

*Conquest Beach Shoreline
Preservation Project*



Resiliency Through Restoration

Presentation for STAC Workshop:
Monitoring and Assessing Impacts of
Changes in Weather Patterns and
Extreme Events on BMP Siting and
Design

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*Windy Hill Shoreline
Resiliency Project (Corsica River)*

Considerations For:

- Siting
- Design
- Construction

Pre Construction



Ferry Pt. Park Shoreline and Wetland Enhancement Plan



The Challenge:

How do we design and construct resiliency projects which address storm events and maintain (or enhance) ecologic integrity?

Pre-Restoration



Ferry Pt. Living Shoreline Project

Kent Narrows (Queen Anne's County)

One Year After Restoration



Annapolis Maritime Museum (Back Creek)





Rock Run Mill

Conowingo Dam

Historic Dams



Centreville Dam

Bloede Dam



Left: Centreville Dam, Right: Bloede Dam. Credit: USFWS

Historic Dam Structures Are Ubiquitous Across the Mid-Atlantic Region

Bishopville Dam Removal Buntings Branch



Prior To Dam Removal

After 9" Storm Event





Mill Dam Blowouts Due to High Intensity Rainfall Events

Barren Cr. Dam (Wicomico Co.)



Big Mill Dam
(Worcester CO.)





Stream Issues Associated with Climate Change

Streams are disconnected from the adjacent floodplain resulting in:

- Excess sedimentation
- Little opportunity for nutrient processing
- Poor habitat

Restoring Degraded Streams Provides Opportunities To:

- **Reconnect to Floodplain**
- **Slow Movement of Water**
- **Provide for Nutrient Processing**
- **Improve Habitat**



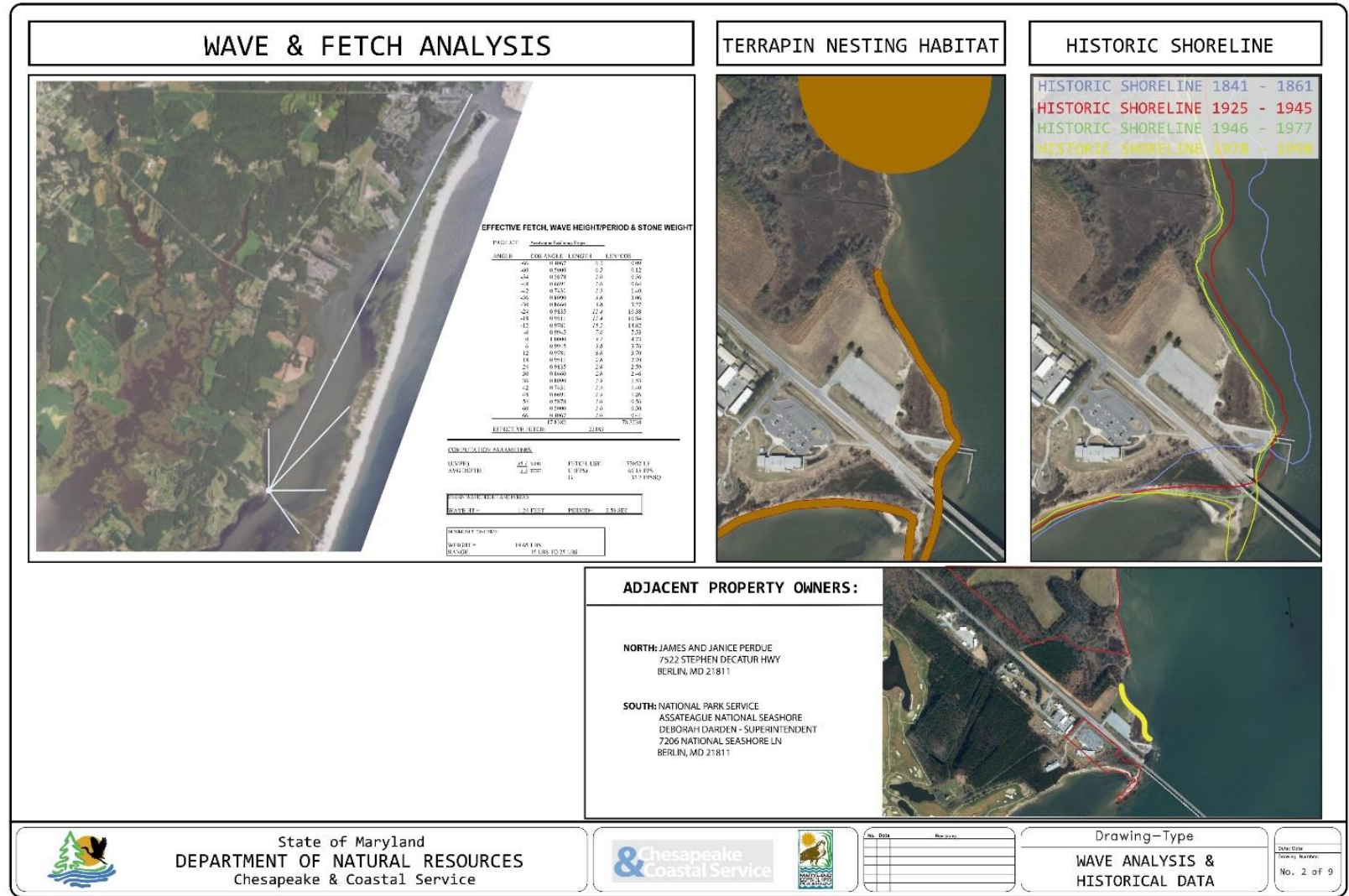
Assateague Island Living Shoreline Siting

- ❑ Increase resiliency for State infrastructure;
- ❑ Maintain coastal processes;
- ❑ Minimize impact on natural resources while restoring wildlife habitat;
- ❑ Restore and protect public access;
- ❑ Provide in-ground example of building resiliency through restoration.



Assateague Island Living Shoreline Design

- ❑ Design structures to be resilient during the maximum storm event through proper material sizing and placement;
- ❑ Provide framework to embrace dynamic equilibrium;
- ❑ Embrace and maintain coastal processes rather than fight against coastal energies.



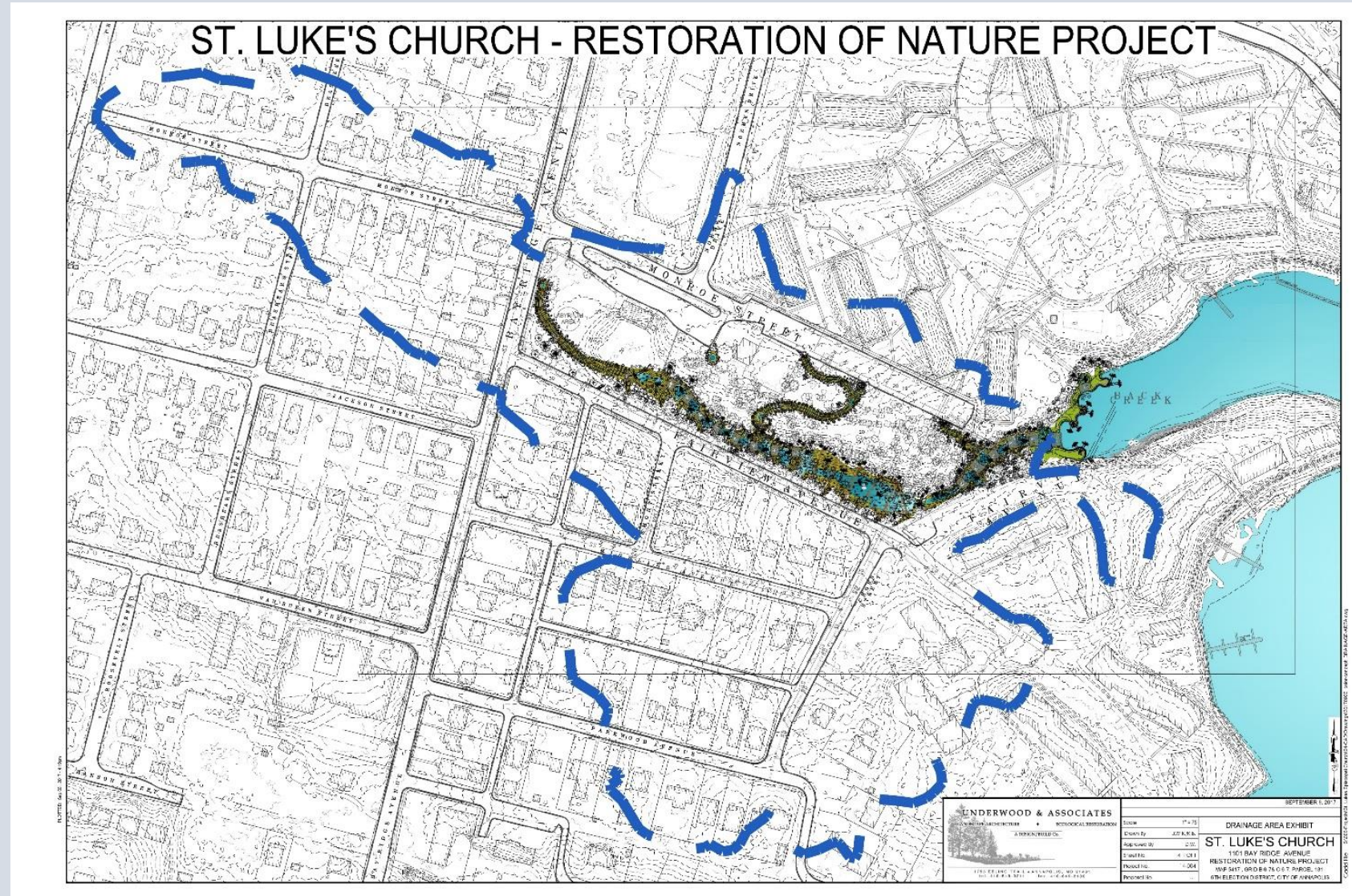
Assateague Island Living Shoreline Construction

- Monitor weather conditions;
- Manage and minimize disturbance daily;
- Maintain erosion & sediment controls.



St. Luke's Restoration of Nature Siting

- ❑ Reduce nitrogen, phosphorus, and sediment through ecological restoration from the top of the watershed to tidewater;
- ❑ Safely convey the 100 year rain event while providing resiliency to larger and more frequent storm events;
- ❑ Minimize impact on natural resources while restoring wildlife habitat.



St. Luke's Restoration of Nature Construction

- ❑ Install and maintain a proper haul road;
- ❑ Construct grade control structures starting downstream and moving upstream, to manage storm events during construction;
- ❑ Manage and minimize disturbance daily;
- ❑ Maintain erosion & sediment controls.



Adaptive Management

- ❑ Required on all nature based ecological restoration projects – if material is not moving, its not working;
- ❑ Maintain framework to embrace dynamic equilibrium;
- ❑ Place adaptive management material within the landscape on site to allow for minimally invasive adaptive management.



Thank you!