A photograph of a beach with waves crashing onto the shore. In the background, there are several houses built on stilts, typical of coastal architecture. The sky is overcast.

# Coastal Resilience Project Updates

## Shoreline Management Model v. 5



Christine Tombleson  
CCRM Tidal Wetlands Workshop  
May 2, 2019



# Comprehensive Coastal Shoreline Management Portals (CCRMPs)

- A Portal is a specially designed website that serves as the single point of access for a variety of information

# Comprehensive Coastal Shoreline Management Portals (CCRMPs)

- Provide Information, data, and tools to assist localities
- Implementation of tidal shoreline laws and policy established by the Virginia General Assembly
- Every Tidewater locality has their own specific portal



[www.vims.edu/ccrm/ccrmp](http://www.vims.edu/ccrm/ccrmp)

# Comprehensive Coastal Shoreline Management Portals (CCRMPs)

## Mapping Tools

Interactive map viewers use the most recent available data pertaining to shoreline conditions, shoreline access and protection structures, tidal marshes, beaches, bathymetry, and topographic elevations, to map and display preferred shoreline best management practices and sea-level rise scenarios. *(best viewed on large screens)*

- [Comprehensive Map Viewer](#)
- [Sea-Level Rise Risk and Vulnerability Tool](#)
- [AdaptVA Interactive Map](#) *(zoom to locality by using the "Find address or place" search tool)*

## Shoreline & Tidal Marsh Inventory Reports

Current and historical assessments of shoreline features.

- [Shoreline Inventory Summary Tables - 2014](#)
- [Shoreline Inventory Reports - 2015 & 1976](#)
- [Historical Tidal Marsh Inventory - 1976](#)
- [Piankatank River Watershed Shoreline Inventory Maps - 2000](#)

## GIS Data Downloads

Click below to download data included in the mapping tools.

- [Shoreline Inventory GIS Data - 2014](#) *includes TMI GIS data*
- [Shoreline Management Model GIS Data - 2015](#)
- [Piankatank River Watershed Shoreline Inventory GIS Data](#)

## Other Shoreline Publications

Additional reports and management plans related to tidal shorelines produced by CCRM and/or VIMS Shoreline Studies Program.

- [Gloucester County Shoreline Management Plan - 2016](#)
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- [John's Point Landing Living Shoreline - Ecological Monitoring - 2016](#)
- [Shoreline Evolution: Gloucester County, Virginia - York River, Mobjack Bay and Piankatank River - 2010](#)
- [Public Beach Assessment Report: Gloucester Point Public Beach - 1996](#)

## General Guidance

- [Shoreline Best Management Practices](#)
- [Comprehensive Plan Guidance](#)
- [Tidal Shoreline Laws & Policies](#)
- [CCRMP FAQ's](#)

## Related Links

- [AdaptVA](#)
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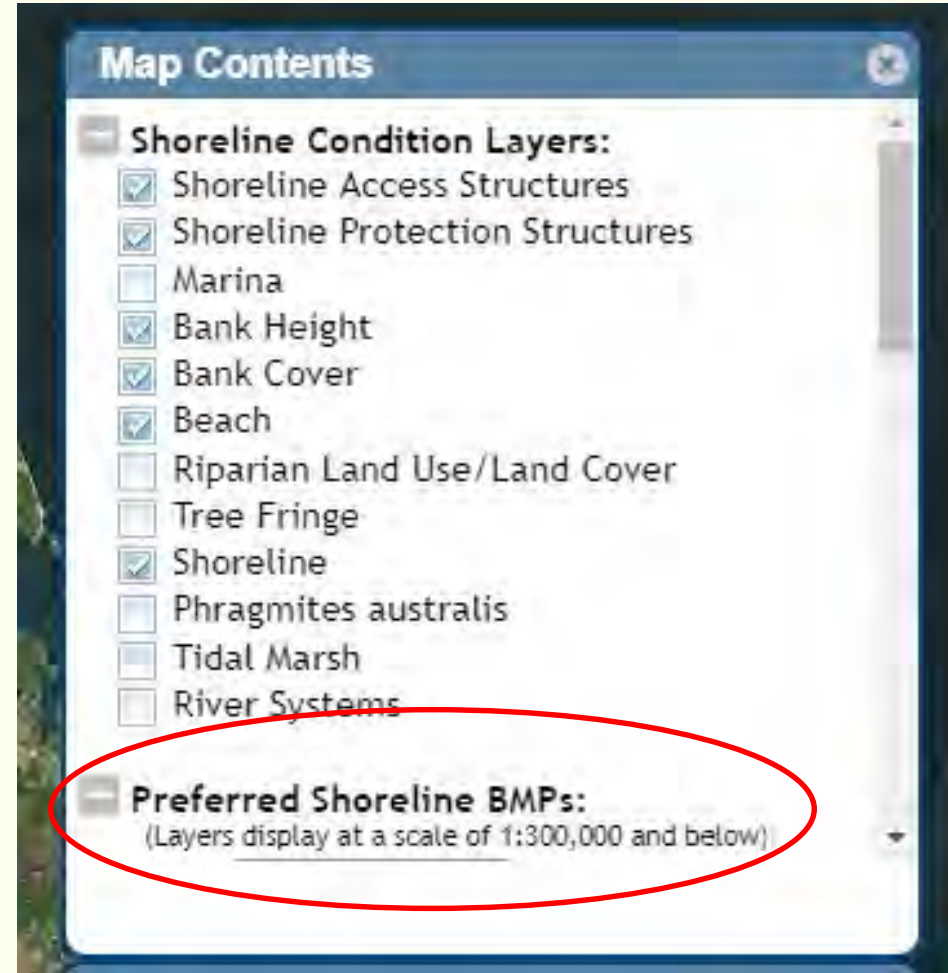
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# Comprehensive Map Viewer



BMP = Best Management Practice

# Comprehensive Map Viewer



- Preferred Shoreline BMPs

- Recommendations intended to address eroding/failing shorelines
  - Based on available shoreline conditions
  - Preferred shoreline erosion control practices/approaches
    - Control erosion
    - Have ecological benefits
    - Contribute to coastal resiliency

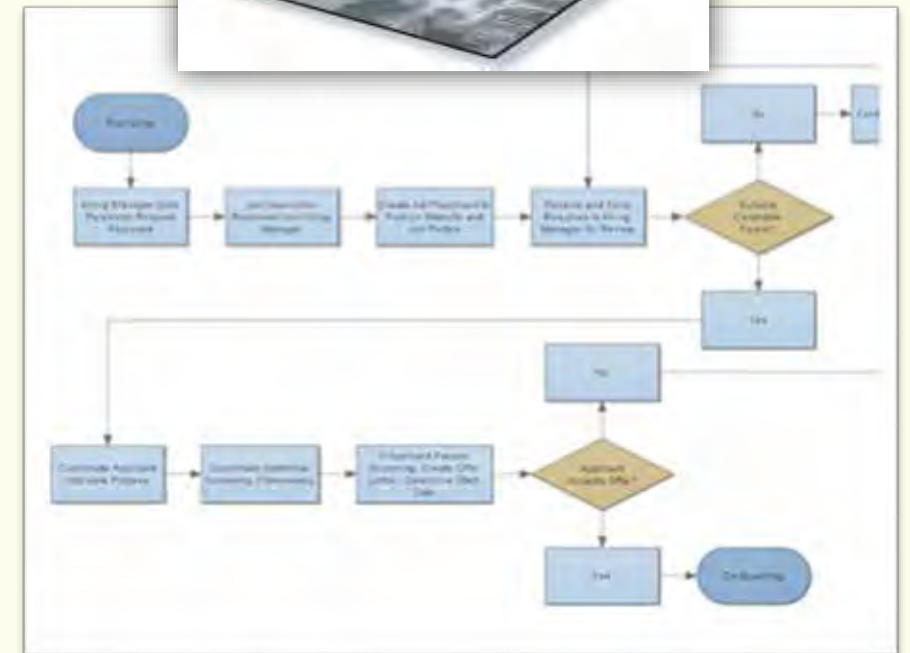
Recommendations reflect *Commonwealth's policy: Living shoreline practices are the preferred alternatives where possible.*



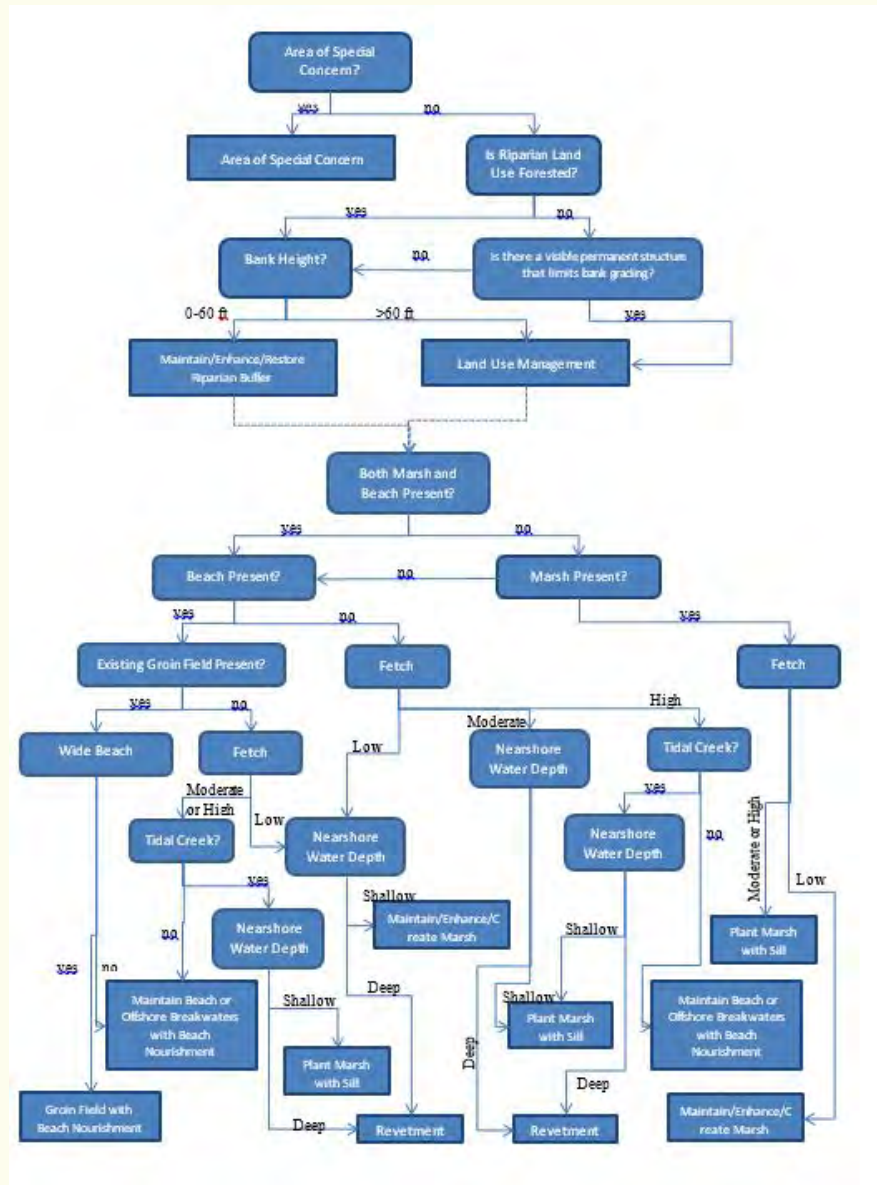


# Shoreline Management Model

- Spatial, GIS based model (Data is mapped)
- Static model (Snap-shot in time)
  - Determines the appropriate BMP for an **eroding/failing** shoreline
  - Based on the **available shoreline condition data at the time of inventory**
  - Uses **decision tree logic**



# Shoreline Management Model – Decision Tree Logic







# Shoreline Management Model (v.5)

Shoreline conditions factored into the model include:

- Presence or absence of natural buffers (tidal marshes, beaches, riparian forests)
- Bank height
- Nearshore bathymetry – Water depth
- Wave exposure (fetch) - Energy
- Proximity of upland development



# Shoreline Management Model (v.5 )

## What's New?

# Shoreline Management Model (v.5)

1) Model now factors in existing shoreline defense structures



# Shoreline Management Model (v.5)

## 2) Preferred BMP Recommendation (slight) Changes

### Previous Recommendations

- Maintain/Enhance/Create Marsh and/or Riparian Buffer
- Plant Marsh with Sill
- Groin Field with Beach Nourishment
- Maintain Beach or Offshore Breakwater with Beach Nourishment
- Revetment

### New Recommendations

- Non-Structural Living Shoreline
- Plant Marsh with Sill
- Groin Field with Beach Nourishment
- Maintain Beach or Offshore Breakwater with Beach Nourishment
- Revetment
- Bulkhead Toe Revetment



# Shoreline Management Model (v.5)

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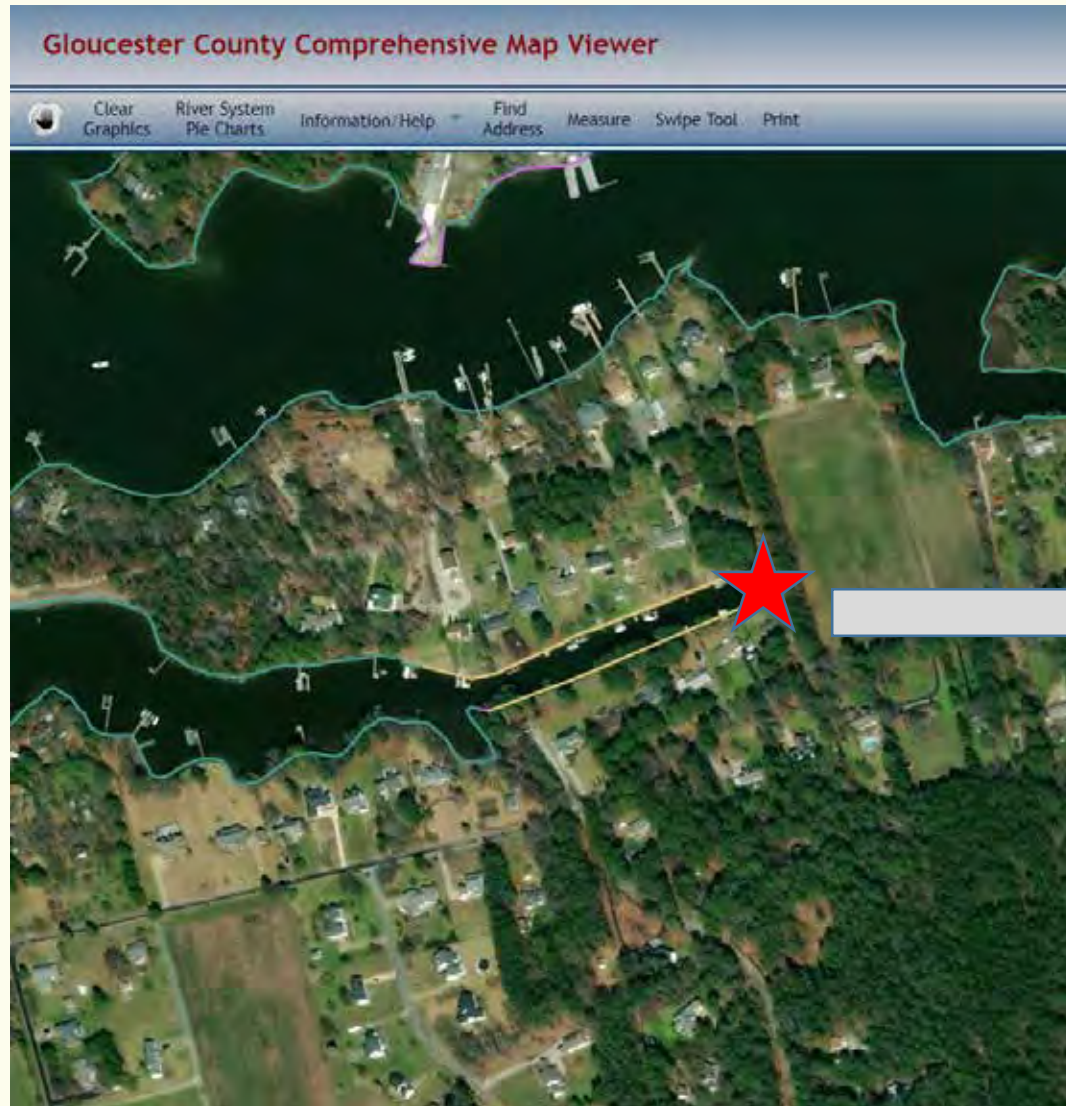
- Non-Structural Living Shoreline
- Plant Marsh with Sill
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- Revetment
- Bulkhead Toe Revetment

# Note: Shoreline BMP Definition

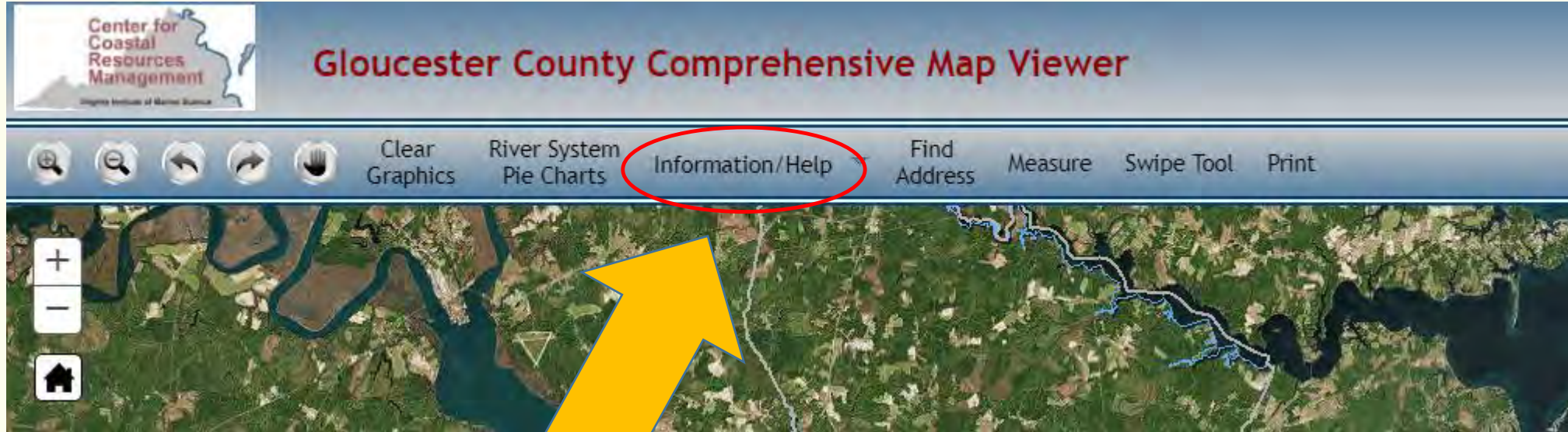


- It is important to read the definition of the BMP for more details
  - Definition provides potential alternative approaches and placement of BMP and other details:
  - Based on:
    - Ability to grade bank
    - Navigation needs/limitations
    - Length of shoreline being treated
  - Helps determine the best BMP approach for the shoreline

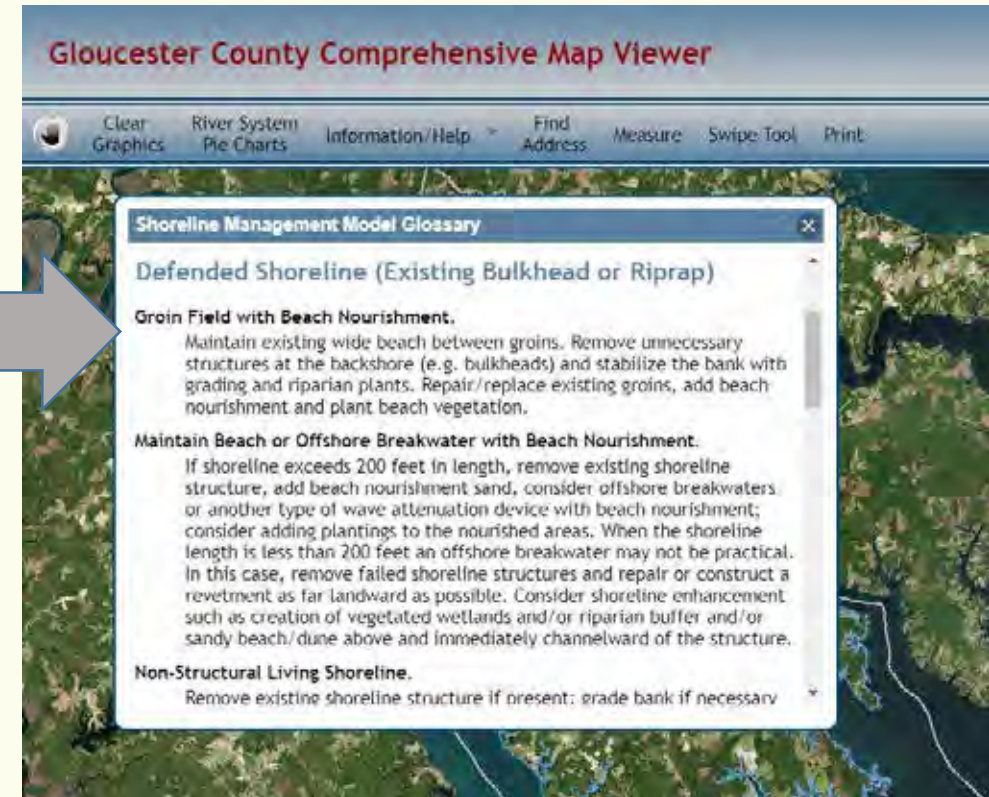
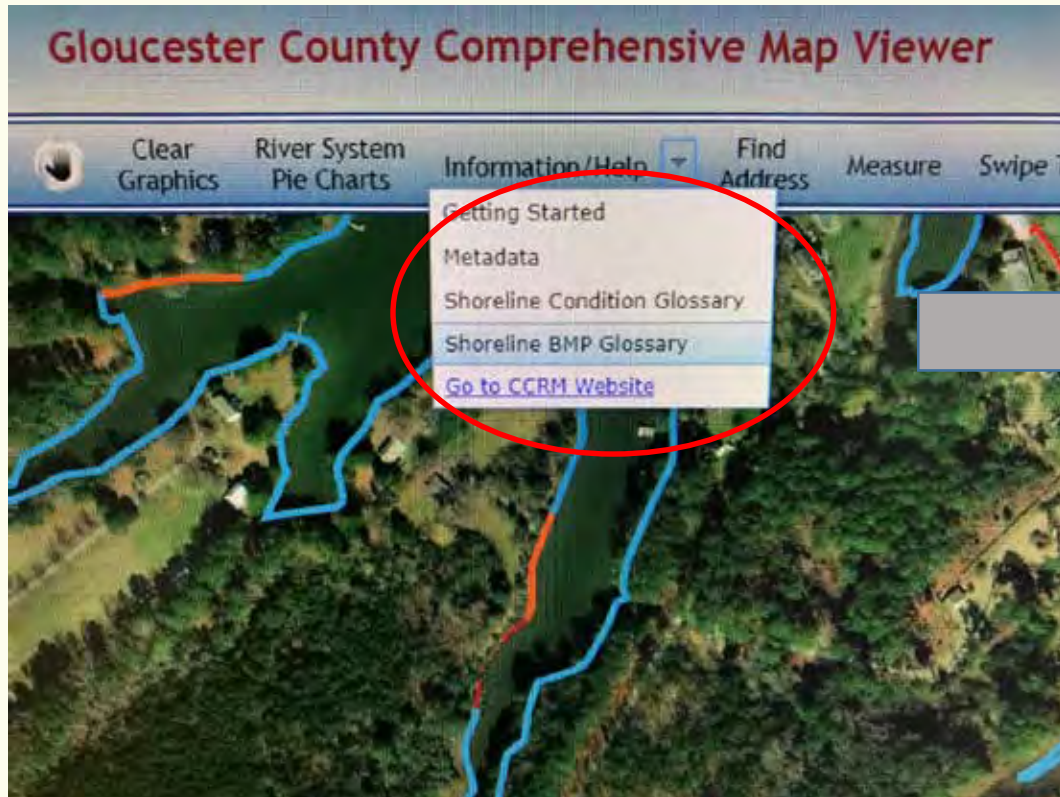
# Note: Shoreline BMP Definition



# Shoreline BMP Glossary



# Shoreline BMP Glossary



# Shoreline Management Model (v.5)

## 2) Preferred BMP Recommendation (slight) Changes

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- Maintain/Enhance/Create Marsh
- Plant Marsh with Sill
- Groin Field with Beach Nourishment
- Maintain Beach or Offshore Breakwater with Beach Nourishment
- Revetment
- Area of Special Concern
  - Residential canals
  - Industrial and commercial hardened shoreline
  - Sand spits

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- Bulkhead Toe Revetment
- **Special Consideration Areas**



# Shoreline Management Model (v.5)

- Residential Canals  
Now get a specific BMP recommendation





# Shoreline Management Model (v.5)

## Special Consideration Areas

- **Highly Modified Areas**  
Industrial and Commercial hardened shoreline areas



Shoreline management options may be limited by:

- Highly developed upland
- Adjacent infrastructure (e.g. road)
- Navigation needs/limitations

### **Recommendation:**

- Seek expert advice on the design of your project.

# Shoreline Management Model (v.5)

## Special Consideration Areas

- Special Geomorphic Area  
Sand Spits



These features are dynamic.

### Recommendation:

- Maintain the natural condition of this shoreline to allow for unimpeded sediment movement and the corresponding response of wetlands, beach and/or dune.
- If primary structures are present and threatened, seek expert advice on the design of your project.

# Shoreline Management Model (v.5)

## Special Consideration Areas

- Ecological Conflict

Model now factors in presence of Submerged Aquatic Vegetation (SAV)



Management options for shorelines may be limited by the presence of Submerged Aquatic Vegetation (SAV).

### Recommendation:

- Seek advice from the Virginia Marine Resources Commission Habitat Management Division <http://www.mrc.virginia.gov/>.

# Shoreline Management Model Updates (v.5)

## SUMMARY

- The model now factors in:
  - Existing defense structures and SAV along a shoreline
- Bulkhead Toe Revetment is now a recommendation
- Maintain/Enhance/Create Marsh and/or Riparian Buffer is now called Non-Structural Living Shoreline
- Areas of Special Concern are no longer in model
  - Residential Canals now get a specific BMP
- Special Consideration Areas (new) – Areas where preferred management options may be limited
  - Highly Modified Area
  - Special Geomorphic Area
  - Ecological Conflict



# Questions?

Christine Tombleson  
Center for Coastal Resources Management  
804-684-7912  
[Christine@vims.edu](mailto:Christine@vims.edu)

