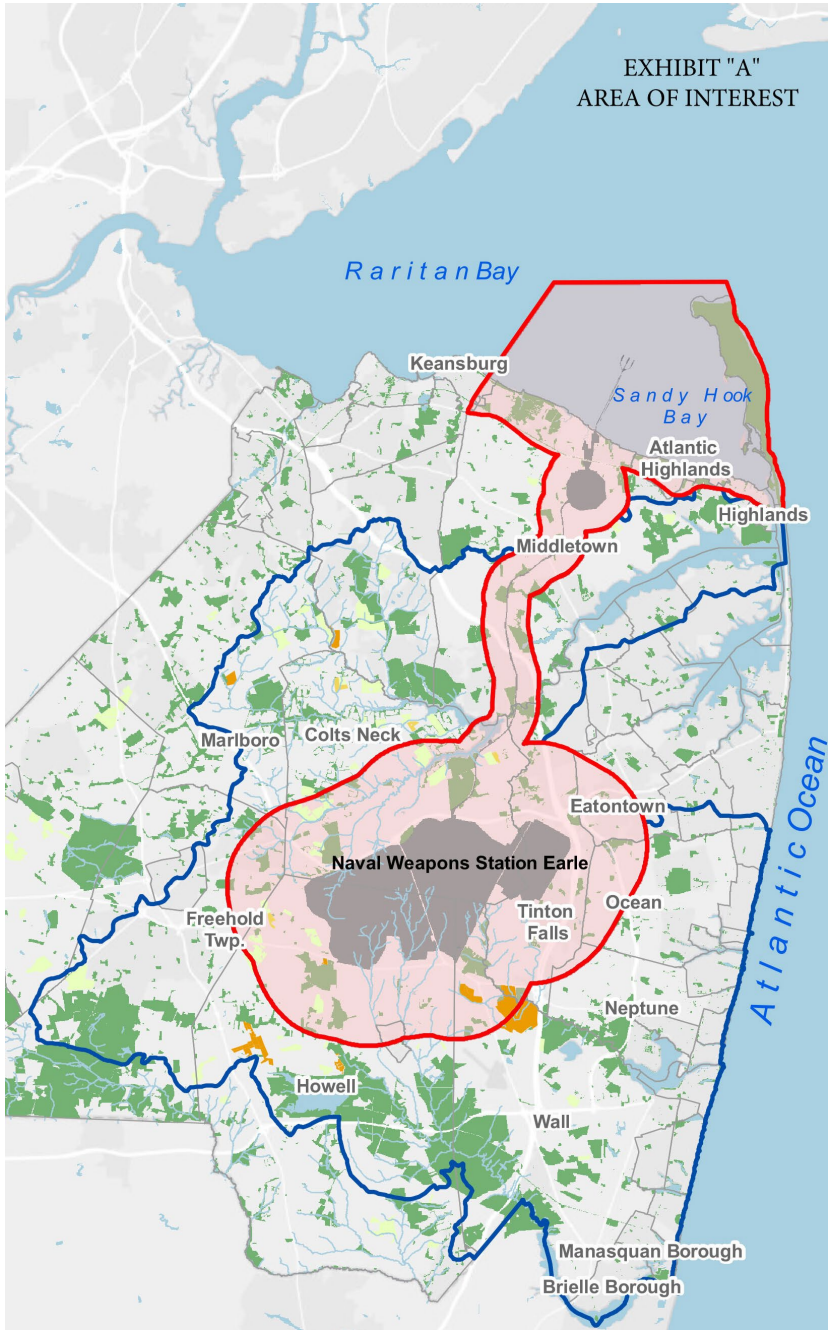
Building Partnerships and Capacity for the Successful Implementation of DOD Coastal Resilience Projects at Naval Weapons Station Earle

Tom Herrington, NJ Sea Grant Resilient Communities & Economies Specialist
Nick Ginther, NWSE Community Planning & Liaison Officer
Meredith Comi, Director, NY/NJ Baykeeper Coastal Restoration Program



Naval Weapons Station Earle

- Supports the Atlantic Fleet's Carrier and Expeditionary Strike Groups
- Hub to five Military Sealift Command cargo/ammunition ships
- 11,851 acre installation extending from Colts Neck to Sandy Hook Bay
- Over one hundred miles of rail line
- 2.9 mile finger pier complex (largest in the northern hemisphere)
- $1.5 Billion in Infrastructure
- Employs 782 civilians, approximately 68 percent of all base personnel
- Includes over 2,800 acres of wetlands and 32.5 acres of open water ponds
- Monmouth County 11th most densely populated county in the state with the highest population density

Facility Resilience

Issues

- Increased frequency and severity of coastal storm events and sea level rise
- Associated disruption of utilities, support services, and vehicular access, and increased Bayfront erosion could have long-term impacts to the future operation, resiliency and safety of the pier, navigational channels and landward facilities.

Response

- Increased awareness of the increasing risk of extreme weather events and our need to adapt to Climate Change and Sea Level Rise
- Identification of nature and natural-based features for increased base and surrounding community resilience
- Conduct 4 Joint Land Use Studies (JLUS) with Monmouth County

JULSs Builds Capacity to successfully compete for External Restoration Funds

- Existing Federal Programs
  - National Fish & Wildlife Foundation's National Coastal Resilience Fund (NFWF)
  - DoD's Readiness and Environmental Protection Integration Program (REPI)
  - EPA & Restore America's Estuaries' National Estuary Program Coastal Watershed Grants
  - Other Programs
    - OLDCC, USACE, NOAA, USF&W

- Common Requirement
  - Partnerships and Stakeholder Engagement
- NFWF & REPI – 4 Phases
  - Phase 1: Community Capacity Building and Planning
  - Phase 2: Site Assessment and Preliminary Design
  - Phase 3: Final Design and Permitting
  - Phase 4: Project Implementation and Monitoring

Benefits of Community Capacity Building and Planning

- Creates a shared vison for developing community and ecosystem resilience in an area or region
- Allows partners and stakeholders to work collaboratively or independently to achieve the shared vision
- Raritan/Sandy Hook Bay Coastal Resilience Planning Study Outcomes
  - Monmouth County has received a 3rd JLUS grant to conduct a site assessment of the Whale Creek project area
  - Highlands Borough has initiated stormwater management upgrades
  - Monmouth University & NWSE Cooperative Agreement to provides $1M in REPI funds over 5-years to advance Community and Facility Resilience Projects
  - Congressman Pallone provided additional funding in the FY22 and FY23 DoD budget for NWS Earle to advance the concept plans in the Planning Study
    - Established Monmouth University, NJ Sea Grant, NY/NJ Baykeeper partnership to aid communities in developing community resilience project proposals

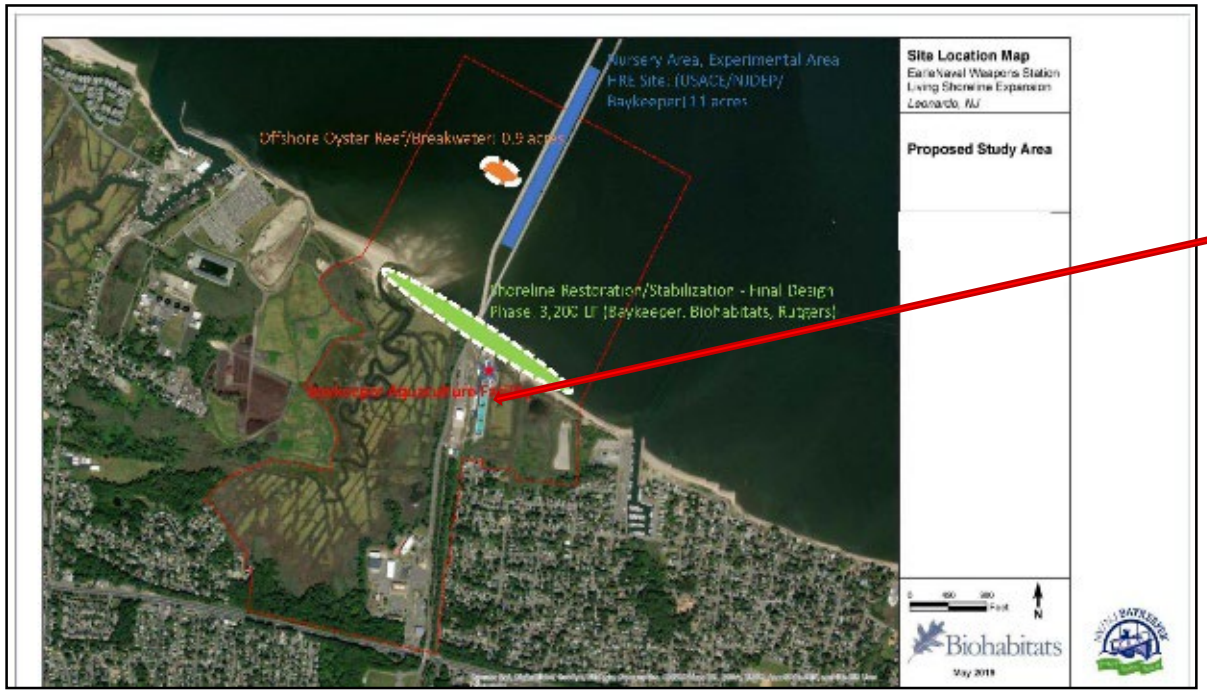
Raritan & Sandy Hook Bay Ecosystem & Community Resilience Projects

NY/NJ Baykeeper's Coastal Restoration Program – ANCHOR PROJECT

NWS Earle Operations

- Oyster restoration
- Aquaculture facility
- Nursery/test area
- Shell collection and curing area
- Living shoreline/NNBF projects

- To date over 9 million oysters have been restored to NY-NJ waters



Aquaculture facility

NWS EARLE RESEARCH

REEF MONITORING

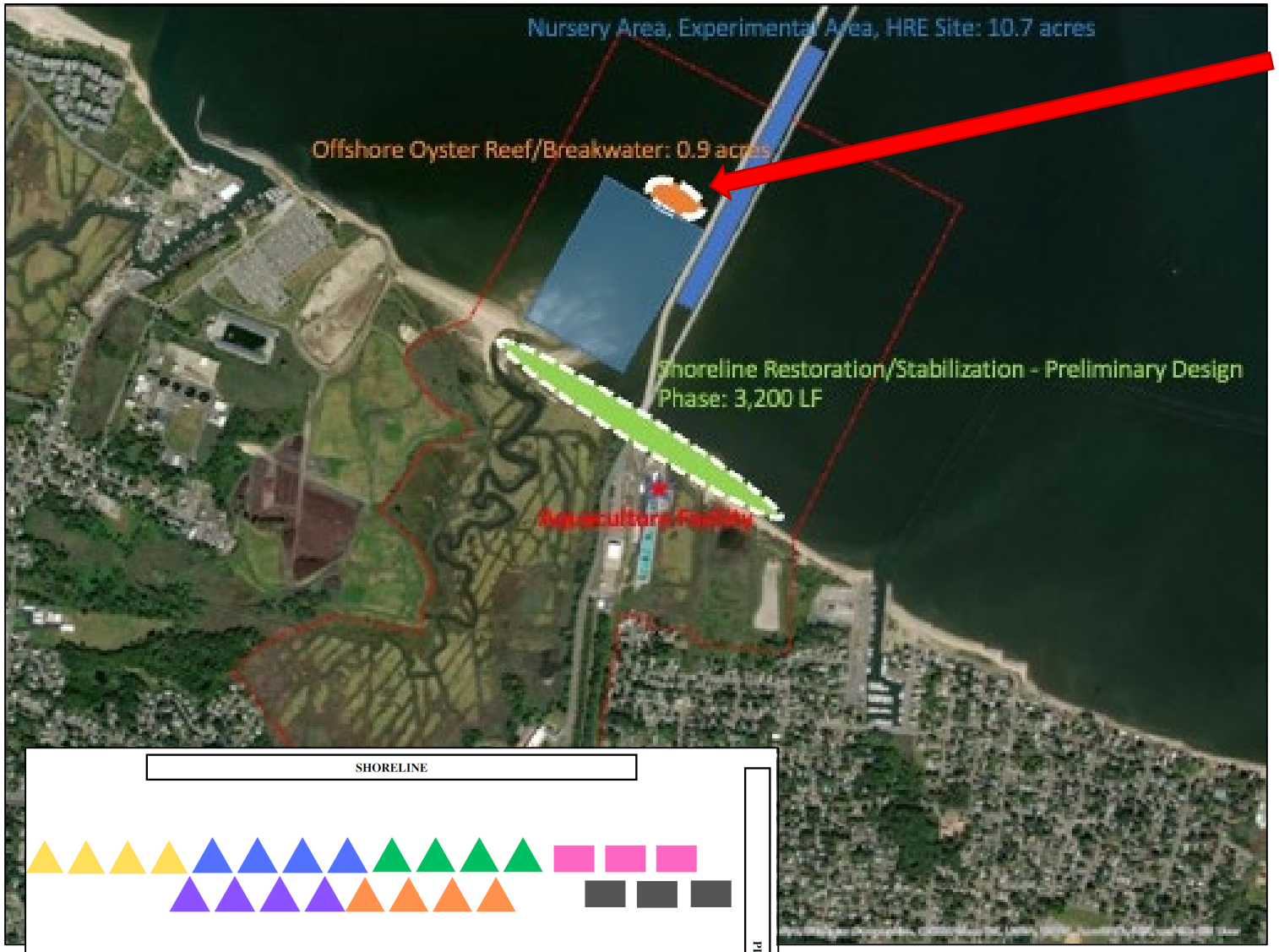
Structural integrity, scouring, oyster growth and survivorship, natural recruitment

BIODIVERSITY STUDIES

Fish traps, settlement plates, qualitative data to determine biodiversity

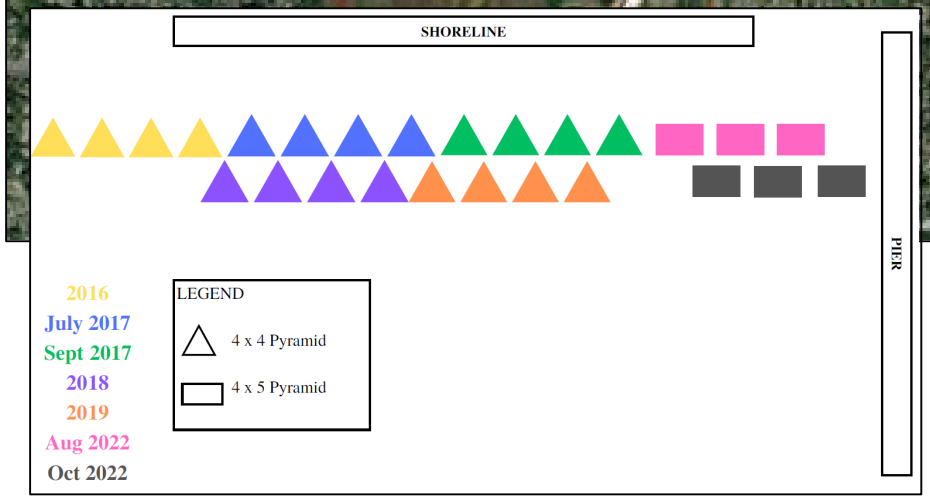
SEDIMENT STUDIES

Shoreline monitoring and sediment traps to determine accretion/ erosion patterns



LIVING SHORELINE/BREAKWATER

- 0.9 acres
- Established 2016; still expanding
- Previous Funding: mitigation money, NFWF IDEA grant
- Current Funding: NJDEP, Richmond County Savings Foundation, and family foundations
- Partners: Biohabitats, NJCU, Monmouth University, NWS Earle



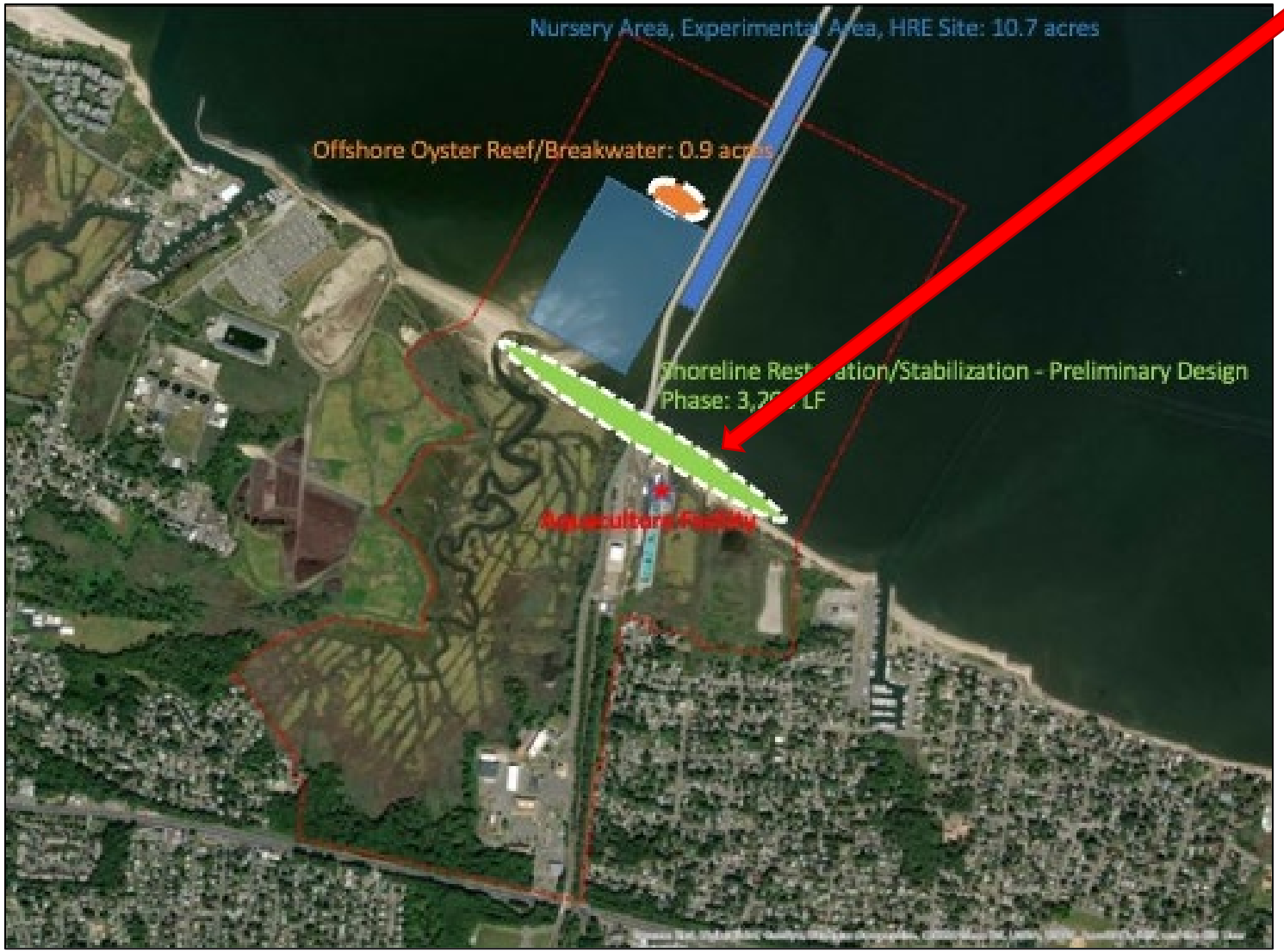
- Spat on castles are transported the Living Shoreline at NWS Earle.
- Individual castles are stacked and arranged into pyramids.
- 840 castles have been placed to date

10.7-acre PROJECT AREA

- Established 2012
- Test area
- Nursery Area
- Funded by: Pew Charitable Trusts, Richmond County Savings Foundation, private foundations/family foundation
- Current Funding (pending): NFWF NCRF in partnership with TNC and Pew to plant adult oysters at the site

Congressional Funding for HRE: Hudson Raritan Estuary Oyster Restoration Project

- One of 20 restoration projects that were authorized for construction
- Baykeeper, USACE, NJDEP, NWSE
- In PED Phase
- Estimated cost = 10 M
- Partners: Baykeeper, USACE, NJDEP, NWS Earle

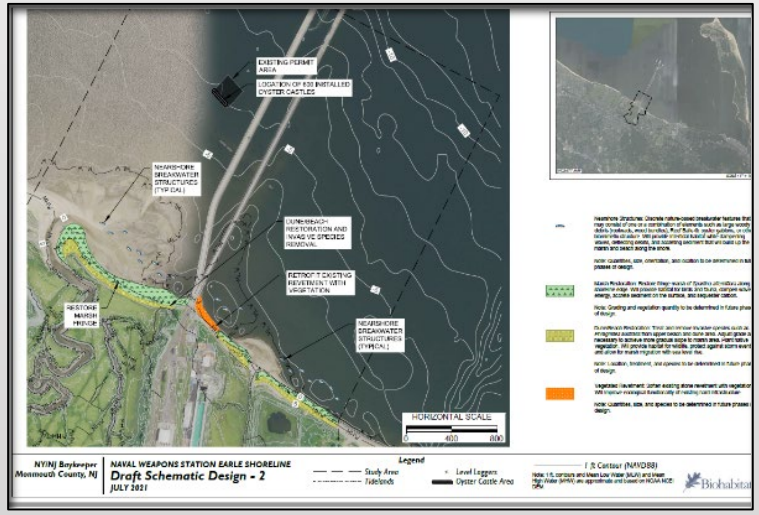


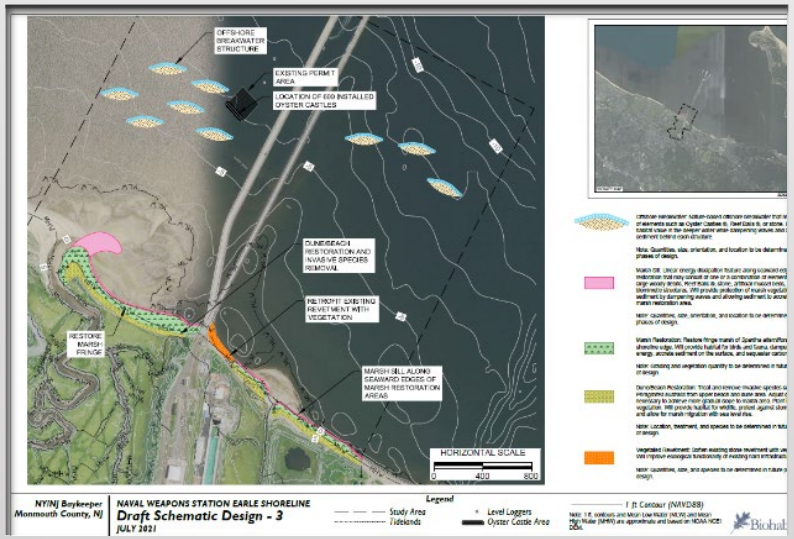
Shoreline Stabilization Project

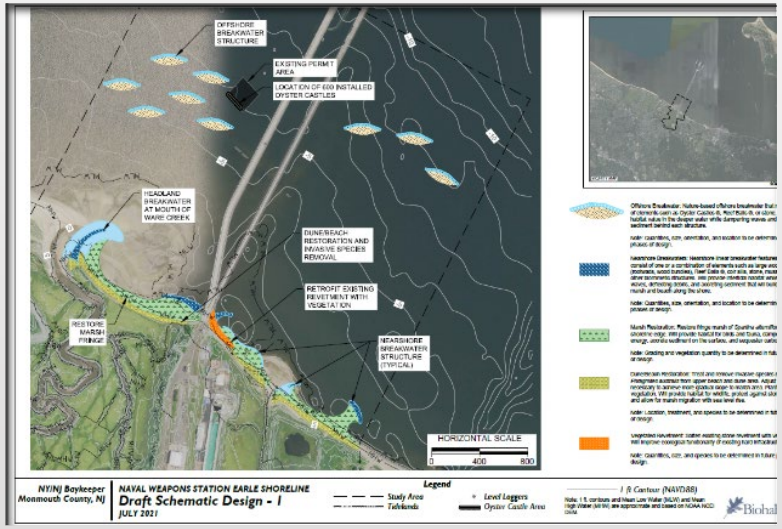
- 200-acre salt marsh located at NWS Earle
- Goal is to stabilize the shoreline around NWS Earle and to protect the surrounding community
- Project will enhance coastal habitat with nature-based approaches along the 3,200 LF of shoreline on NWS Earle's property
- Baykeeper awarded funding through National Fish and Wildlife Foundation's National Coastal Resilience Fund (Phase 1 = $154,743; Phase 2 = $621,576)
- Project Partners: Biohabitats, Rutgers University, Monmouth University, NWS Earle, and Monmouth County
- Currently in final design and permitting phase (Phase 2)

Phase 2: Final Design & Permitting

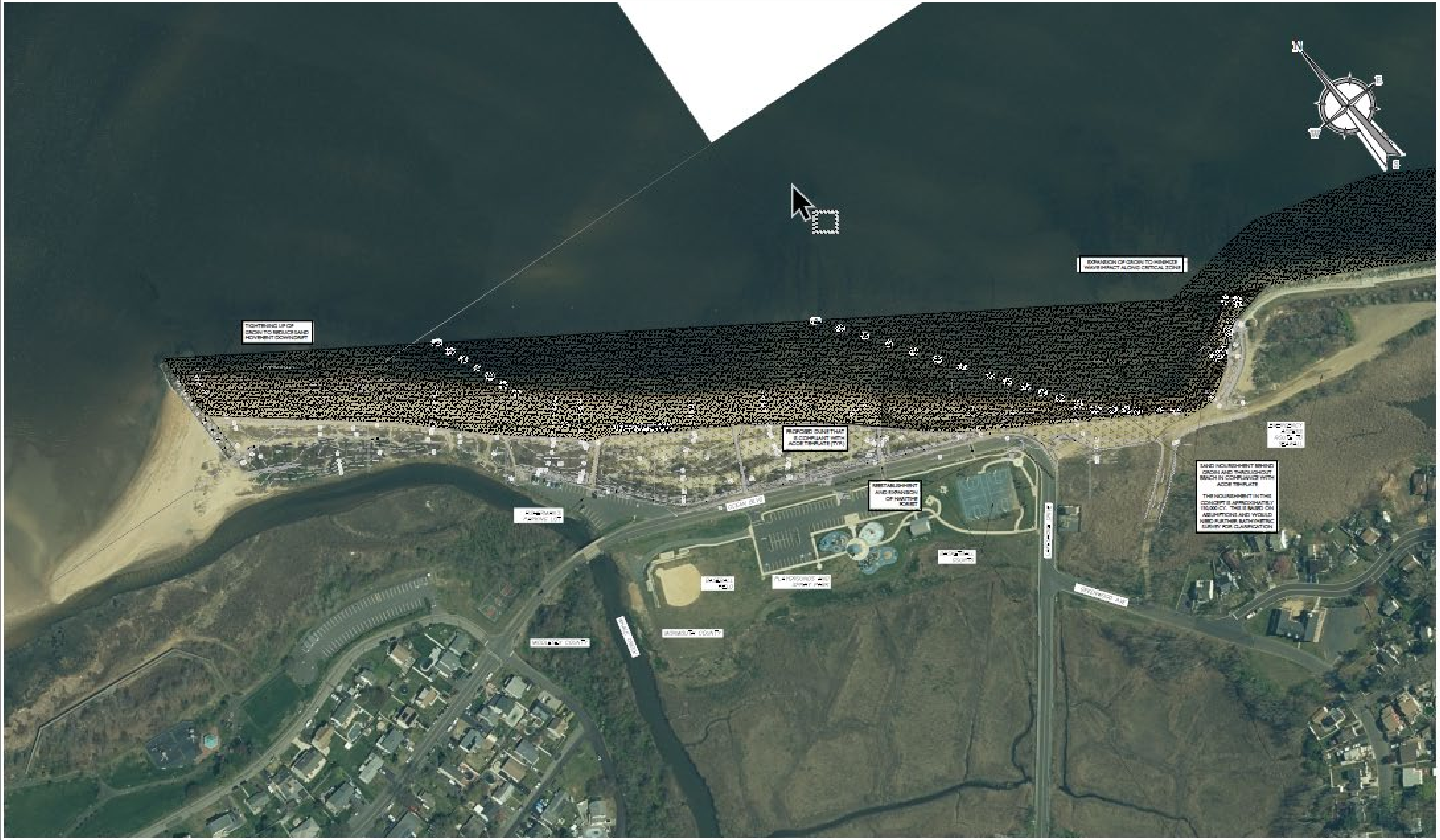
- Phase 1 resulted in three design alternatives
- Design Elements Considered: Offshore Breakwater, Marsh Sill, Nearshore Breakwater, Marsh Restoration, Dune/Beach Restoration, Vegetated Revetment
- Next Steps: Model Refinement, Permitting, & Finalized Design
    - Geotechnical investigations, surveys, hydrodynamic model







1. WHALE CREEK RESTORATION/CLIFFWOOD BEACH STABILIZATION CONCEPT DIAGRAM



DATUM CHART

BENCHMARK KV0765 (U 36)		ELEV. 21.58 (NAVD88)
MEAN HIGHER HIGH WATER (MHHW) SPRING HIGH WATER	24.72' / 19.45'	ELEV. 2.48
MEAN HIGH WATER (MHW)		ELEV. 2.13
MEAN TIDE LEVEL		ELEV. −0.28

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CAFRA BEACH MAINTENANCE PERMIT APPLICATION

FOR

TOWNSHIP OF ABERDEEN

BLOCK 341
PART OF LOT 1

TOWNSHIP OF ABERDEEN
MONMOUTH COUNTY
NEW JERSEY

Colliers Engineering & Design

RED BANK (Headquarters)
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950

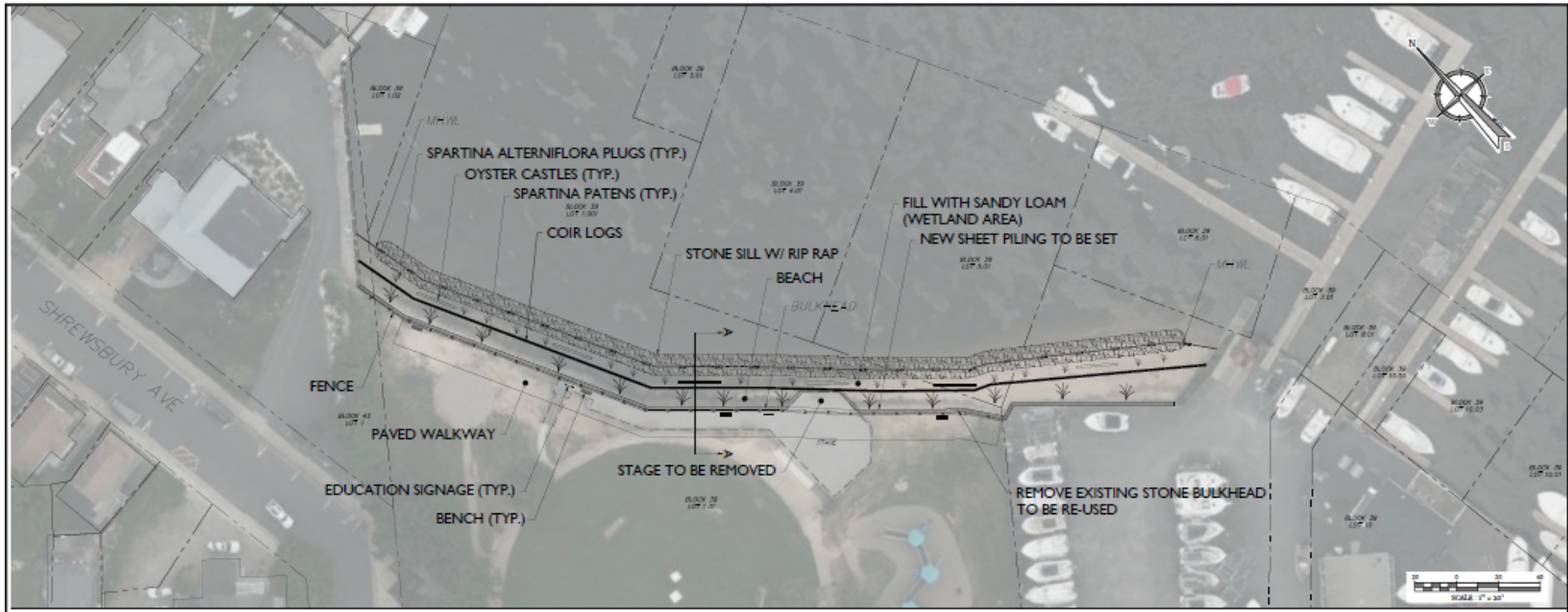
SCALE	DATE	DRAWN BY	CHECKED BY
AS SHOWN			

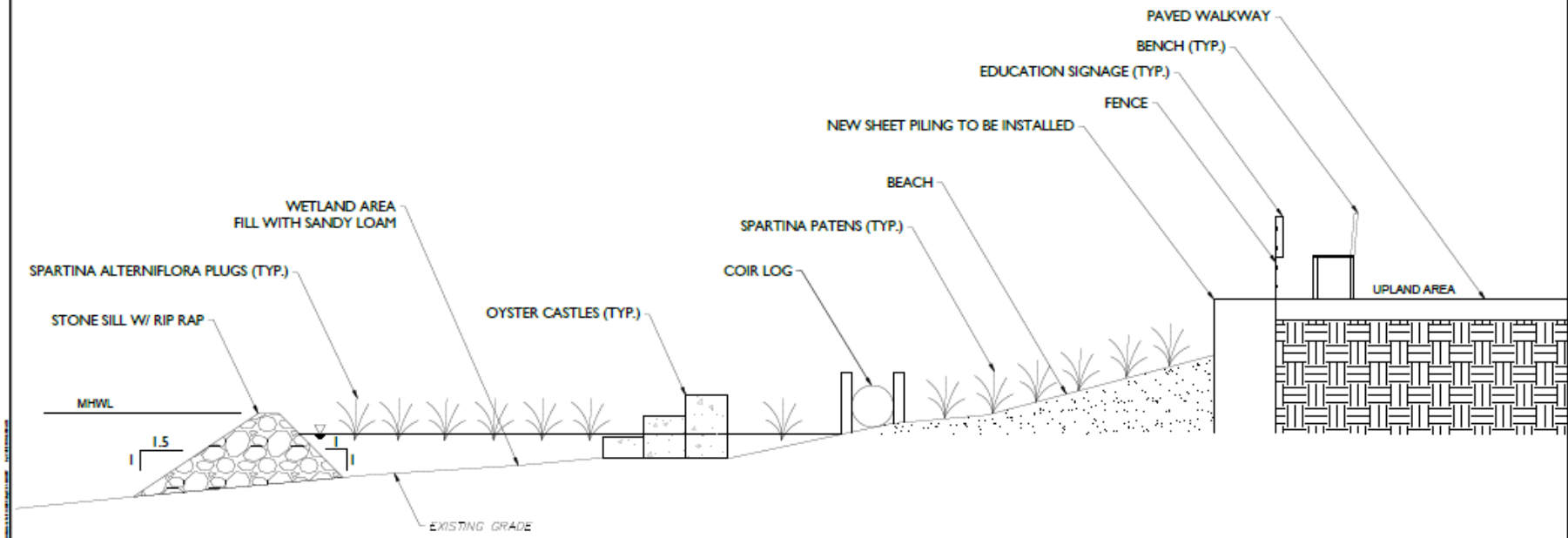
PROJECT NUMBER	DRAWING NAME

SHEET TITLE

CONCEPT PLAN

11. HIGHLANDS STORMWATER IMPROVEMENTS CONCEPT DIAGRAM





SECTION A-A

Collier Engineering & Design

EXHIBIT

FOR

THE BOROUGH OF HIGHLANDS

BULK HEADING AND LIVING SHORELINE AT VETERANS PARK

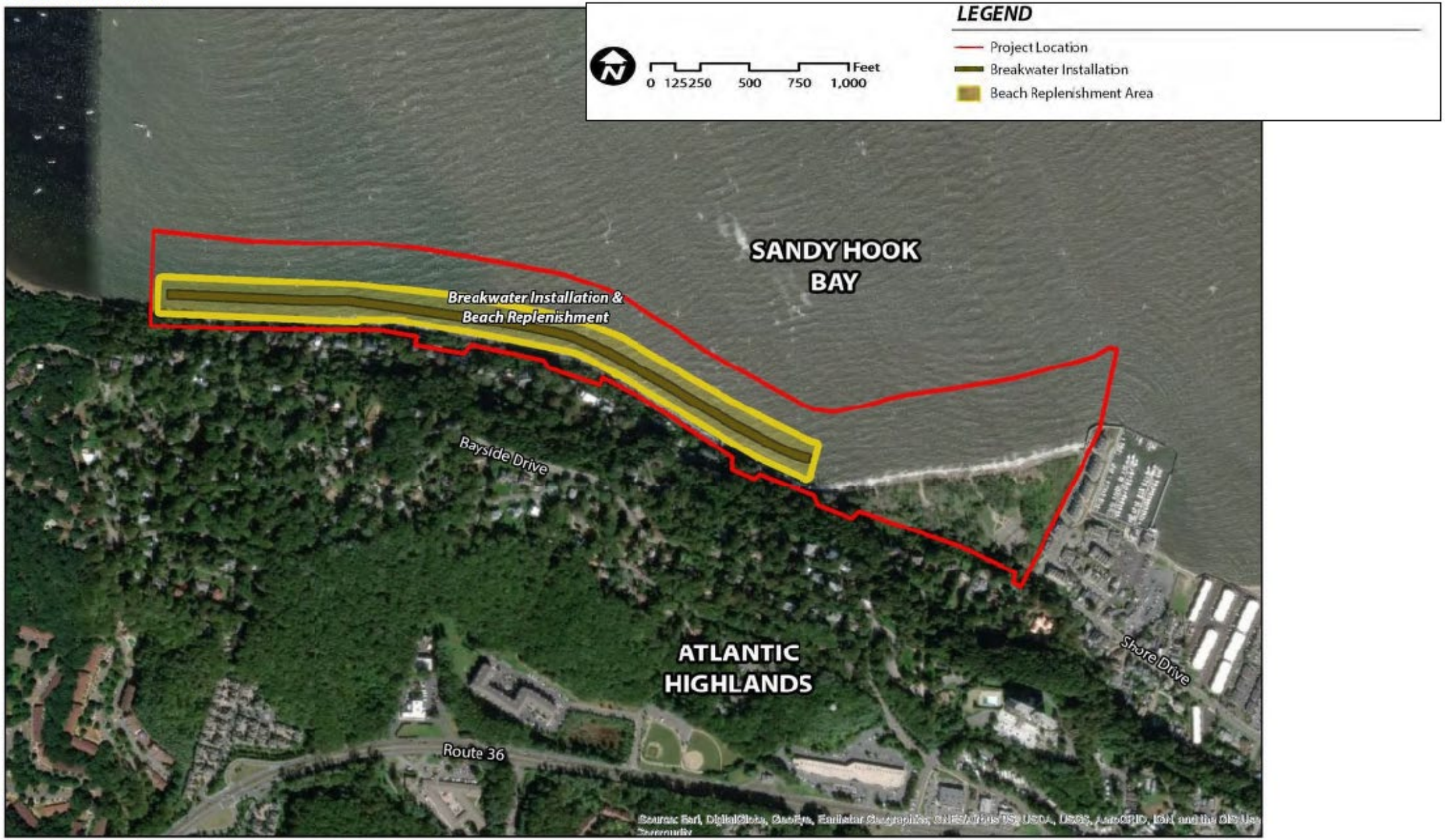
BOROUGH OF HIGHLANDS
MONMOUTH COUNTY
NEW JERSEY

EXHIBIT

1 of 1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION

10. HENRY HUDSON TRAIL SHORELINE PROTECTION CONCEPT DIAGRAM

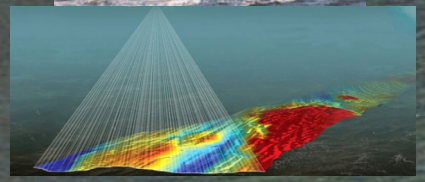


10. HENRY HUDSON TRAIL SHORELINE PROTECTION
PHOTO SIMULATION

LEGEND

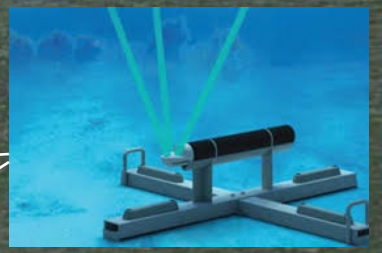
Project Location

ONR Living Shoreline Test Bed Components



Hydrographic Surveying

CTD & Water Quality



Wave & current Meters

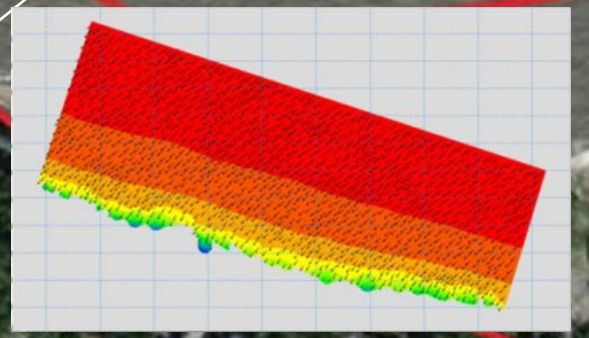
Tide Gauge

Breakwater Installation & Beach Replenishment

SANDY HOOK BAY

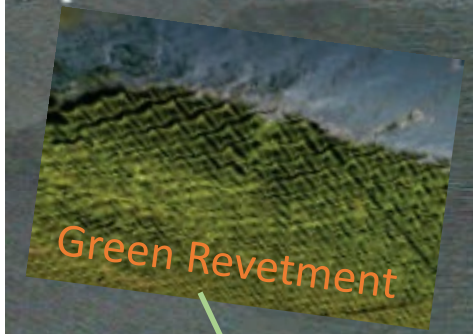
Shoreline Monitoring

Ecosystem Monitoring

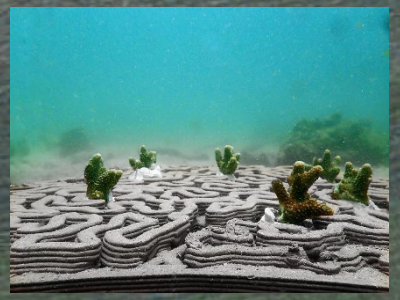


Test Bed Modeling System

Modifying the Conceptual Design to include a Research Component



Green Revetment



Offshore Reefs

Breakwater Installation &
Beach Replenishment

SANDY HOOK
BAY

Bayside Drive

Geotube
Core Dune


Questions?

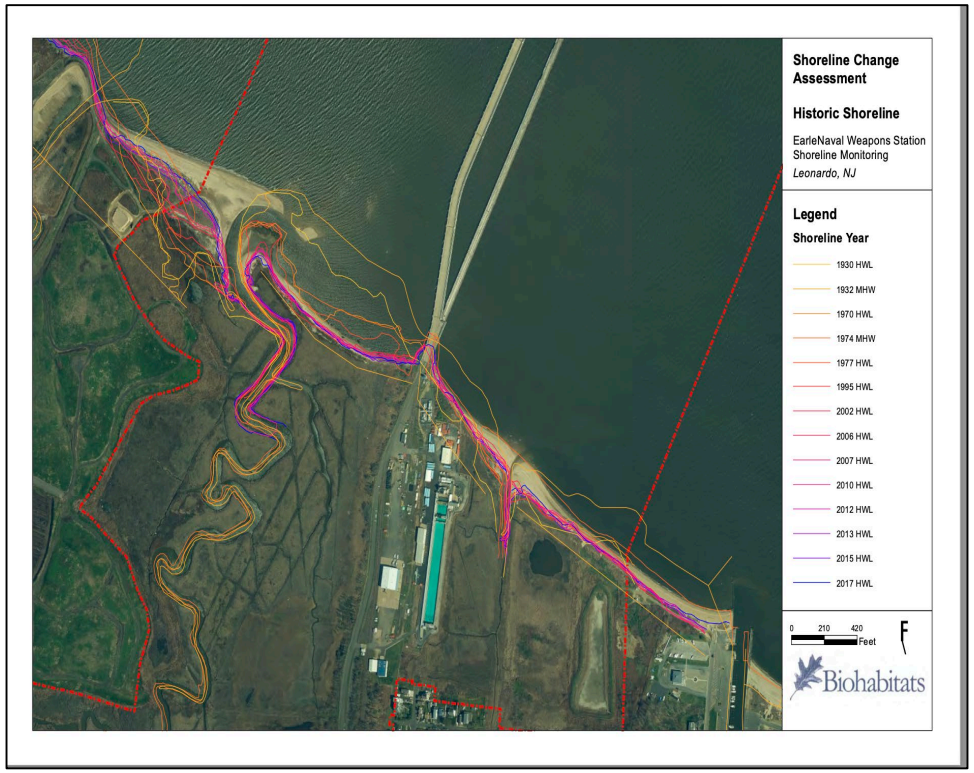
Additional Slides

NFWF NCRF FUNDING

Phase 1: “Evaluation of the Naval Weapons Station Earle Shoreline-Determining Design Alternatives for A Nature-based Approach to Coastal Community Protection” (2019 – 2021)

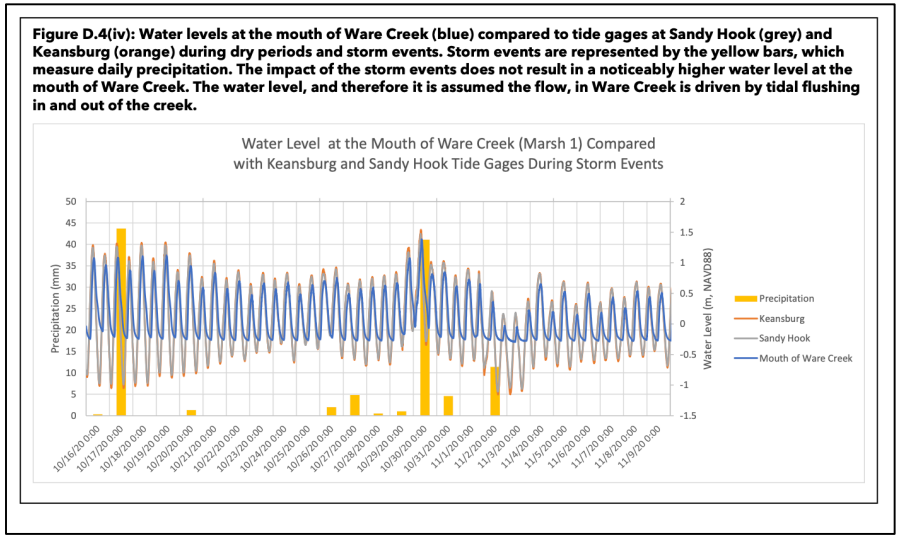
Robust data collection period to determine:

- Existing shoreline conditions and how it is changing over time.
- Coastal hydrodynamics that exist at the project site → inform a model
- Site constraints that are driving habitat loss
- Deployed ADCP to better understand the dynamics associated w/ waves and current at the project site.
- Deployed Leveloggers®to measure flow in and out of Ware Creek.



Project Findings

- Project site has experienced historic erosion of 1.6-1.75 ft per year.
  - Shoreline to the west of the mouth of Ware Creek shows a net accretion overtime → **shifting eastward**.
- **Wave energy** is the primary cause for this erosion.
- A **strong tidal signal** dominates flow into & out of the creek as the tides change



ANTICIPATED PROJECT RESULTS & BENEFITS

- Approximately 3,300 LF of shoreline stabilized
- Approximately 2.6 acres of fringe marsh restored/created
- Up to 3 acres of inter-tidal & sub-tidal habitat enhancement & 3 acres of dune/beach restoration & planting
- Reduction in flood risk for NWSE & approximately 9 acres of residential properties that are within the 100-year floodplain adjacent to the project site.
- Protection of 90-acre Ware Creek marsh habitat immediately inland from the shoreline,→ residences, businesses, & other community assets will benefit from this flood reduction.
- Restoration of lost ecological function to improve intertidal and marsh habitat for species of juvenile fish, migratory birds, & terrapins

Department of Defense (DOD) Appropriations

- Rep. Frank Pallone secured 2.5 M for coastal resilience projects along the Raritan Bayshore.
- Baykeeper, Monmouth University and Monmouth County are pursuing projects that will make NWS Earle and the Raritan Bayshore more resilient to coastal hazards.
- Ongoing work with NWS Earle, Monmouth County, NJDEP, Rutgers University and others