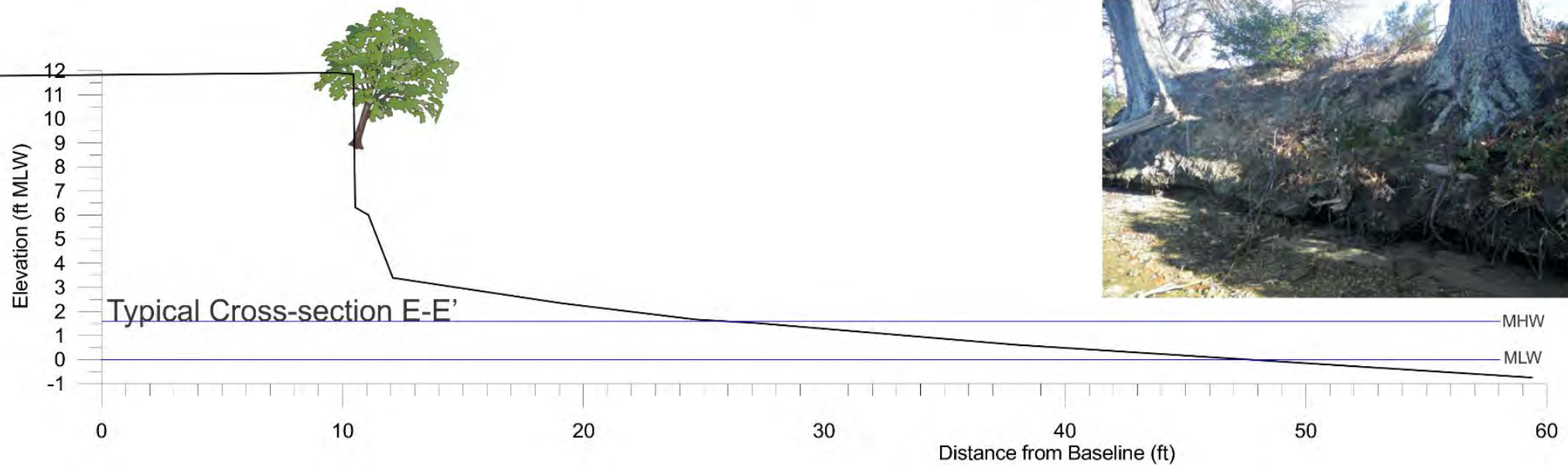
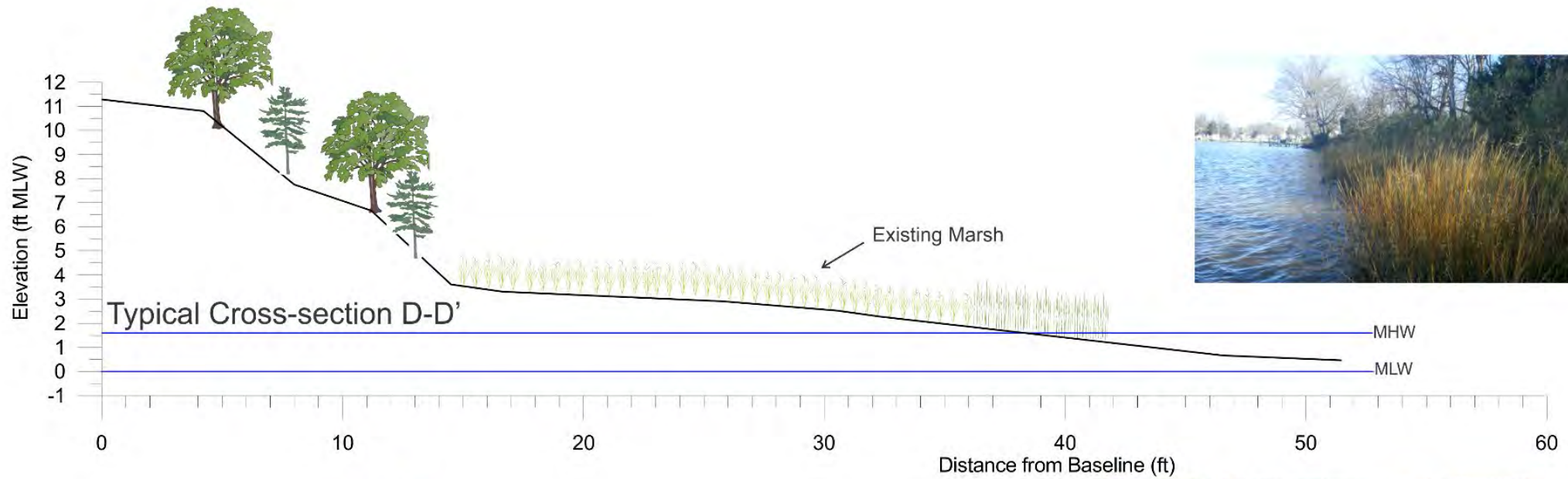
# Cross-Sections



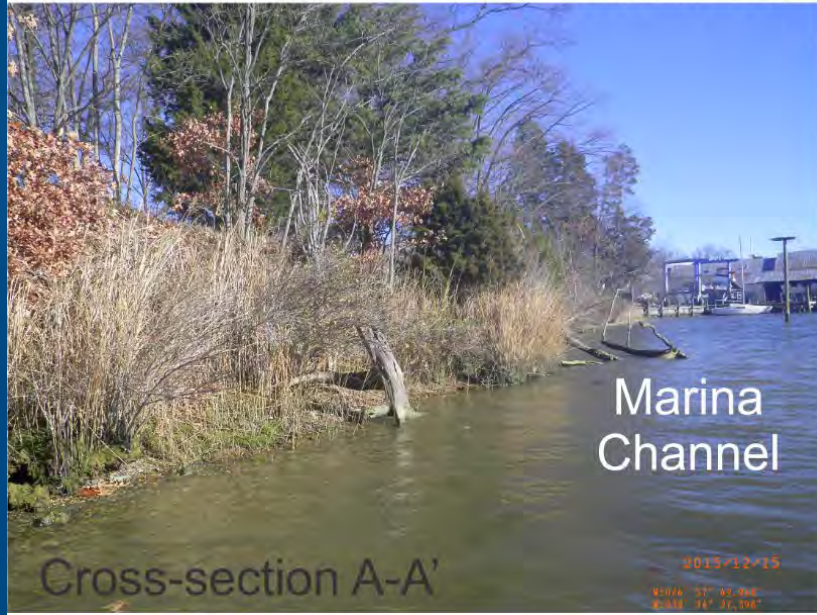
# Cross-Sections from Survey



# Cross-Sections from Survey



Southwest facing shoreline



# Existing Conditions

Southwest facing shoreline



Point shoreline



Cross-section B-B'



Cross-section C-C'  
Broken Concrete Debris

Northwest facing shoreline



Looking from Point toward marsh



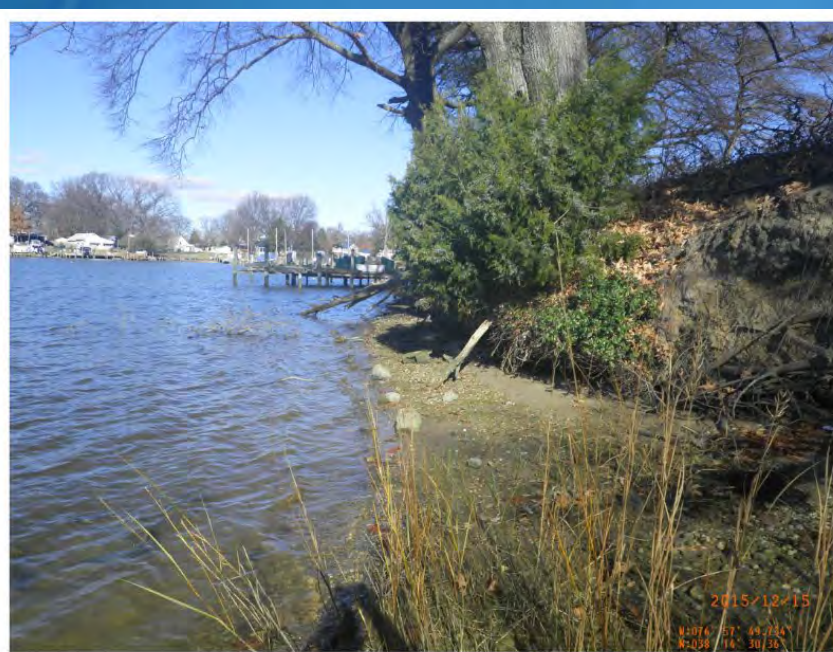
Cross-section D-D'

# Existing Conditions

# Existing Conditions



Cross-section D-D'



Cross-section E-E'



Cross-section E-E'



End of Property

# Evaluation Sheet Information

## Site Evaluation

Site Name Robin Grove Date \_\_\_\_\_  
 Site Locality Westmoreland Body of Water Monroe Bay

### Pre-Visit Parameters

- Shore Orientation(s): N NE E SE S SW W NW  
 Site Length: 750 (ft)
- Average Fetch(es):  
 Very High (> 15 miles) High (5-15 miles) Medium (1-5 miles)  
 Low (0.5-1 miles) Very Low (< 0.5 miles)
- Longest Fetch: 0.75 NW miles
- Shore Morphology: Pocket Straight Headland Irregular
- Distance to 6 ft Contour: 7300 ft
- Nearshore Morphology: Bars no Tidal Flats no
- Nearshore Aquatic Vegetation: no
- Tide Range: 1.6 ft
- Storm Surge: 10 yr 5 ft 50 yr 6.5 100 yr 7 ft MLW
- Erosion Rate:  
 Very High Accretion (> +10 ft/yr) High Accretion (+10 to +5 ft/yr)  
 Medium Accretion (+5 to +2 ft/yr) Low Accretion (±2 to ±1 ft/yr)  
 Very Low Accretion (+1 to 0 ft/yr) Very Low Erosion (0 to -1 ft/yr) *NW + SW face*  
Low Erosion (-1 to -2 ft/yr) Medium Erosion (-2 to -5 ft/yr)  
 High Erosion (-5 to -10 ft/yr) Very High Erosion (< -10 ft/yr)
- Design Wave: Height 1 ft Period 15

Notes:

38°14'28.07"N  
76°57'50.98"W

## Site Visit Parameters

- Site Boundaries: On image
- Site Characteristics:  
 Upland Land Use Park and treatment plant  
 Proximity to Infrastructure Treatment plant fence is close to top of bank  
 Cover Mostly open with some trees on SW shoreline  
Heavily wooded on NW shoreline
- Bank Condition:  

	<u>Point</u>	DD	EE	
Bank Face- <u>Erosional</u>	Stable	Transitional	<u>Undercut</u>	
Bank of Bank - <u>Erosional</u>	Stable	Transitional	<u>Undercut</u>	
	DD	AA	AA	
- Bank Height: EE
- Bank Composition: SM
- RPA Buffer:
- Shore Zone: Sand  Marsh   
 Width Varies. See cross-section  
 Elevation
- Backshore Zone: Sand  Marsh   
 Width Varies. See cross-section  
 Elevation
- Boat Wakes: yes
- Existing Shoreline Defensive Structures: no but construction  
Debris at point
- Nearshore Stability: Firm SW face Soft NW face

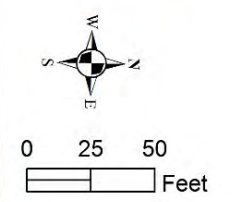
# Information Helpful for Design

## Robin Grove Park, Colonial Beach, VA Existing Data



Accepted Datums  
 Colonial Beach  
 1983-2001 Epoch  
 MHW, +1.6 ft MLW  
 NAVD88, +0.85 ft MLW  
 MLW, +0.0 ft

- Existing**
- x Spot Elevations
  - ▲ Benchmarks
  - 1 ft Contours
  - Profiles
  - Ex. MLW
  - Ex. MHW
  - Fencing



Marina wants to minimize sedimentation to it's channel

Fence

Private Property no access

Parking & Entrance

Pump Station

Robinson Grove Park

Marina

Monroe Bay

Southwest facing shoreline

Northeast facing shoreline

No recreational access along this side

Concrete debris

Ex. MLW

Ex. marsh

Ex. exposed bank

Ex. beach with intermittent transitional bank

Ex. eroding bank

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW

Ex. MLW

Ex. MHW



# Draw Your Design

## Robin Grove Design



Accepted Datums  
Colonial Beach  
1983-2001 Epoch

MHW, +1.6 ft MLW  
NAVD88, +0.85 ft MLW  
MLW, +0.0 ft

