



# Integrating Sustainability Into Marina Design

Dock Expo 2024

December  
2024



# Why Integrate Sustainability Into Your Marina?

- Save Money / Increase Profits
- Improve Wave Climate
- Reduce Energy Costs
- Reduce Maintenance Costs
- Market Differentiation
- Expand Habitat
- Grant Funding
- Speed Up Entitlements
- Future Proof Your Facility
- Good for the Environment















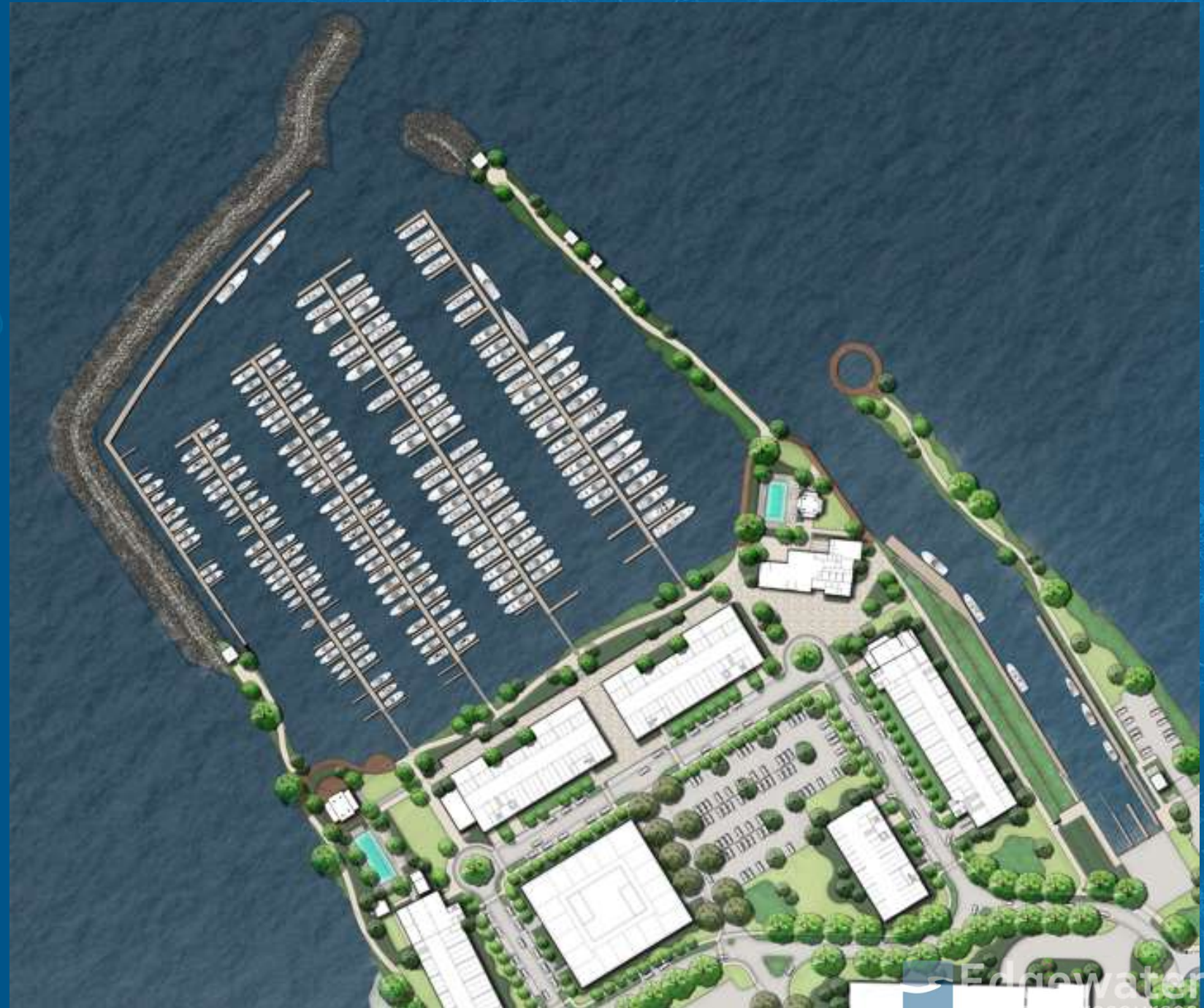






# Environmental Sustainability

- Brownfield Cleanup
- Solar Power Generation
- Wind Power Generation
- Green Roofs
- Dark Sky Lighting
- Native Plant Palette
- Soft Shoreline Habitat
- Michigan Clean Marina Certification









# Integrating Public Access

- Permanent Public Easements
- Fishing Outcrops
- ADA Compliant Fishing Access
- ADA Compliant Paddlecraft Launch
- Public Fishing Pier
- Maintain Subsistence Fishing

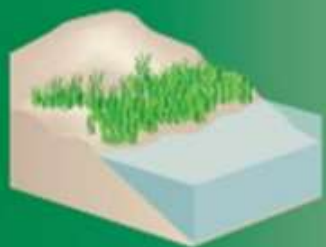




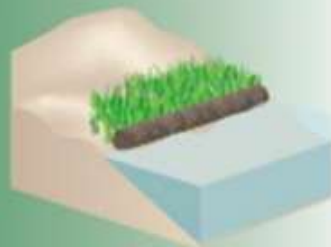
## GREEN - SOFTER TECHNIQUES

## GRAY - HARDER TECHNIQUES

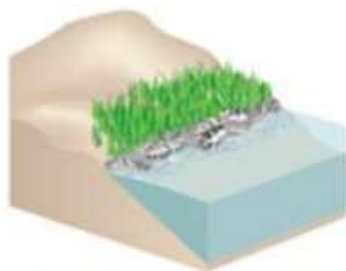
### *Living Shorelines*



**VEGETATION ONLY -**  
Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.



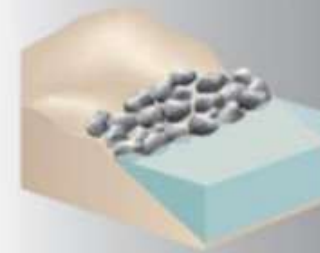
**EDGING -**  
Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.



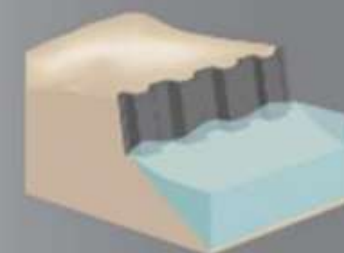
**SILLS -**  
Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.



**BREAKWATER -**  
(vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



**REVETMENT -**  
Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



**BULKHEAD -**  
Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.









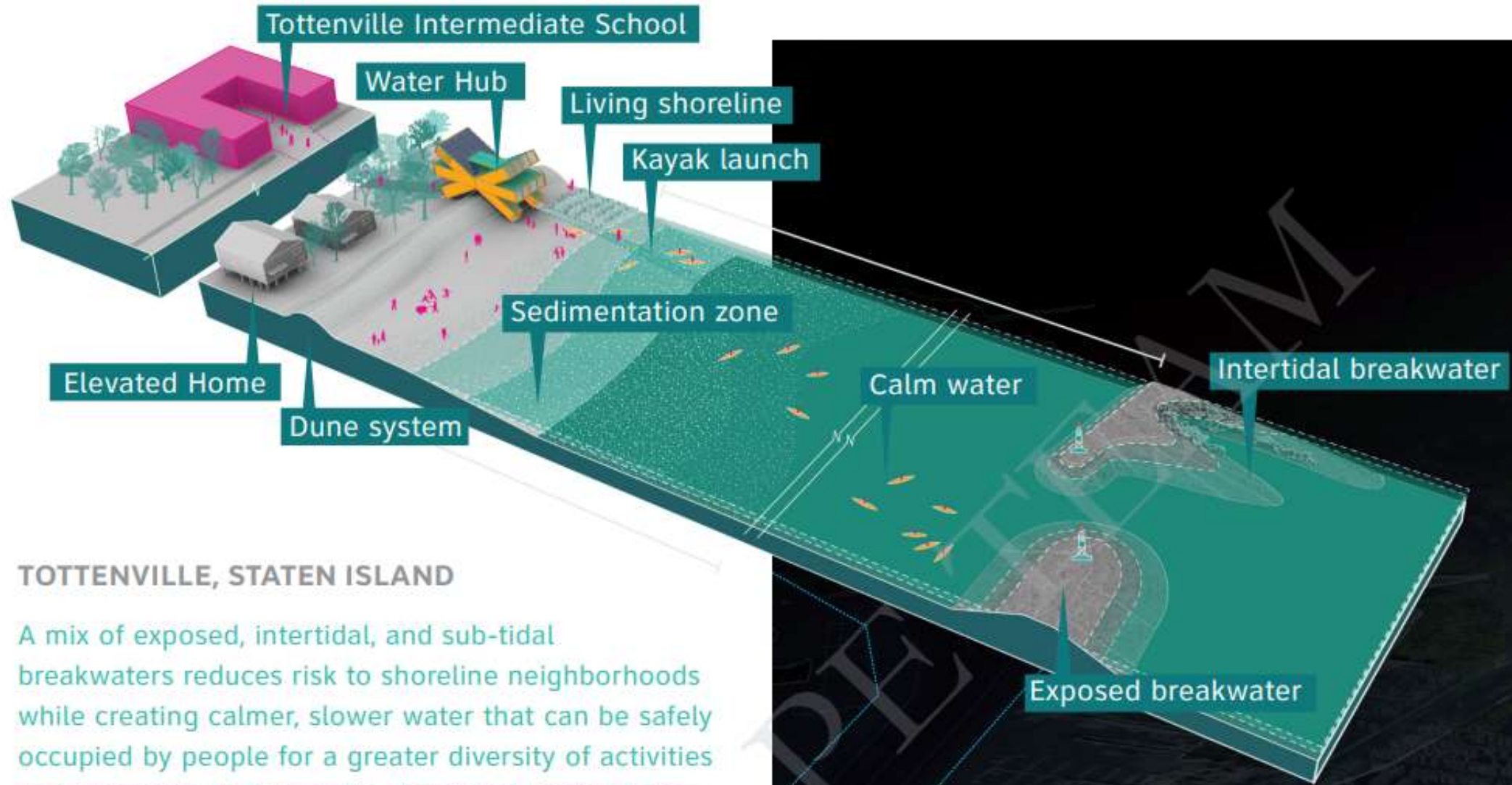


# Financial Benefits

- Over \$40 million in Brownfield Funds
- Eliminated \$2 million in Shoreline Armoring
- \$1.5 million BIG Grant Funding
- \$1 million Public Fishing Access Grant
- \$50k Clean Vessel Act Grant
- Permit Approved



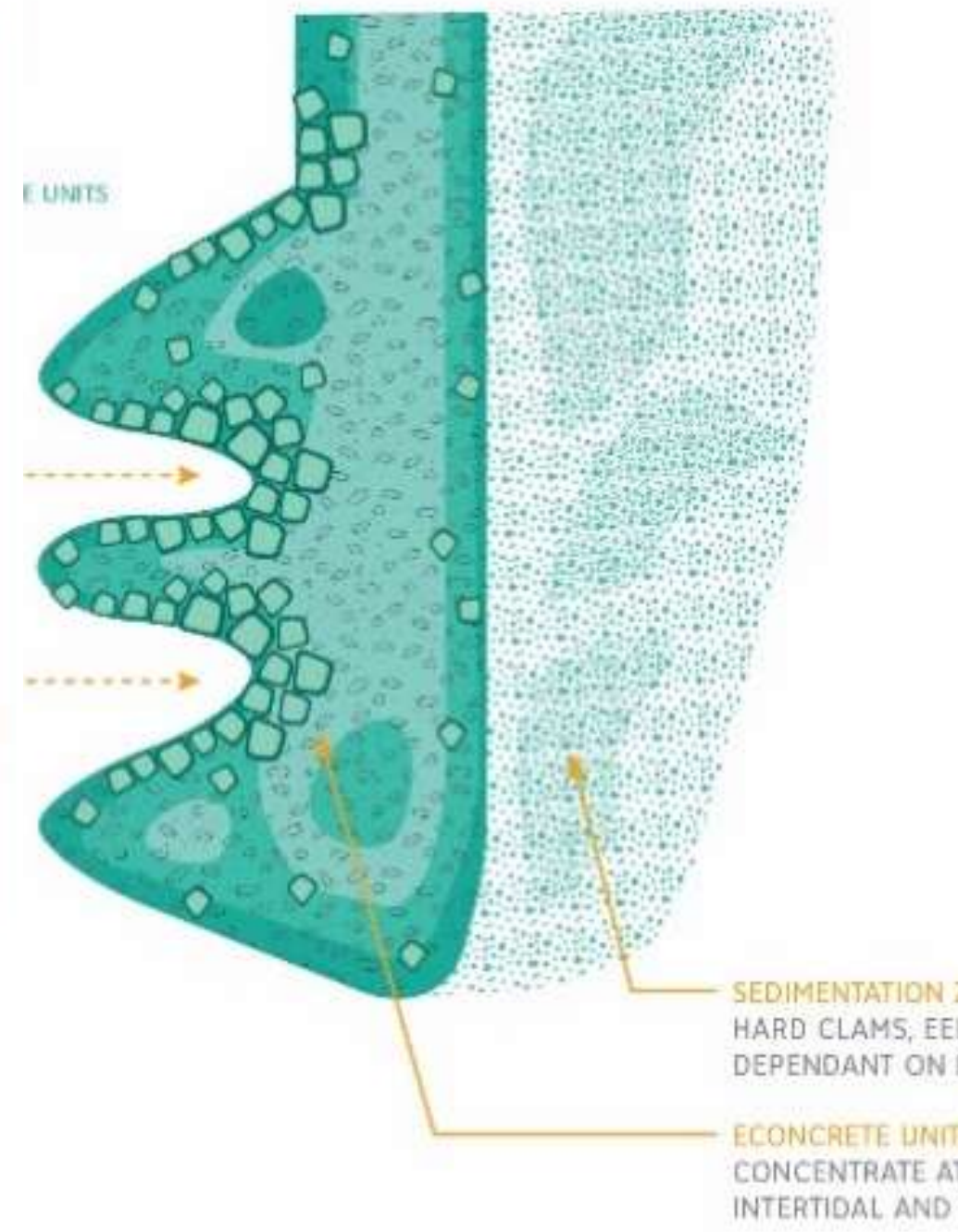
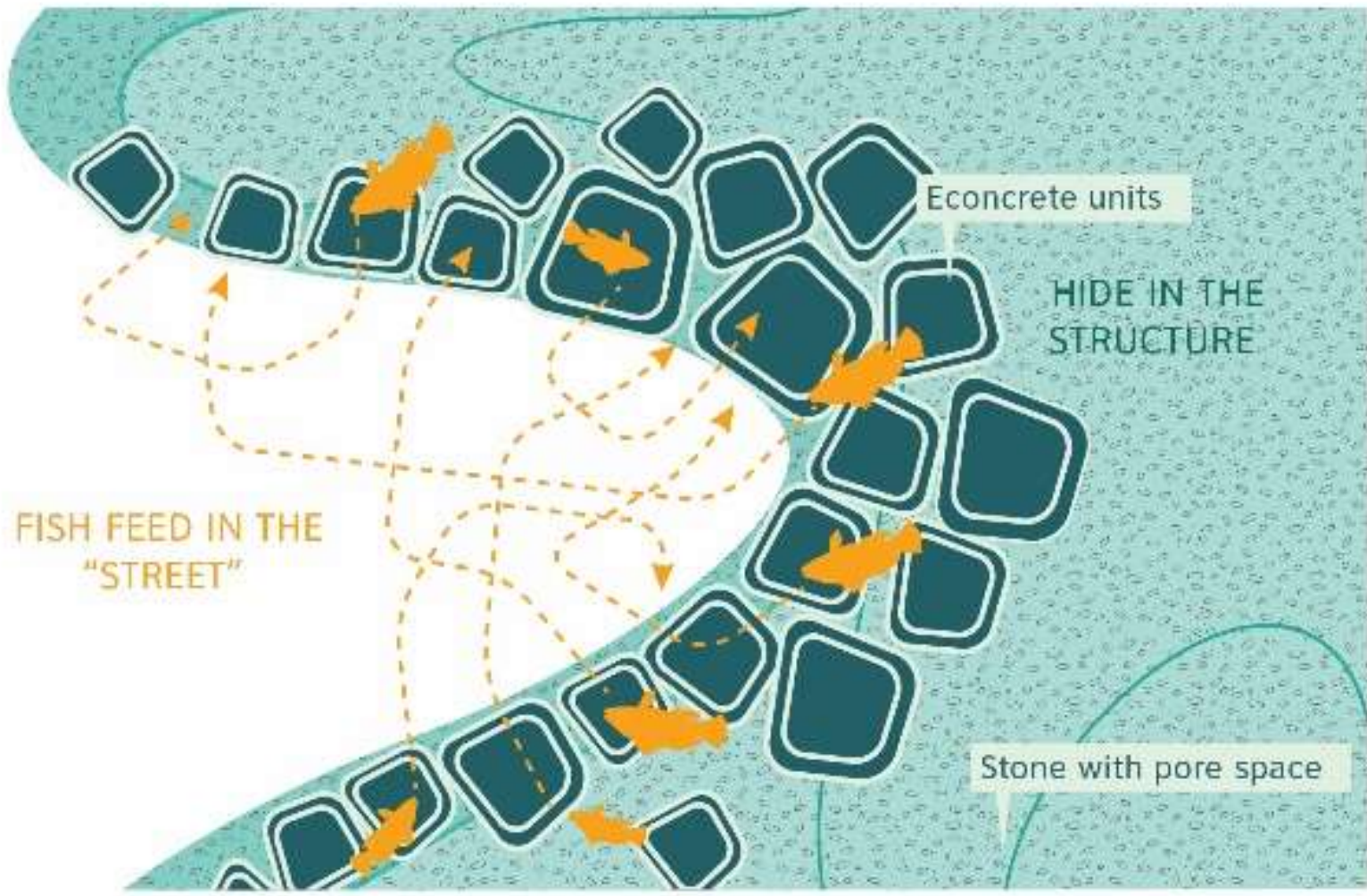




### TOTTENVILLE, STATEN ISLAND

A mix of exposed, intertidal, and sub-tidal breakwaters reduces risk to shoreline neighborhoods while creating calmer, slower water that can be safely occupied by people for a greater diversity of activities and programs. In Tottenville, the introduction of the breakwater system and the Water Hub enable local community partners, such as Kayak Staten Island and Conference House Park, to more fully enjoy the protected shoreline and calmer water.

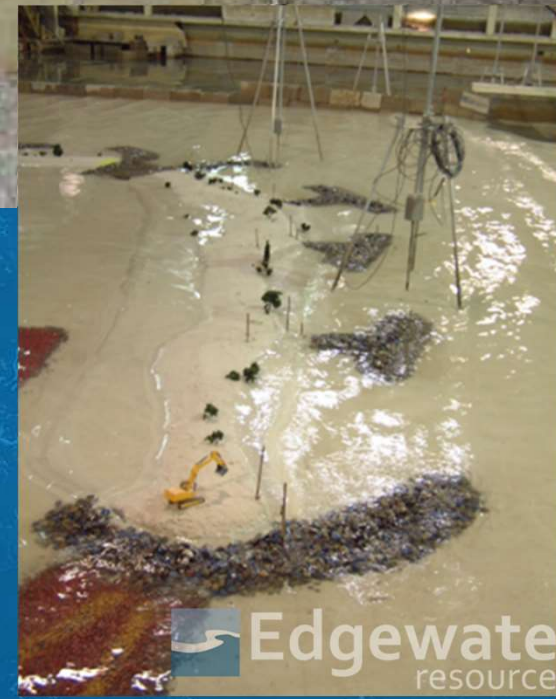
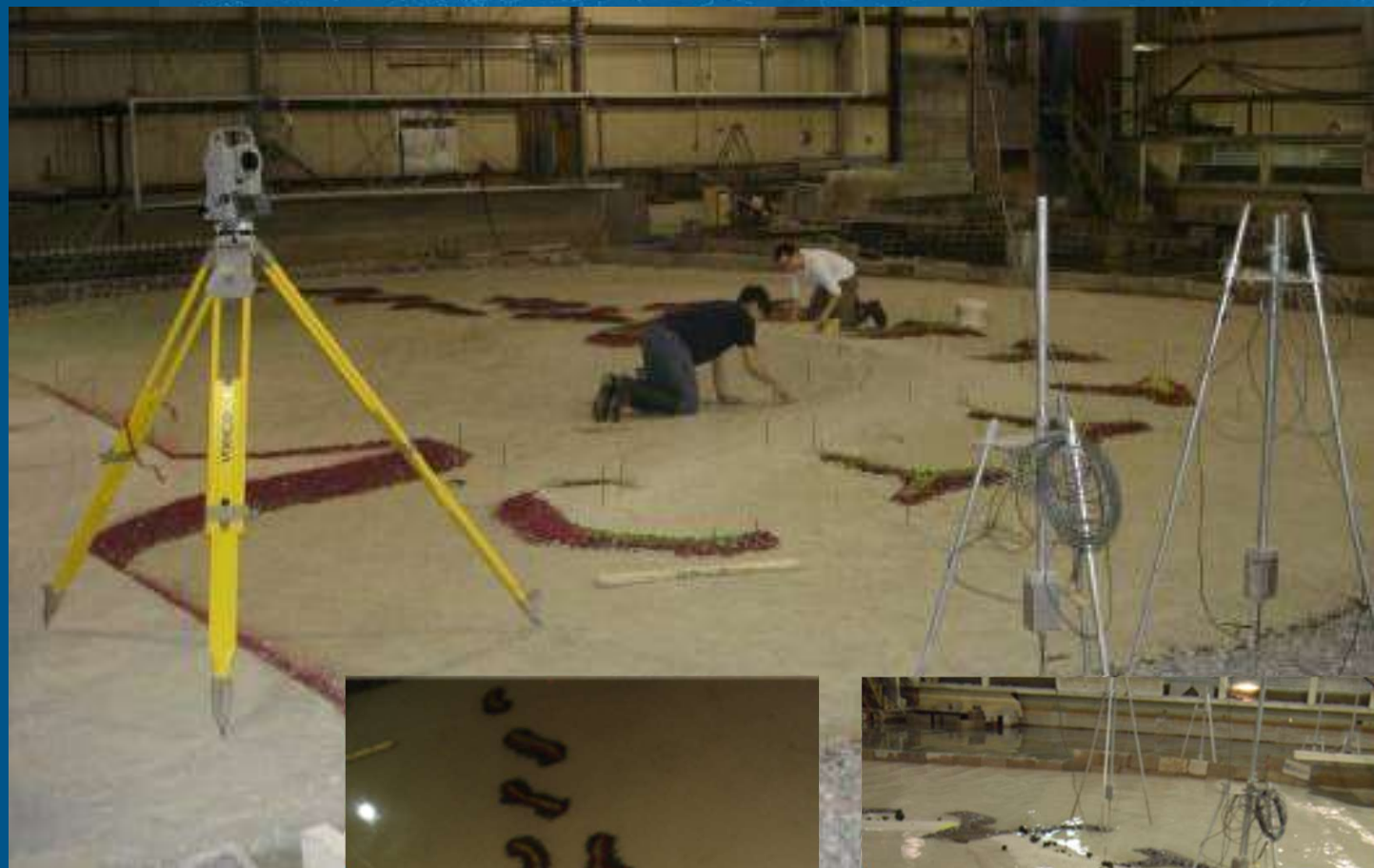
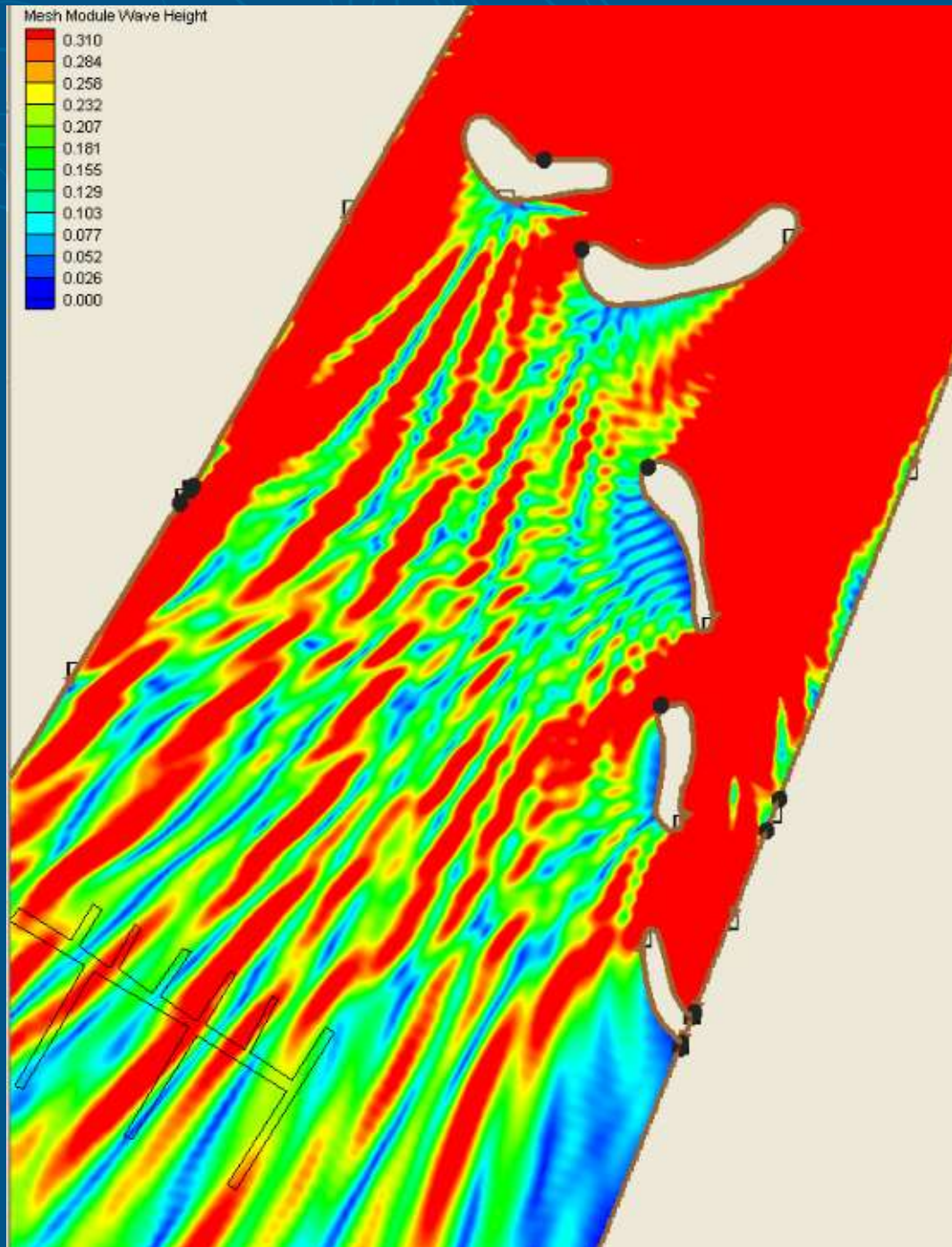








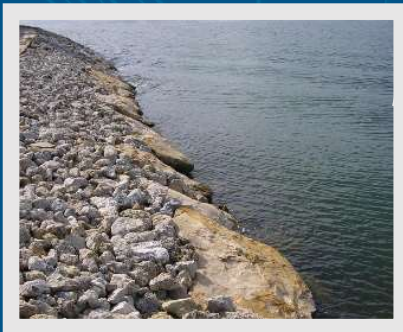




























### WATERFRONT PLAN

- (A) Breakwater islands
- (B) Proposed slips
- (C) Lookout point
- (D) Dune area
- (E) Fuel dock
- (F) 11 new car spaces
- (G) Kayak launch
- (H) Relocated tie-down lane
- (I) Soft shoreline
- (J) Fishing dock
- (K) Restroom
- (L) 40-car lot
- (M) Pedestrian bridge
- (N) Path to fire pits and casual seating
- (O) Flexible lawn space
- (P) Restroom
- (Q) Loading/unloading

### SLIP COUNTS

Lower Basin  
Existing: 207  
Proposed: +79

Upper Basin  
Existing: 58  
Proposed: +17





Bio-enhancing admix



Texture agents

## Science-based molds

The macro design of our molds and mold-inserts, enables the creation of ecological niches. These support the ecological uplift of infrastructure and provide added bioprotection, delivering increased strength and durability to the structure.







LEED Gold Certification  
AIA SustainABILITY Award  
ASLA President's Award  
Engineering News Record  
"Best Project"  
ISS Fabien Cousteau Blue Award











# Electrify Everything

- Metering Reduces Energy Use by Over 40%
- Heat Pumps can be 400% Efficient
- \$.50 kW Hour Means \$50 for a “tank” of Electricity
- Fewer Moving Parts, Less Maintenance
- The Grid Gets Cleaner Every Day





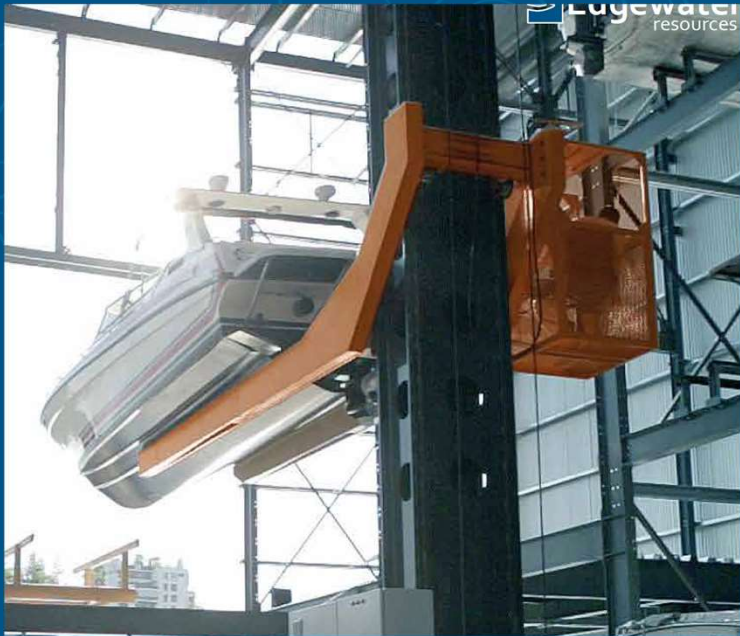
DECEMBER 21, 2021

# Tritium partners with Aqua superPower to expand charging network for electric boats

Scooter Doll - Dec. 21st 2021 9:01 pm PT □ @SCOOTERDOLL







## < Charge Stats

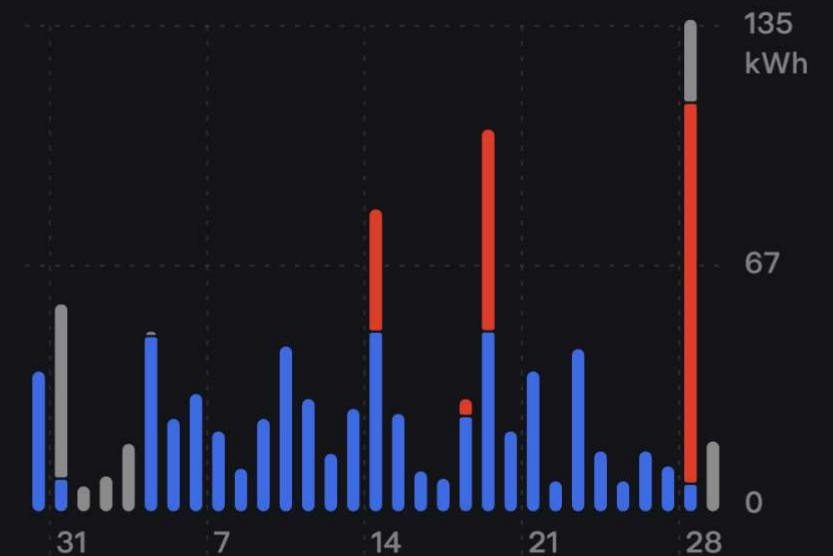
Last 31 Days


Total Charged

**920 kWh**

Total Spent

**\$162**



 **66%**  
Home

 **21%**  
Supercharger

 **12%**  
Other



1/2021

# Safe Harbor Lauderdale Marine Center

South Fork New River





# Safe Harbor Lauderdale Marine Center

South Fork New River





# Thank You

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PRINCIPAL & PRESIDENT

**Greg Weykamp**

 269 408 6562

 [gweykamp@edgewaterresources.com](mailto:gweykamp@edgewaterresources.com)

