



While you're waiting, scan for resources on marsh replenishment



Bringing marsh replenishment to scale with a shared project pipeline.

Moderator

Bill Shadel

Coastal Projects Manager

The Nature Conservancy

Why this matters

A Framework for Managing Sediment in the Back Bays of New Jersey



The Nature Conservancy 



Why this matters

A Framework for Managing Sediment
in the Back Bays of New Jersey

Sediment starved = imperative to retain
Eroded tidal habitats ≈ new channel sediment
Sediment ≈ uncontaminated

Removal of clean sediment ≈ detrimental

LINE UP MARSH SITES IN ADVANCE OF DREDGING



Navigation

Community
Resilience

Marsh
Health

Panelists

Tyler
Kinney

Genevieve
Clifton

Fred
Acres

Adrianna
Zito-Livingston



Up next...

Tyler Kinney

COASTAL BIOLOGIST

NJDEP Fish and Wildlife

The Strategic Conservation Planning Model

Upgrading the Operating System
for New Jersey's Wildlife
Management Area System



The Scope of Our Responsibility

New Jersey DEP Fish and Wildlife manages a vast and critical network of habitats.

- **365,000 acres** managed within the Wildlife Management Area (WMA) System
- **44%** of New Jersey's open space
- **122** distinct WMAs

Our objective is to orchestrate conservation efforts at a landscape scale across this system, aligning restoration and resilience initiatives with statewide priorities.

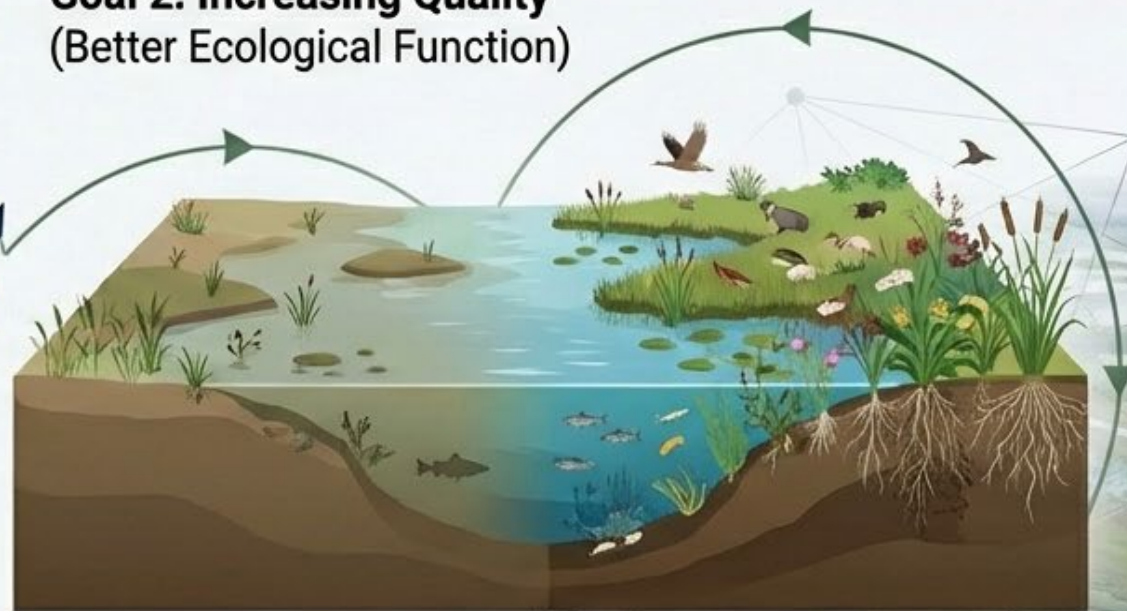
Scaling Habitat Restoration: The Goals

Meaningfully scaling habitat restoration requires maximizing both the Quantity and Quality of our efforts.

Goal 1: Increasing Quantity (More Area Restored)



Goal 2: Increasing Quality (Better Ecological Function)

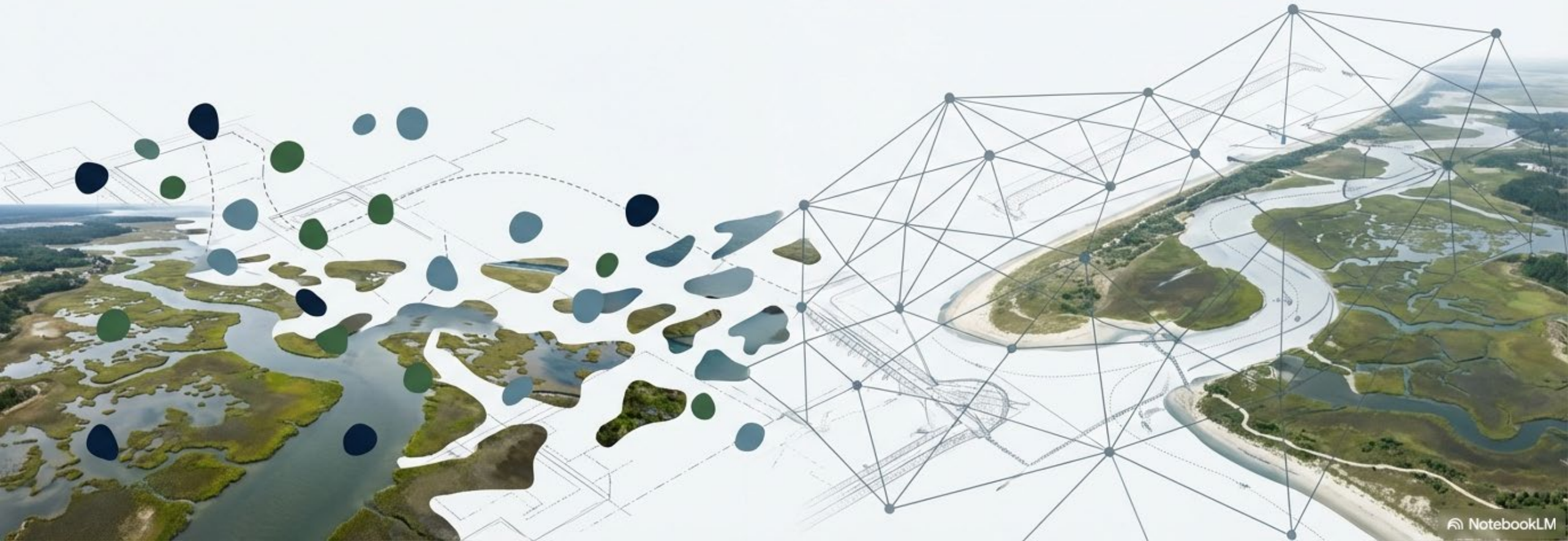


Improved resilience, biodiversity, and ecosystem services.

Moving Beyond Random Acts of Conservation

Historically, habitat restoration has often relied on a project-by-project approach—isolated efforts executed without broader landscape alignment.

To achieve true resilience, we are transitioning away from these fragmented, “random acts of conservation.” We are pivoting to early, active, and highly structured collaboration.



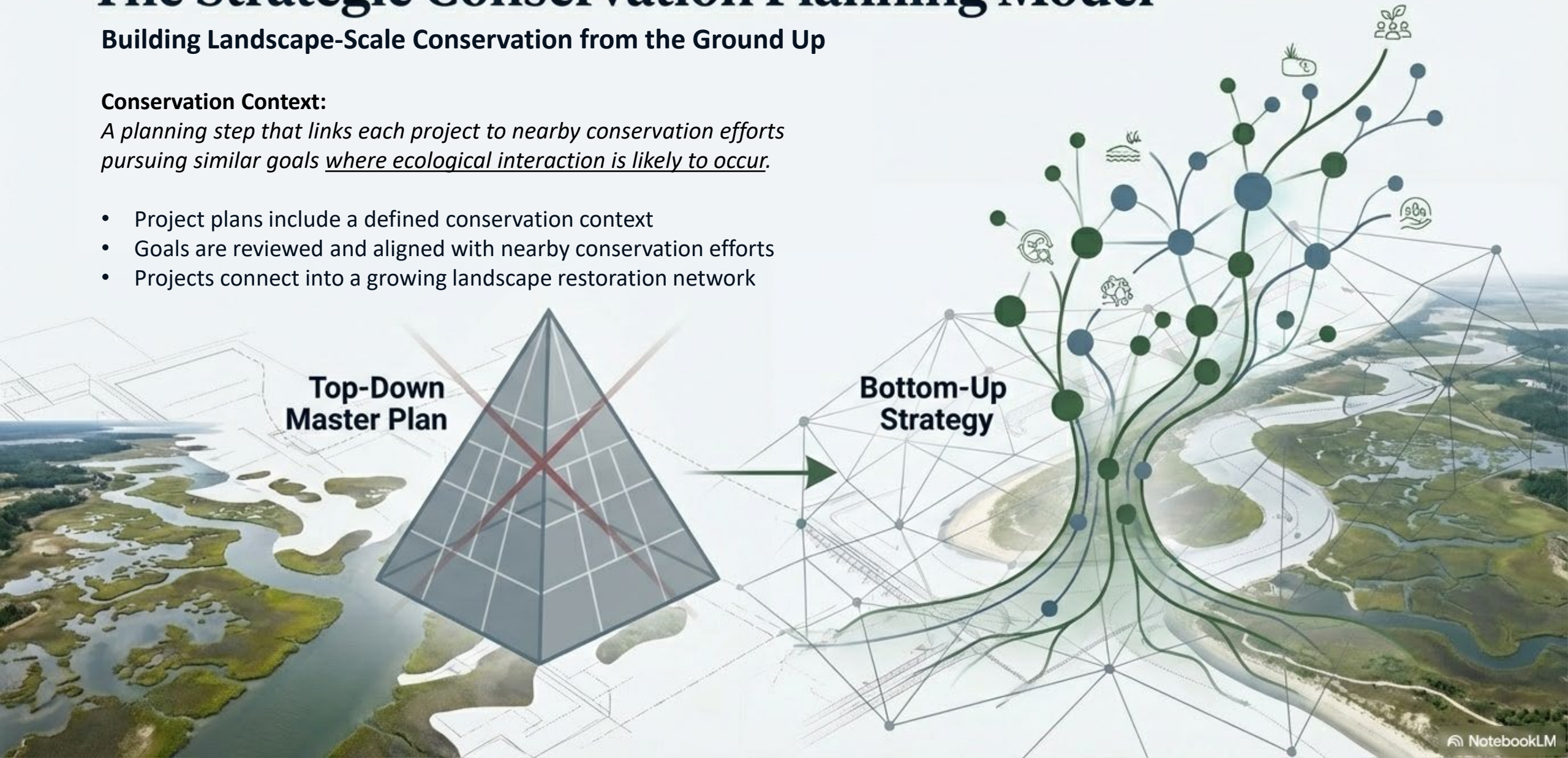
The Strategic Conservation Planning Model

Building Landscape-Scale Conservation from the Ground Up

Conservation Context:

A planning step that links each project to nearby conservation efforts pursuing similar goals where ecological interaction is likely to occur.

- Project plans include a defined conservation context
- Goals are reviewed and aligned with nearby conservation efforts
- Projects connect into a growing landscape restoration network



Strategy Requires a System

A visionary strategy alone does not scale restoration. To accomplish our goals, we must operationalize the strategy at high volume and maximum efficiency.



Landscape-Scale Impacts Require Consistency

SYNERGIZED

Mindful of Project-Level
Interorganizational synergy



GRADUATED

Multiple levels of planning rigor to
leverage entry level manpower and
build community experience

DURABLE

Enough directional momentum
to withstand changes in
leadership and/or priorities

INHERITABLE

Unimpeded by professional turn
over

ACCESSIBLE

Planning outputs must be broadly
available to the community
of practice

ADAPTIVE

Able to change direction enough
to stay current with the practice

PREDICTABLE

Operations unfold in a way
stakeholders can reasonably anticipate

SELF-REINFORCING

Science must advise restoration, and
restoration must facilitate science.

Component 1: Resource Improvement Guides

Standard Operating Procedures for Habitat Restoration on the WMA System

- **Define Roles Early**
Clarifies responsibilities and expectations at the start of every project.
- **Shared Language**
Community-developed glossary ensures practitioners are speaking, and documenting with the same language.
- **Standardized Methods & Metrics**
Creates **PREDICTABLE**, repeatable restoration projects with monitoring metrics that create a **SELF-REINFORCING** practice.
- **Appropriate Scopes**
Guides range from procedural & advisory to prescriptive, appropriately reflecting the state of the practice.
- **Updated Through Practice**
Guides are **ADAPTIVE**, with periodic revisions via Practitioner feedback and scientific publication.

Wildlife Management Area Resource Improvement Guide
A Standard Operating Procedure for the Strategic Conservation Planning Model

New Jersey Department of Environmental Protection
Fish & Wildlife
Bureau of Land Management
Coastal Program

Version 2026

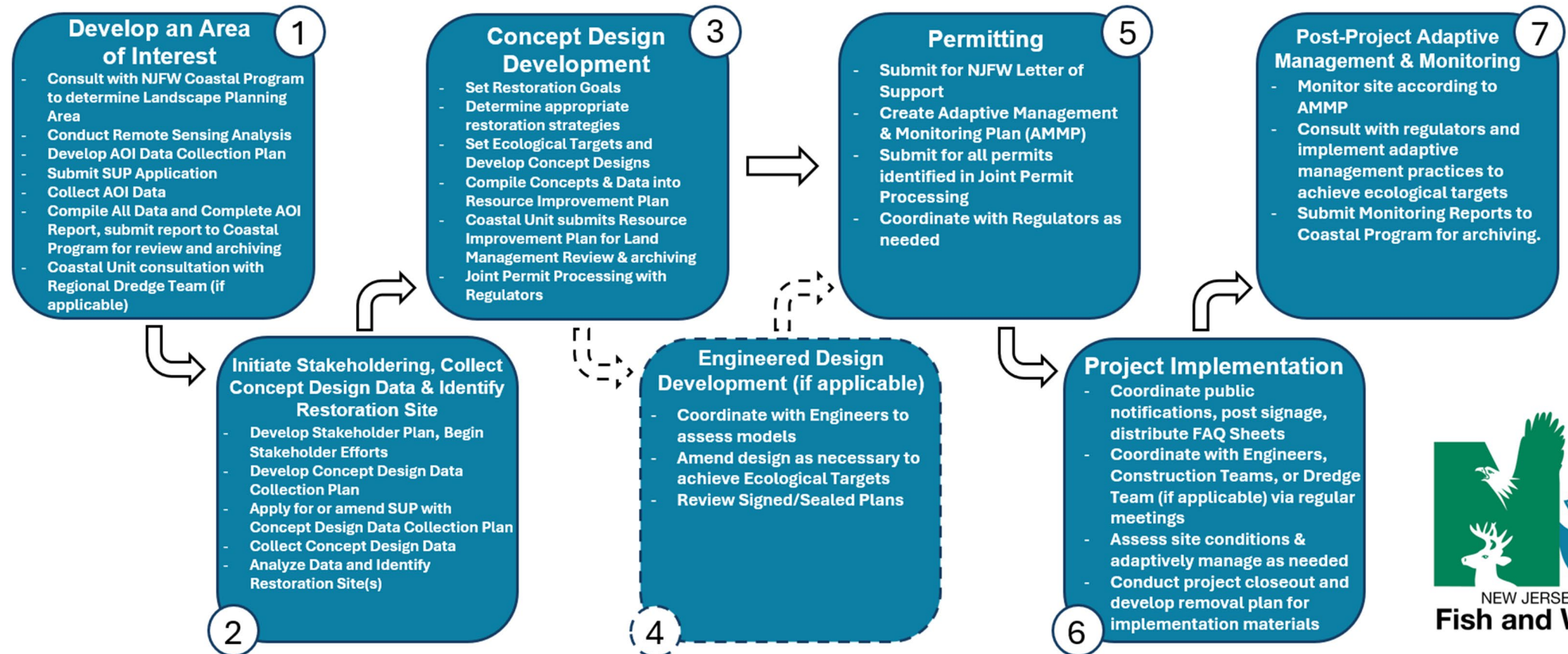
*Coastal Habitats:
Sediment-Based Restoration*



The Coastal Restoration Workflow

A complete restoration workflow for the WMA System maximizes efficiency and scales restoration volume.

Sustained restoration volume builds the momentum required for a **DURABLE** conservation operation.



Component 2: Standardized Planning Outputs

Consistent documentation makes operations **INHERITABLE** across generations, enabling Landscape-Scale Conservation.



Area of Interest (AOI)

Report: Scoping document
Identifying opportunities via
desktop-analysis and low-
resolution ground truthing.

Data not used for restoration
design, allowing for a
GRADUATED system.

Resource Improvement Plan:

The official project plan,
including project narratives,
data, and concept designs.

Contains **Conservation**

Context, enabling a project
that is **SYNERGIZED** to the
landscape.

Adaptive Management & Monitoring Plan (AMMP):

Permit-integrated defining
monitoring metrics and
adaptive actions.

Monitoring Report:

Reporting document defining
outcomes of projects and
recommended adaptive
management actions

Stakeholder Plan:

Roadmap for community
alignment and post-project
creative outputs.

Component 3: Centralized Geodatabase & Archive

ACCESSIBLE Project Records for the Community of Practice

- Official record of habitat projects on the WMA System
- Managed by NJDEP Fish and Wildlife Office of GIS
- Spatial features linked directly to planning output archive
- Ensures project plans are accessible across the conservation community
- Facilitates project synergy, and accessibility to practitioners and research scientists alike



Landscape-Scale Conservation Realized

By embedding Conservation Context into every new restoration plan, individual efforts no longer are planned in isolation.

They become additive.

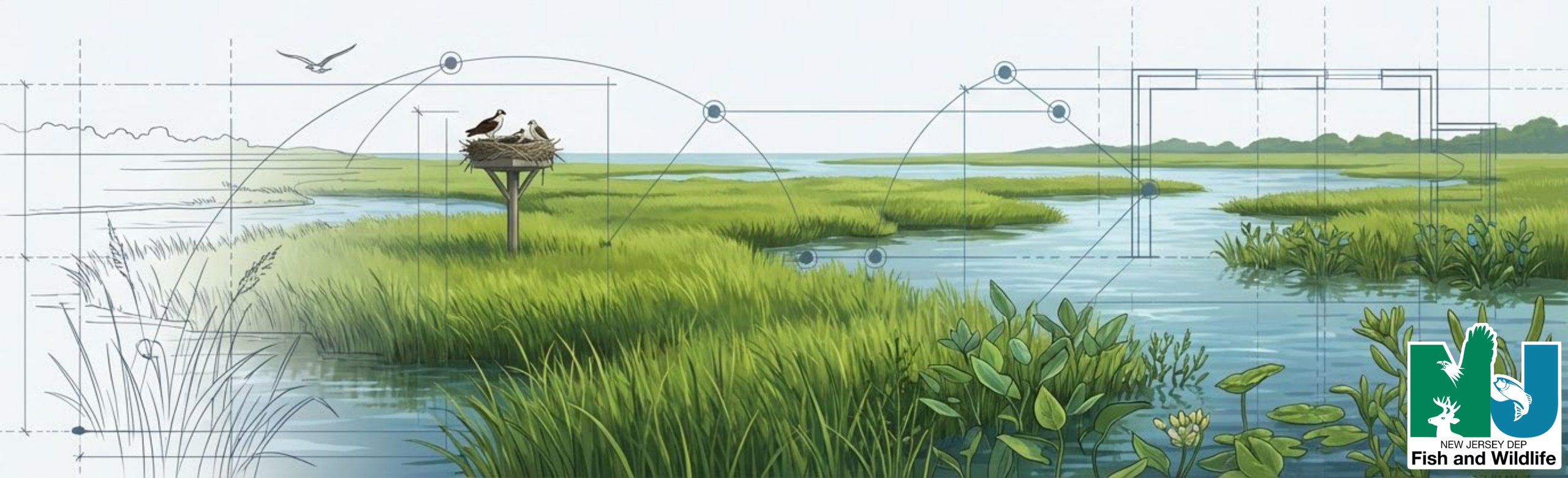
NJDEP Fish and Wildlife's *Strategic Conservation Planning Model*
- the Ecosystem Approach to Coastal Restoration



New Jersey's Coasts Can't Wait

And neither do we.

The NJDEP Fish and Wildlife Coastal Program turns urgency into action, and action into thriving habitats, resilient communities, and visible results.



Up next...

Genevieve Clifton

DIRECTOR

NJDOT Maritime Resources & Construction Support



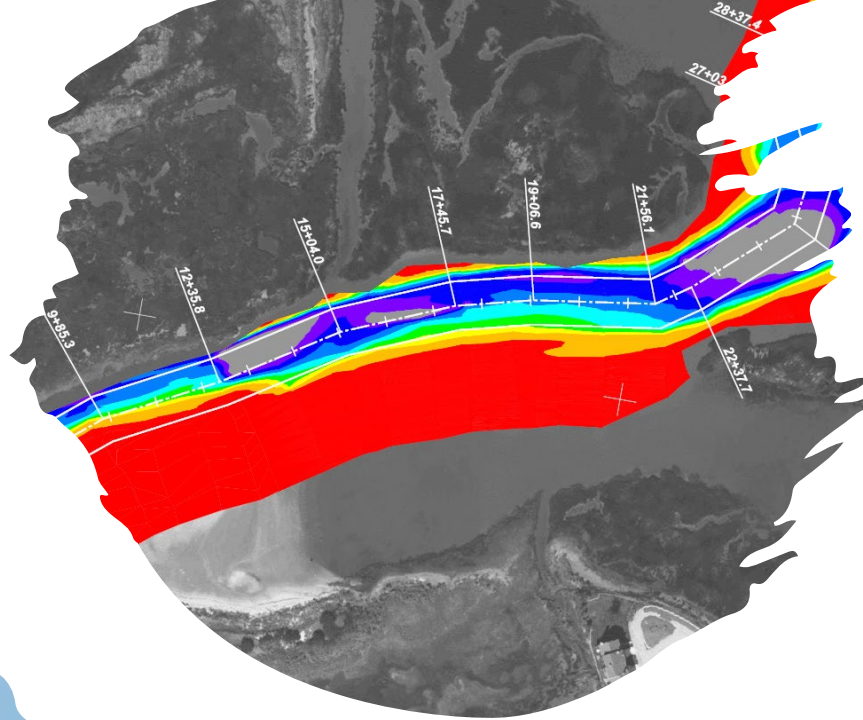
Bringing Marsh Replenishment to Scale with a Shared Project Pipeline

Navigating Changing Tides

March 11, 2026

Genevieve Clifton, NJDOT

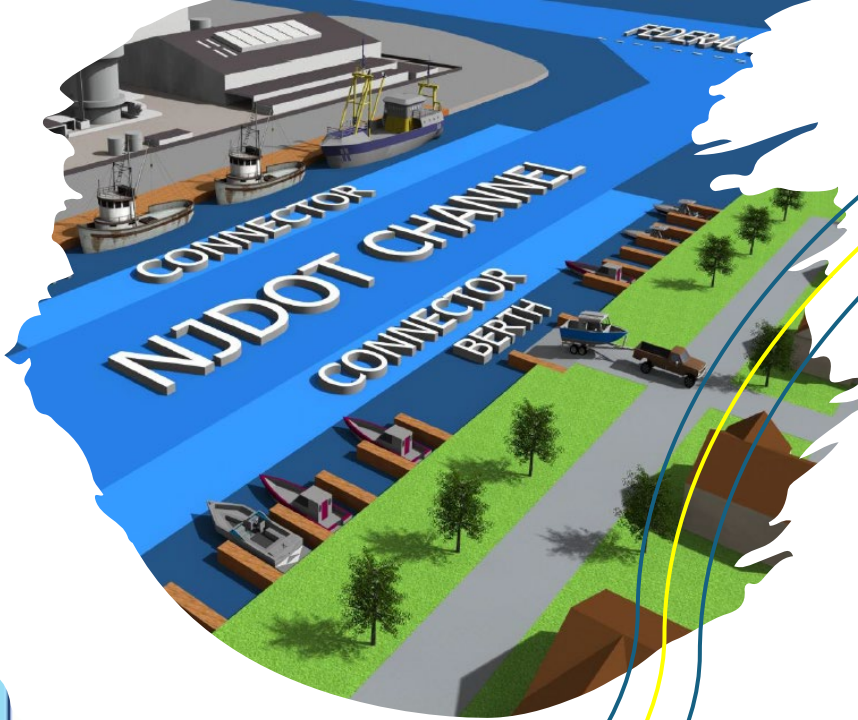
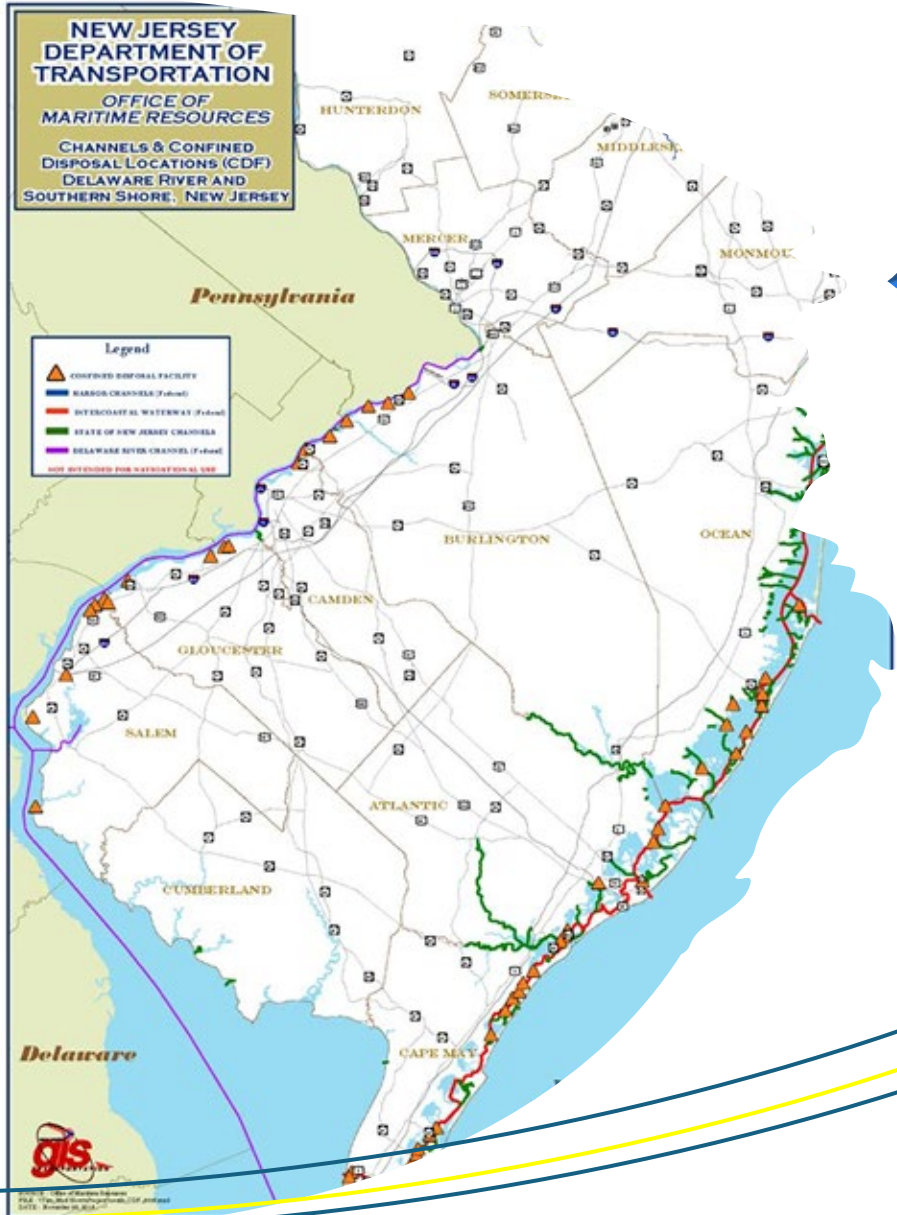
Director, Maritime Resources and Construction Support



OMR's Mission: To facilitate the efficient transportation of people and goods into, out of, and upon the waterways of New Jersey for commerce, recreation, and tourism by planning for, providing, maintaining and improving maritime infrastructure Statewide.

**NEW JERSEY
DEPARTMENT OF
TRANSPORTATION**
OFFICE OF
MARITIME RESOURCES
CHANNELS & CONFINED
DISPOSAL LOCATIONS (CDF)
DELAWARE RIVER AND
SOUTHERN SHORE, NEW JERSEY

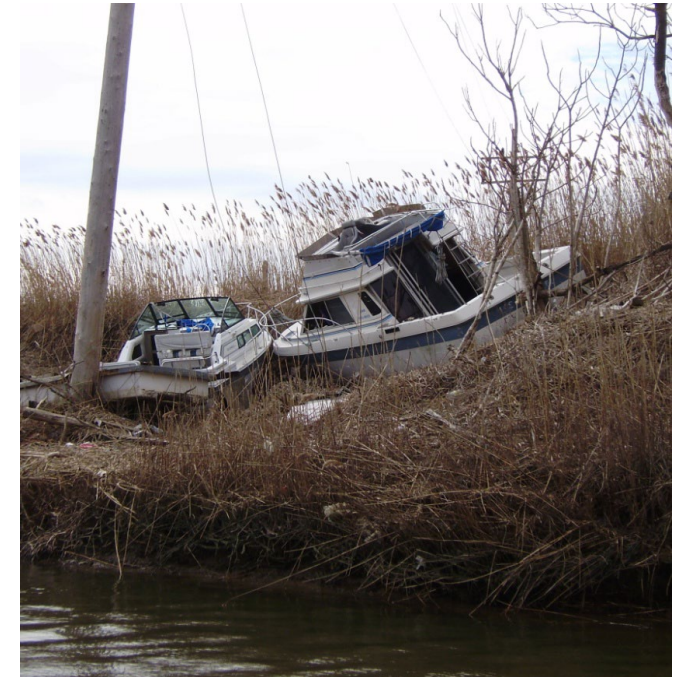
Legend
▲ CONFINED DISPOSAL FACILITY
— HARBOR CHANNELS (Federal)
— INTERCOASTAL WATERWAY (Federal)
— STATE OF NEW JERSEY CHANNELS
— DELAWARE RIVER CHANNELS (Federal)
NOT INTENDED FOR NAVIGATIONAL USE



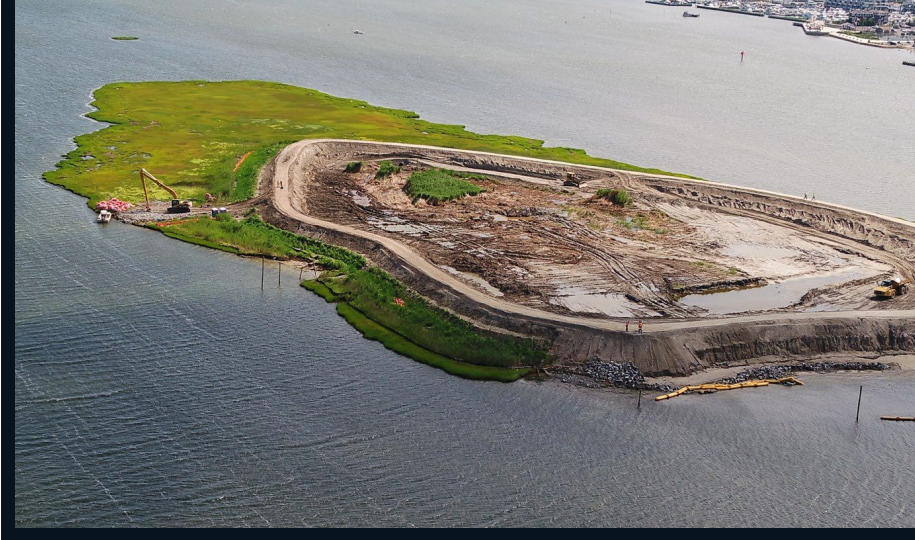
NJ's Marine Transportation System

2013: NJDOT State Channel Dredging Program - Post Sandy

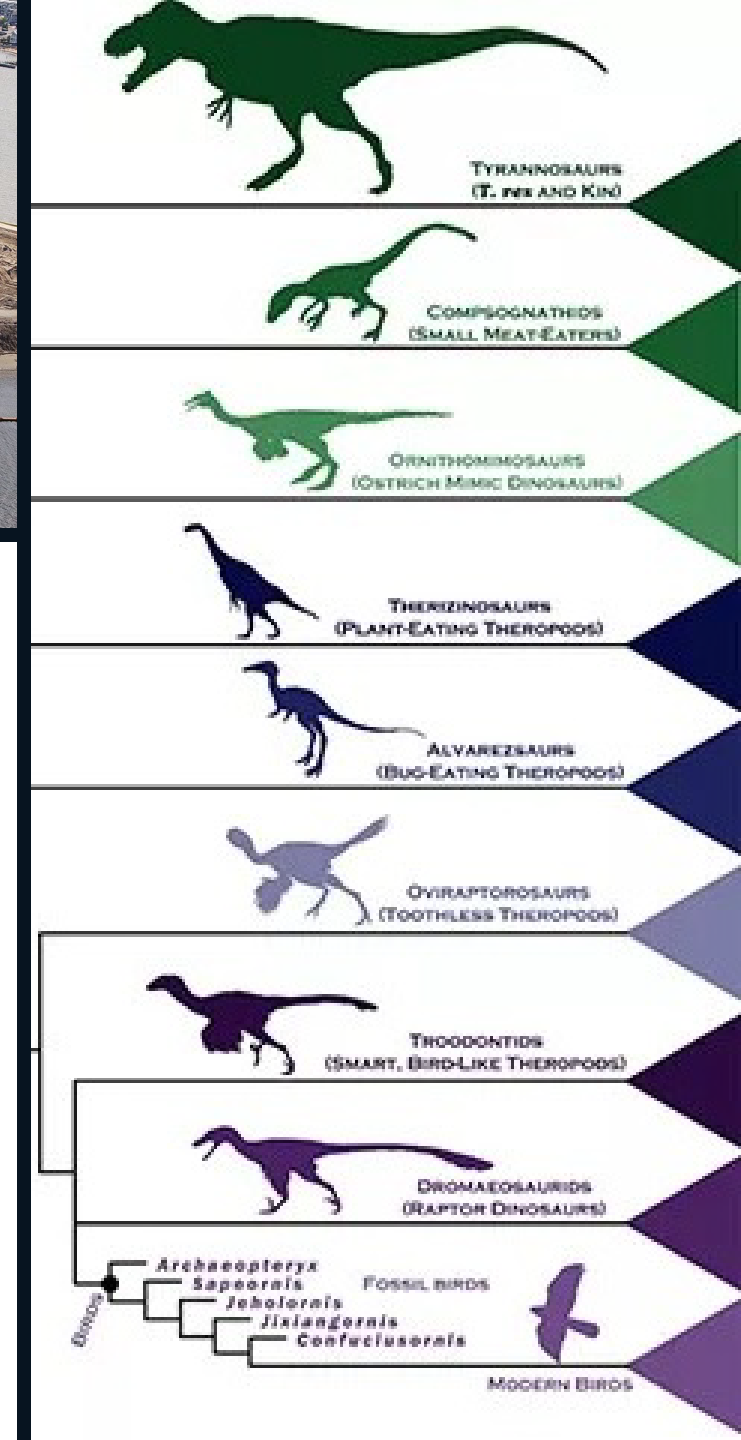
- 217 State Channels
- Over 1.2M CY of ecological beneficial use
- 100% of material is screened for beneficial use
- Tide has turned - today more material is utilized beneficially than is "confined"



Historical Context and Dredged Material Evolution - Moving On



- Demonization of DM
- Recycled resource
- Beneficial use
- Sediment in the system
- Elevated approach - systems view that leverages multiple co-benefits



Modern Dredged Material Revolution



The Marsh Makeover



- Partnership and Collaboration – Role of Virginia Rettig, “Virginia the Brave”
- Navigation Safety – Marsh Restoration
 - We’d like our material back...
- Rise of TNC, USFWS, FW as resource stewards





We are not alone!

- Live and die on our own sword
- Projects became informed by partnership and collaboration
- NJDOT invested in the Framework approach
- Meetings, more meetings...



What do I need?

- Educated partners – Benefit to NJDOT and the interested parties
- Outreach advocates
- Project support
- Cost reduction/sharing

And...



- Projects to be NJDOT Design Ready
 - Informed by landowner interest and conservation goals
 - Informed by accurate data/collected in accurate datum
 - Quality projects prioritized
 - Right-sized – size, scale, volume of material, design tolerances
 - Low risk/managed risk
- Project Pipeline - Reconsidered



Let's Back this Baby Up

- Landowner and resource agency assessments independent of state channels
 - DM is everywhere; prioritize later
 - Marshes for marshes sake
- Partnership and communication = Greater opportunity
- Trusted coordination and data collection
- Clarity regarding who is driving the bus and at what point
- Project is permitted and ready for construction



And here we are...

- Conservation goals are acknowledged and designed for
- Dredging contractors included in meeting/exceeding restoration goals/impact reduction
- Need driven to the extent practical
- Comparative mapping





Restored Marshes - Doing Marsh Things

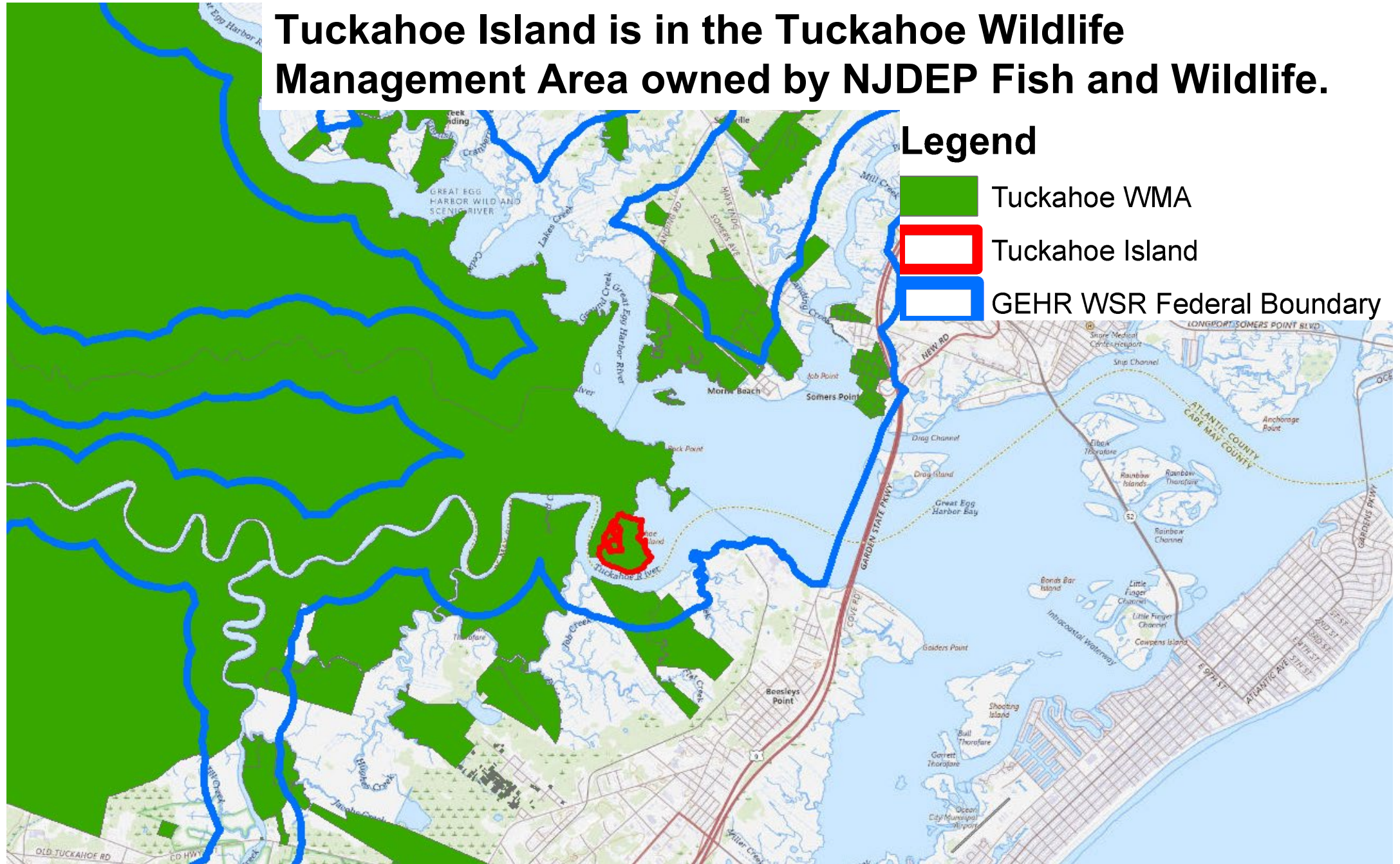
Up next...

Fred Acres

OPERATIONS MANAGER

Great Egg Harbor Watershed Association

Tuckahoe Island is in the Tuckahoe Wildlife Management Area owned by NJDEP Fish and Wildlife.



The Great Egg Harbor Marsh Vegetation is Rapidly Eroding at the Edges and Converting to Mud on the Platform



The interior and edges of Tuckahoe Island are being flooded many times per year now due to frequent flooding. The vegetation is rapidly converting to open mud and then washing off with each tidal change event.



**Vegetated versus Unvegetated Marsh on Tuckahoe Island, 10/3/23, High Tide.
Tuckahoe Island is drowning, and the beneficial reuse of dredge material could save it.**



Area of Interest Report

Tuckahoe Wildlife Management Area

Tuckahoe Island

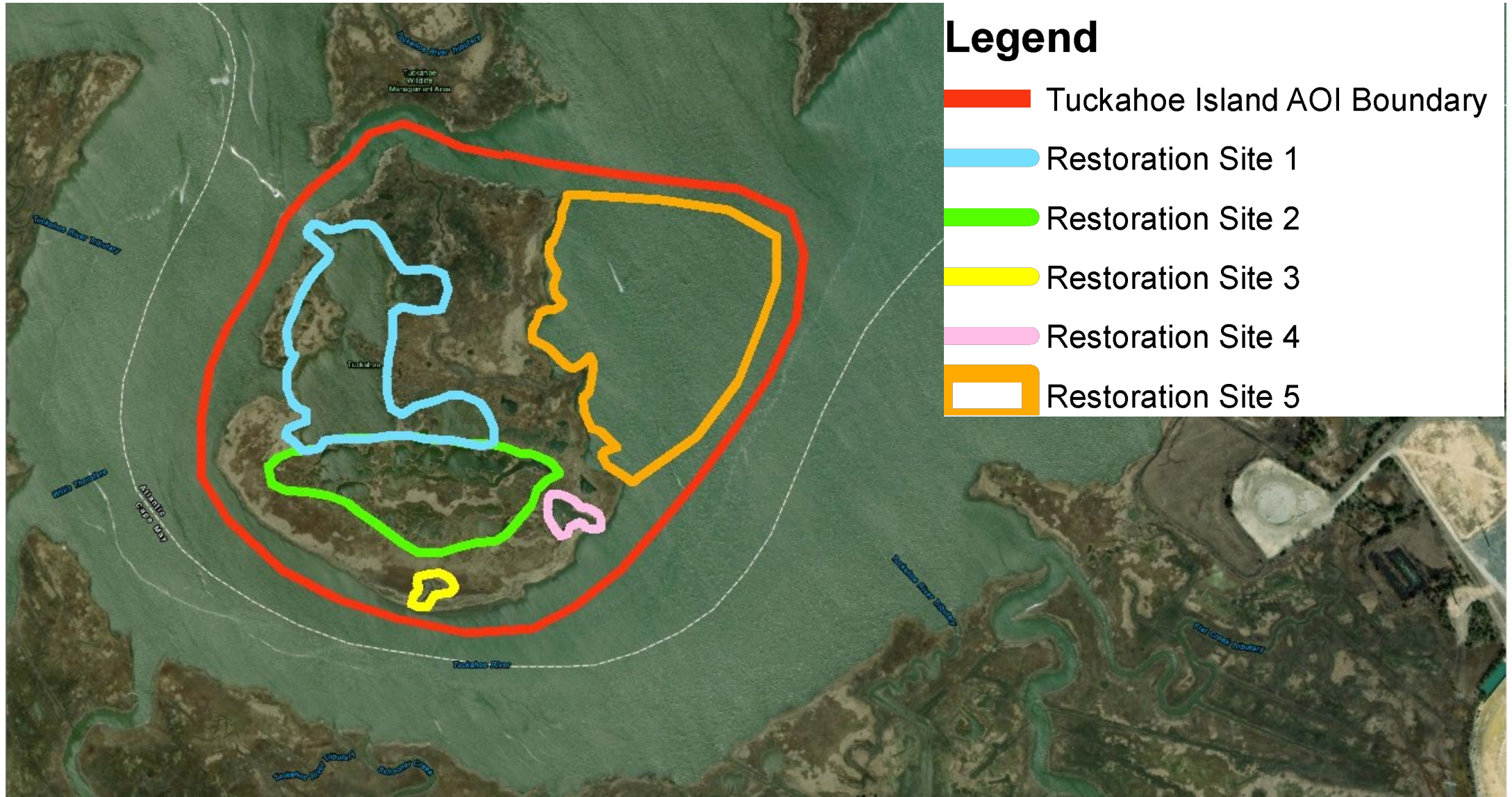
Executive Summary

Climate change, sea-level rise, severe weather, and frequent flooding are causing the conversion and loss of vegetated high and low marsh to subtidal and intertidal water areas on Tuckahoe Island (State Wildlife Action Plan (SWAP) Action Drivers 11, 11.5, 11.5.0). This conversion and loss of coastal marsh is threatening species that depend on vegetated marsh habitats that are critical for a number of coastal species to fulfill life history requirements (SWAP 11.5.0.1, 11.5.0.4). This Area of Interest (AOI) Report recommends the implementation of sediment augmentation, restoration and enhancement techniques on the tidal salt marshes of Tuckahoe Island to offset marsh subsidence, the effects of sea level rise, and to stabilize the tidal marsh ecosystem (SWAP 2.11.0.46). The degradation of these marine habitats and species which are important to recreational and commercial activities as well as the stability of an ecosystem are also degrading the purposes for which Tuckahoe Island was authorized under 50 CFR 80.134(c). The restoration, enhancement, and future protection of Tuckahoe Island as proposed in this AOI will fully restore Tuckahoe Island to its authorized purposes as required in 50 CFR 80.135.

AOI Development Team

New Jersey Fish and Wildlife: Coastal Unit	Great Egg Harbor Watershed Association
Tyler Kinney Coastal Biologist Bureau of Land Management New Jersey Fish and Wildlife C: 609-422-7243 Tyler.Kinney@dep.nj.gov	Fred Akers, Operations Manager C: 609-335-3744 fred.akers13@gmail.com Brooke Fisher, Administrator C: 609-602-0334 Bhandlev99@gmail.com
	National Park Service Kurt Cheng Resource Manager kurt_cheng@nps.gov

Tuckahoe Island AOI Proposed Restoration Sites



Appendix A, Figure 3: Proposed Tuckahoe Island AOI Restoration Sites

Since tidal saltmarsh protection and restoration through the beneficial use of dredge material is a fairly new concept, is very costly in time and money, and is very complicated, many partners are essential for planning, permitting, and implementation.

Fortunately, there is now a pipeline of projects where many people who are very interested in saving our tidal marsh from sea level rise and climate change and sharing their expertise.

Great Egg Harbor Watershed Association Tuckahoe Island Restoration Partners	
NJDEP Partners	Tyler Kinney, Ben Keys, Nathan Figley, Jason Hearon, Joshua Moody
NJDOT Partners	Genevieve Clifton, Katie Axt, Jahan Nusrat, Tyler Armstrong, Vincent Masciandaro, Jennifer Brunton,
NJDOT Partners	Jenn Grenier, Stephanie Molina, Joselyn Wall, Christina Comuso, Nick Mallory, Richard Eastburn
Stockton Partners	Kim McKenna, Steven Hafner, Crist Robine
TNC Partners	Bill Shadel, Adrianna Zito-Livingston, Elizabeth Semple
NPS Partners	Kurt Cheng
Congress Partners	Haddon Antonucci for Rep. Van Drew
GEHWA Partners	Fred Akers, Brooke Fisher, Lynn Maun, Julie Akers, Dave Brown, Paul Kenney

Up next...

Adrianna Zito-Livingston

CLIMATE ADAPTATION PROJECT MANAGER

The Nature Conservancy



Image: Avalon New Jersey TNC

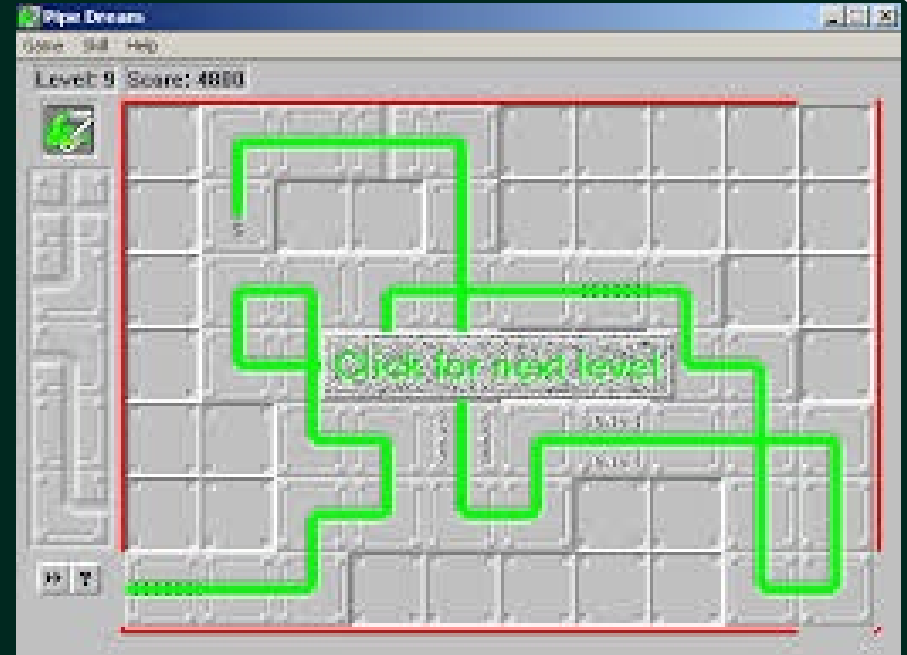
Leveling Up Marsh Replenishment

**Adrianna Zito-Livingston, Climate Adaptation Project Manager The Nature Conservancy
Beneficial Use Restoration Taskforce Co-lead**

Working Together to Level Up Our Game



Landowners
Resource Managers
Navigation Managers
NGO's
Communities
Academics
Consultants
Regulators



Random
(Opportunistic)
Restoration



Regional
Sediment
Management

Partnerships: Going Further Together



Conservation and Navigation



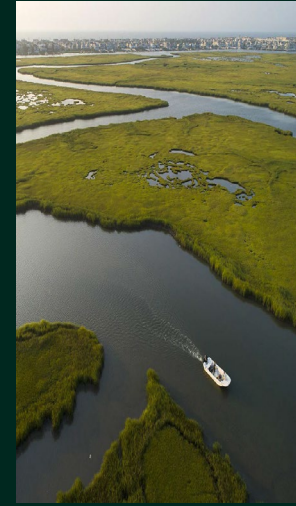
Dredging Need



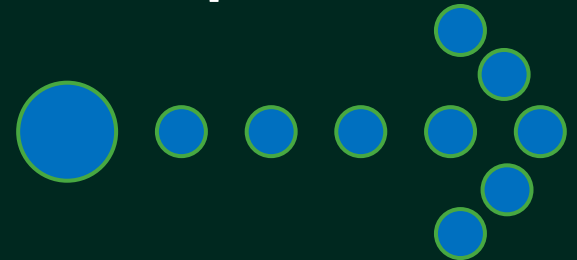
Marsh Need



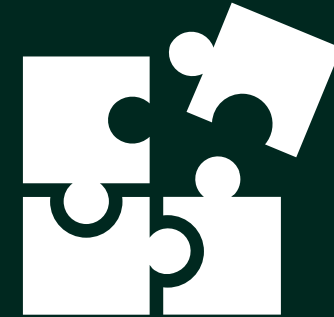
Community Need



Marsh Replenishment Pipeline

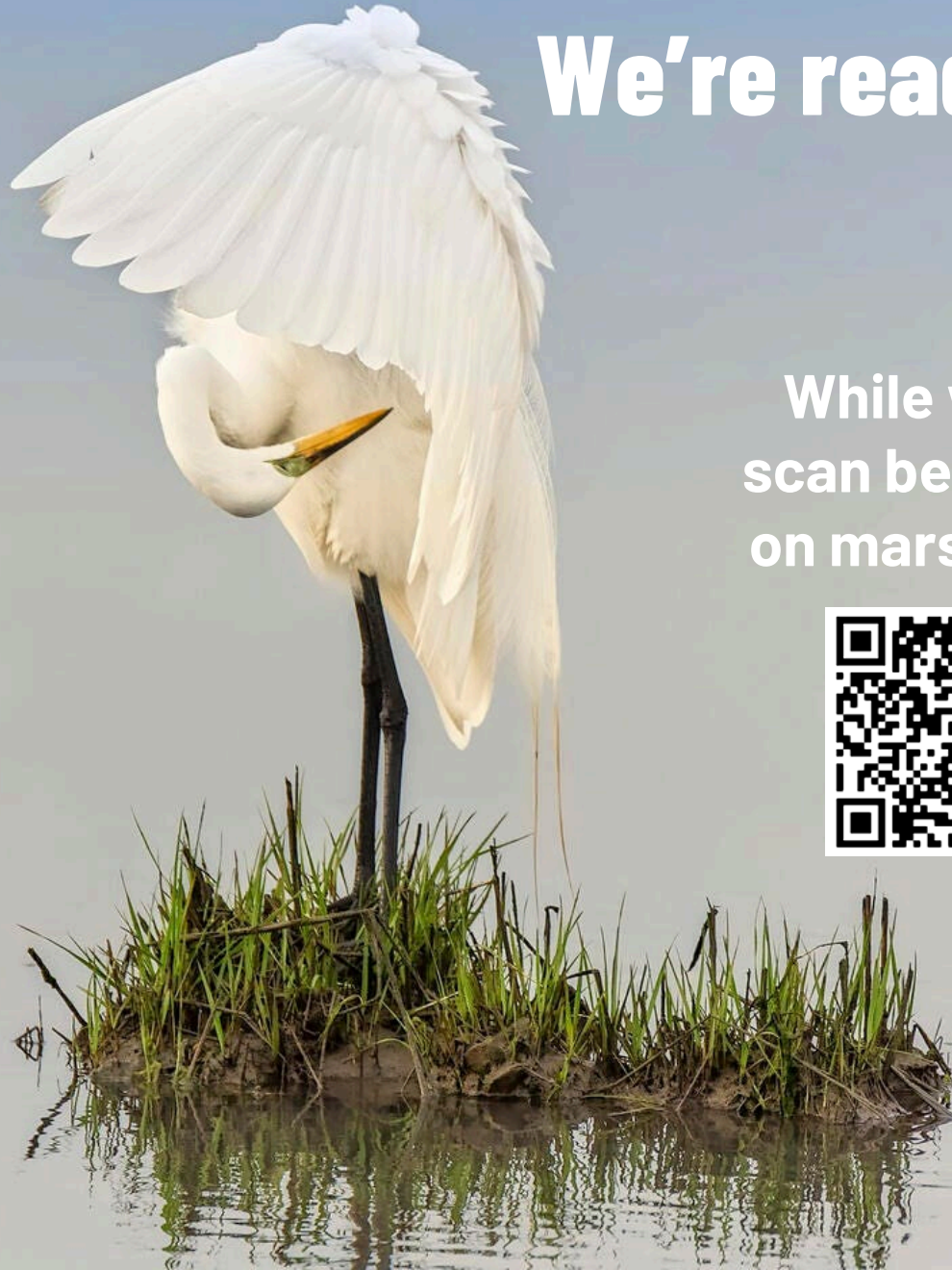


Beneficial Use Restoration Taskforce



What are your Questions? We're ready to dish the dirt!

While we're chatting...
scan below for resources
on marsh replenishment.





**While we're
chatting, scan for
resources on marsh
replenishment.**

