

The Site, Desktop Exercise, Prep for Day 2



Project Area

Site Introduction



Site Introduction



Site Introduction

Current Site Uses

- Recreation - boating, canoes
- College campus
- Research
- Donor events
- Weekend getaway



Site Introduction

Site Goals

- Shoreline erosion protection
- Improve buffer
- Maintain recreational access





Common Knowledge of Living Shoreline Implementation Best Practices & Resources

Site Feasibility & Evaluation

Design

Permitting

Construction

Maintenance
Monitoring
Management

Meet Client & ID Problem

Site Assessment

Consult Technical Advisors & Regulators

Consider Solutions

Select Solution
Conceptual Designs
Consult Client, Contractor
Consult Regulators, TAs

ID Impacts & Permits Required
Develop final drawings for Permit Application

Complete & Submit JPA Part 5 CBPA Info
Site Visits & Meetings w/ Regulators & Boards
Address Comments & Conditions for Approval

Pre-Construction Feasibility, Site Visits, Consults, Permits
Site Prep, Protection Materials
Construction & Inspections

Establishment
Typical Regular Tasks
Management
Monitoring & Verification

Pre-Class Work for Day 2

- Review & be familiar with VMRC Group 1 and Group 2 General Permits
- Using the Desktop Analysis Guide, complete the Desktop Analysis Form for the area outlined in red on the Base Map. Bring a printed copy of the form to class.

Key References

[VIMS Living Shoreline Design Guidance](#)

[VIMS Online Shoreline Management Handbook](#)

[VMRC Wetlands Guidance & Wetlands Regulations](#)

[Incorporating Oysters into Living Shorelines](#)

[Key Reference Guide](#)

Worksheets & Handouts

[Desktop Analysis Form](#)

[Desktop Analysis Instruction Guide](#)

[Site Assessment Terms](#)

[Permitting Terminology](#)

[Case Studies](#)

[Joint Permit Application](#)

Criteria for VMRC General Permits for [Group 1](#) and [Group 2](#)

[Maintenance Plan Template](#)

Videos

[Intro to CBLP](#)

[Why Living Shorelines](#)

[Living Shorelines 101](#)

[Regulatory Context of Shorelines](#)

[Designing for Sea Level Rise](#)

[Planting Considerations for Living Shorelines](#)

Pre-Class Work for Day 2

DESKTOP ANALYSIS	Shore orientation:	N NE NW E W S SE SW								Shore Length:	ft		Shore Width:	ft					
	Average Fetch:	Very High (> 15 miles)				High (5-15 miles)		Medium (1-5 miles)		Low (0.5 - 1 mile)		Very Low (< 0.5 miles)							
	Longest Fetch:	mi		Direction:				Shore Morphology:	Pocket		Straight		Headland		Irregular				
	Depth Offshore:	ft		Nearshore Morphology:				Bars		Tidal Flats		Other:							
	Tide Data	MLW:		MHW:		MTL:		Mean Tide Range:				1.5x Mean Tide Range: (calculate using MTR)							
	Storm Surge:	10 yr				50 yr				100 yr				Average Salinity:		PSU			
	Expected SLR:	10 yr				20 yr				50 yr				Saltwater		Freshwater			
	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 High Erosion (> -10 ft/yr) ☐ High Erosion (-5 to -10 ft/yr) ☐ Medium Erosion (-2 to -5 ft/yr) ☐ Low Erosion (-1 to -2 ft/yr) ☐ Very Low Erosion (0 to -1 ft/yr)						Is Submerged Aquatic Vegetation (SAV) present?		YES		NO	
	Design Wave:	Height				Period				Proximity to Navigation Channel:									
	Note easements or utilities located in the project area:																		
	Notes:																		

Pre-Class Work for Day 2

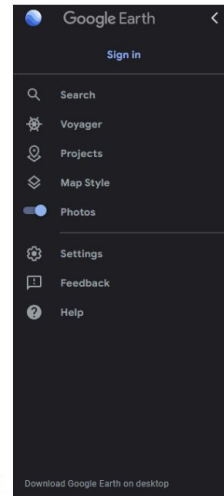
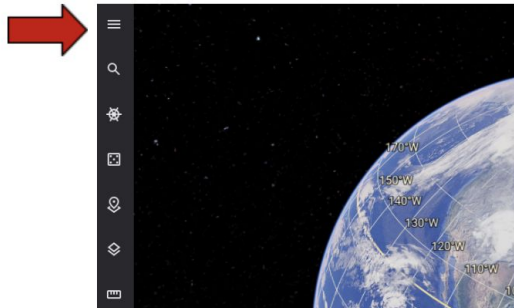


Desktop Analysis Guide Site Assessment

This instruction guide is intended to assist in conducting a desktop analysis for a potential living shoreline project. Use this guide to complete the Desktop Analysis portion of the Site Evaluation Form. Refer to the VIMS *Living Shoreline Design Guidelines* key reference for a more detailed discussion of terminology and the site assessment process. Additional guidance can also be found in [this VIMS PowerPoint](#). For convenience, the analysis criteria in this guide are organized according to the digital tool used and may not be in the exact order found on the evaluation form. *Note that sample map images may not correspond to the project site being evaluated.*

Before you begin:

1. Download the free version of Google Earth, available [here](#). Click the hamburger icon (3 stacked lines) in the top left corner, then click "Download Google Earth on desktop" at the very bottom of the menu.



Living Shoreline Design Guidelines for Shore Protection in Virginia's Estuarine Environment



Virginia Institute of Marine Science
William & Mary
Gloucester Point, Virginia

September 2021

Fetch: Shoreline Orientation & Measuring

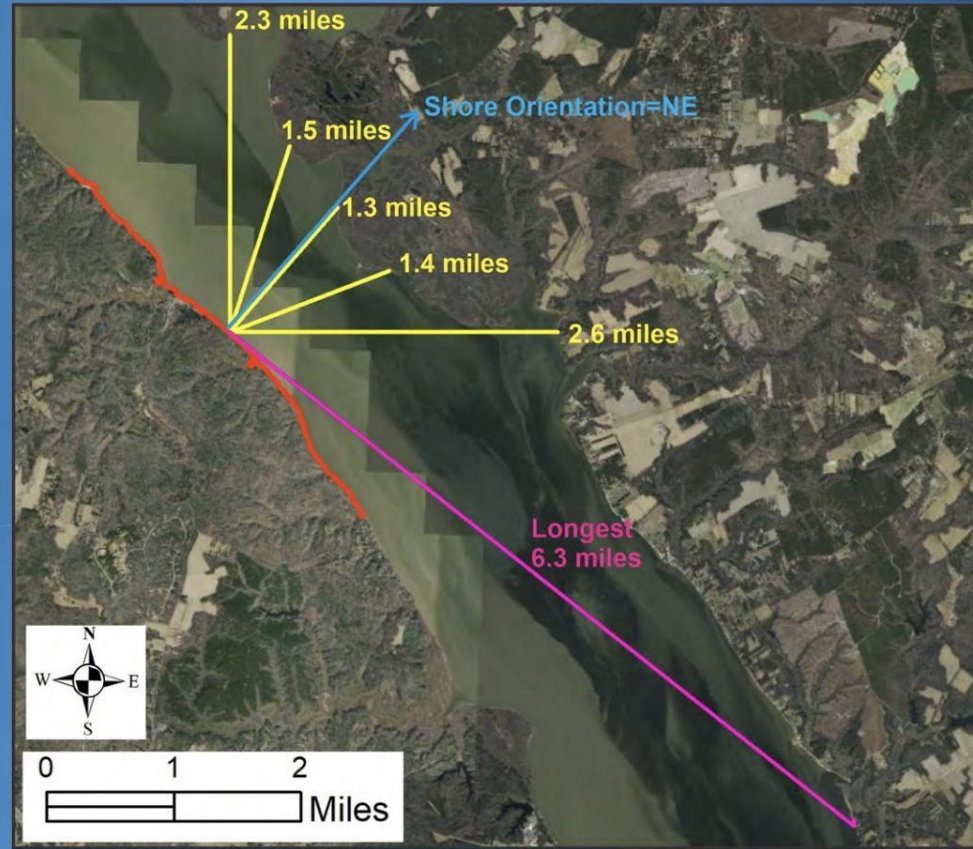
Fetch

- Length of water over which a given wind can blow without obstruction.
- It is a proxy measure for wind/wave energy impacting the shoreline.
- The larger the fetch, the more energy potentially impacting the shoreline.

Longest Fetch
Purple line

Average Fetch measure 5 yellow arrow vectors (45 deg. Apart on either side of the shore orientation) and take an average

Notes: If a site faces more than 1 direction, you may need more than 1 fetch calculation.



VIMS | **WILLIAM & MARY**
VIRGINIA INSTITUTE OF MARINE SCIENCE

Choose your datum, be consistent

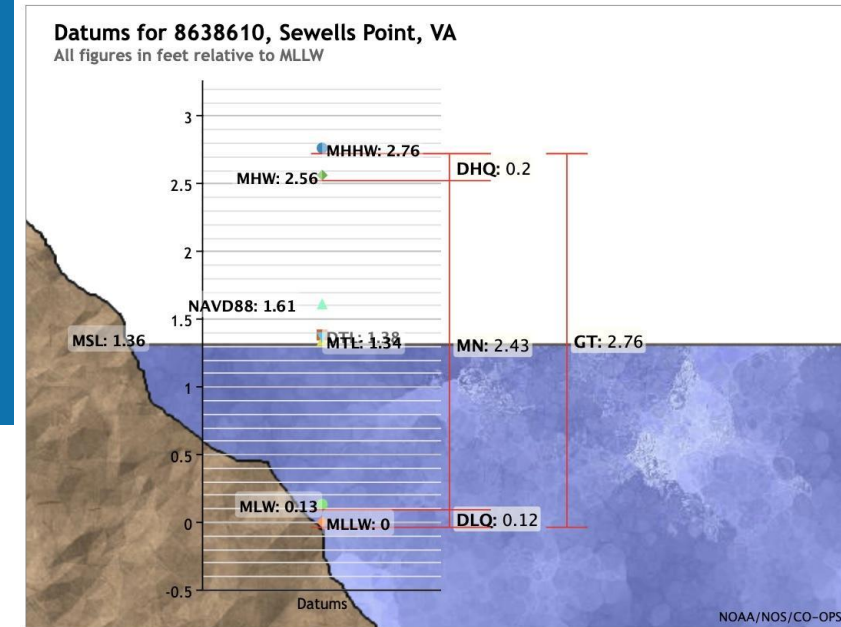
- 1) VIMS - Mean Low Water (MLW)
- 2) CORPs - Mean Low Low Water (MLLW)
- 3) Land Topography - NAVD88
- 4) NOAA VDATUM <https://vdatum.noaa.gov/vdatumweb/>



If you collect your survey data in NAVD88, at this site at the mouth of the York River, the conversion between NAVD88 and MLW from our Google Earth app is in the 1.4-1.6 ft range. Because our location is nearer to the 1.2-1.4 range, we used 1.4 ft as our conversion. That means that NAVD88 is 1.4 ft above MLW at this site. To convert survey data to MLW, add 1.4 ft to all of your survey elevations.

Example: a point that is 2 ft above NAVD88 (+2 ft NAVD88) will be at +3.4 ft MLW.
a point that is 2 ft below NAVD88 (-2 ft NAVD88) will be at -0.6 ft MLW

Conversion elevations differ by location so it is important to check the conversion app for each site.



Showing datums for

8638610 Sewells Point, VA

Datum

MLLW

Data Units

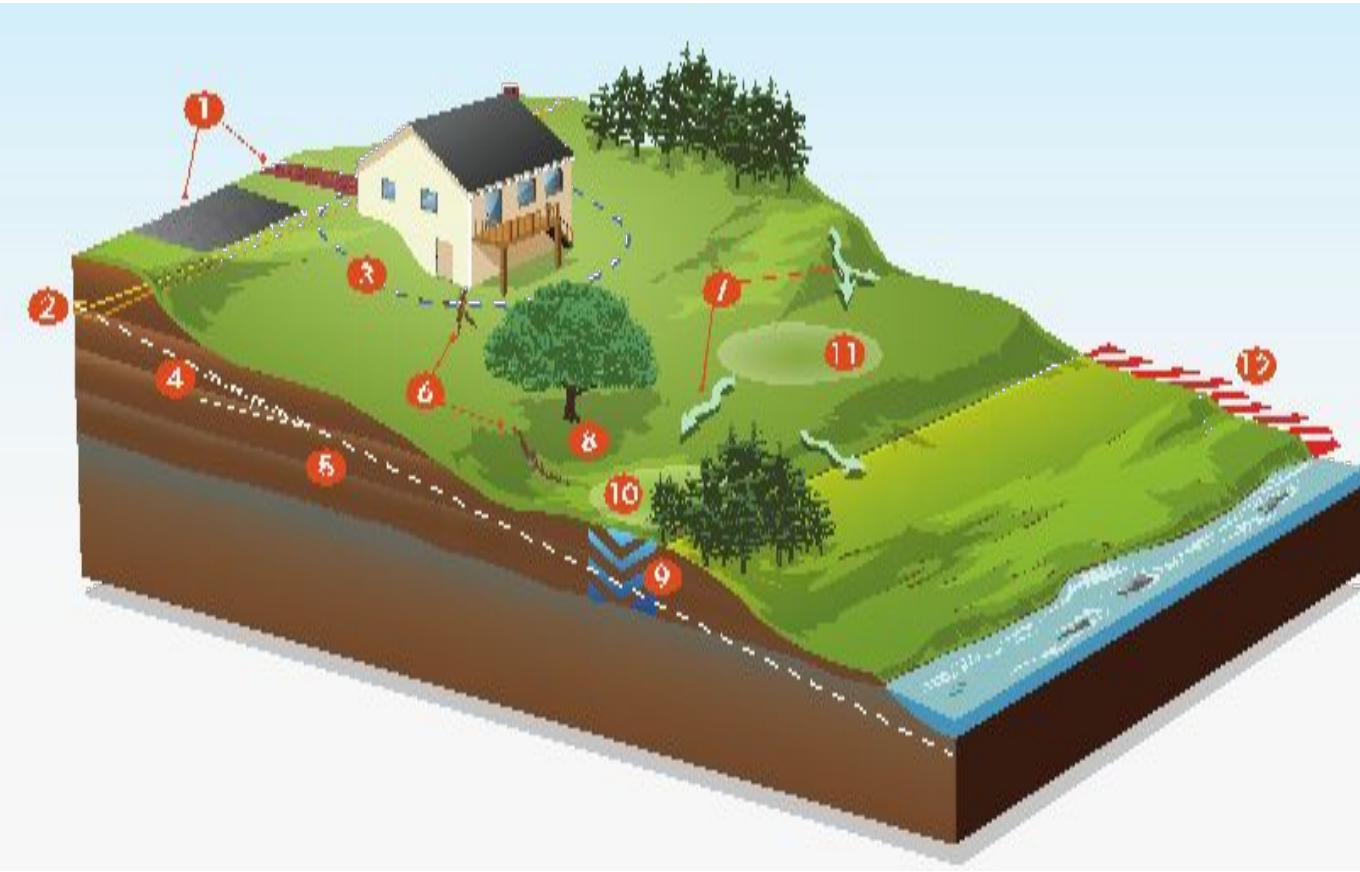
☒ Feet

☐ Meters

Epoch

☒ Present (1983-2001)

Get to know the whole site & surrounding area



- 1) Location and Orientation of Impervious Surfaces
- 2) Utilities and Easements
- 3) Proximity to Structures
- 4) Slope
- 5) Soil Type
- 6) Erosion Problem Areas
- 7) Flow Paths
- 8) Location and Health of Existing Trees/Canopy & Vegetation
- 9) Depth to Groundwater (and seeps)
- 10) Sun and Shade Conditions
- 11) Available Space
- 12) Proximity to sensitive environmental areas

Source: Anne Arundel County Watershed Stewards Academy Rainscapes Manual Appendix A

Other online map sources for information

Adaptva.org

Interactive Norfolk

<https://www.norfolk.gov/1605/Interactive-Norfolk>



The Site: Norfolk Christian Schools 255 Thole St, Norfolk, VA 23505



Initial Site Visit - Inform Design

Constructability must be determined EARLY in planning process

Limiting Factors

- ❑ Access
- ❑ Surrounding vegetation-Invasives
- ❑ Trees and Shade
- ❑ Elevation and Scour
- ❑ Outfalls or Dredged Canals
- ❑ Riparian Ownership
- ❑ Neighboring properties

Advantages

- ❑ Existing marsh
- ❑ Moderate to minimal erosion and wave activity
- ❑ Shallow water depth near the shoreline
- ❑ Abundant sunlight
- ❑ Sandy bottom
- ❑ Existing Oyster and Ribbed Mussel recruitment

Slides by Mary Mantey, ERP

Collect Site Specific Information to Inform Design, Permit Application, Cost Estimates, Monitoring

See Section 4 on the JPA for the full list of permitting requirements

- Linear feet of project
- Width of project
- Total Wetland Conversion
- Height of scarp
- Material for toe or sill
- Material quantities
- Relative fetch
- Coordinates and Address
- Tidal info (MLW, MHW, and direction of EBB and Flood)
- Name of body of water
- Property Boundaries
- Length of sill (if needed)
- Area of sand fill
- Distance to a landmark (benchmark)
- North arrow

Day 2: Field Assessment, Design, Construction Feasibility

Arrive at 9:15 for check in, coffee

September 30 | Day 2 | 9:30am - 4:00pm

Baliles Environmental Center

645 Hull Springs Farm Rd

Montross, VA 22520

Large classroom adjacent to Ames House

What to Bring

- You will be given a notebook with printed materials
- We will be outside, may get wet and dirty. Please dress accordingly with waterproof footwear.
Bring a change of clothes
- Note taking supplies (clipboard recommended) and print out presentation notes if preferred
- Reusable water bottle
- Work gloves
- Day 3: We will also be sketching site design ideas in class. Basic drawing supplies will be provided; participants are welcome to bring personal supplies if they prefer.

QUESTIONS?