



Engineering With Nature[®] to Increase Infrastructure Resilience

May 4, 2023, 10:30 a.m.



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Engineering With Nature to Increase Infrastructure Resilience

Moderator: Hollie Janson Schmidt, Jacobs

Agenda:

- **Leveraging Engineering With Nature® (EWN®) to Support Military Readiness and Installation Resilience**
 - **Dr. Burton Suedel**, Research biologist, U.S. Army Engineer Research and Development Center
- **Engineering With Nature® (EWN®) for the Department of the Navy**
 - **Hollie Janson Schmidt**, Global Senior Director, Sustainability & Climate Response – Americas, Jacobs
- **Implementing Nature Based Infrastructure (NBI)**
 - **Sam Whitin**, National Service Line Program Manager for Coastal Resilience, EA Engineering, Science, and Technology
- **Intentional Alignment of Engineering and Natural Processes**
 - **Scott Pippin**, Public Service Associate; Strategic Operations And Planning Assistance, University of Georgia Institute for Resilient Infrastructure Systems (IRIS)



Introduction



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SUCCESS
STARTS
HERE
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MAY
2-4
2023

San Antonio,
TEXAS



Sam Whitin



National Service Line Program
Manager for Coastal Resilience, EA
Engineering, Science, and Technology



With 23 years of multidisciplinary experience relating to ecosystem restoration projects, Sam Whitin is a Vice President with EA Engineering, Science, and Technology and serves as their National Service Line Program Manager for Coastal Resilience. Sam also serves as Principal Investigator for EA's research efforts supporting the U.S. Army Corps of Engineer's Engineering With Nature® program as well providing support to other federal partners such as Department of Defense, NOAA, the U.S. Fish and Wildlife Service, and the National Park Service.



Implementing Nature-based Solutions

Sam Whitin

National Service Line Program Manager for Coastal Resilience,
EA Engineering, Science, and Technology

JETC San Antonio, Texas
4 May 2023



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Implementing Nature-based Solutions

EXPLANATION OF NATURE-BASED SOLUTIONS (NBS)

Actions that are designed to protect, sustainably manage, and restore natural or modified ecosystems, while also providing benefits to people.

OTHER TERMINOLOGY WITH SAME GENERAL MEANING

Natural Infrastructure

Nature and Nature-Based
Features

Green and Gray-Green
(Hybrid) Infrastructure



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Implementing Nature-based Solutions



- Nature-based solutions don't fit neatly into existing funding streams or engineering guidance (i.e. UFC)
- Military Installation Resilience Reviews and Integrated Natural Resource Management Plans are great places to explore and develop these projects



Implementing Nature-based Solutions

Strengthen and leverage your partnerships and use existing data sources

Nature-Based Resilience. Building on Executive Order 14072, Strengthening the Nation's Forests, Communities and Local Economies, the DON will draw down an additional five million metric tons of CO₂e per year through nature-based solutions by 2027, roughly the same as removing one million cars off the road, on DON-managed lands or working with partners. The DON will also deploy nature-based solutions to mitigate shoreline erosion, protect mission-critical assets, and improve natural assets that are key to achieving resilient infrastructure and operations.

Global and Regional Sea Level Rise Scenarios for the United States

Climate Adaptation For DoD Natural Resource Managers
A Guide to Incorporating Climate Considerations into Integrated Natural Resource Management Plans

ARMY CLIMATE STRATEGY
Implementation Plan

NNBF
International Guidelines on Natural and Nature-Based Features for Flood Risk Management

CLIMATE ACTION 2030
Department of the Navy

Regionalized Sea Level Change & Extreme Water Level Scenarios

NOAA, NASA, US Army Corps of Engineers, USGS, Rutgers, FEMA, FIU, Institute of Environment

Fiscal Years 2023-2027



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Implementing Nature-based Solutions



Photo Credit: USFWS

USACE Nationwide Permits, NEPA compliance, and the need to thoroughly analyze the No Action Alternative



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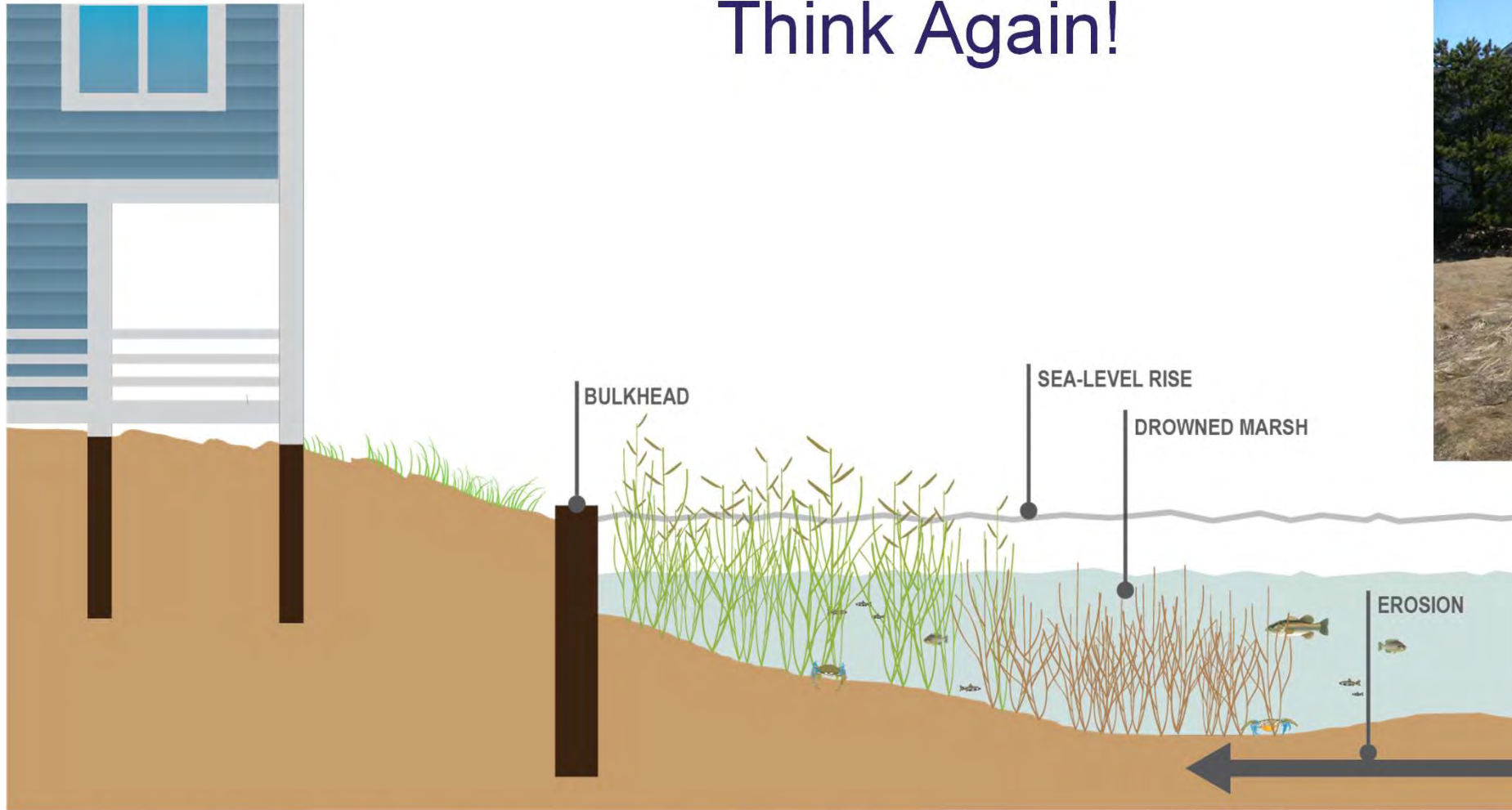


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Implementing Nature-based Solutions

Think you can't get a permit without significant mitigation?

Think Again!



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Implementing Nature-based Solutions

Engineers and Scientists need to work together – they can't be siloed into “designers” and “permit specialists”; they are one in the same when developing Nature-based Solutions



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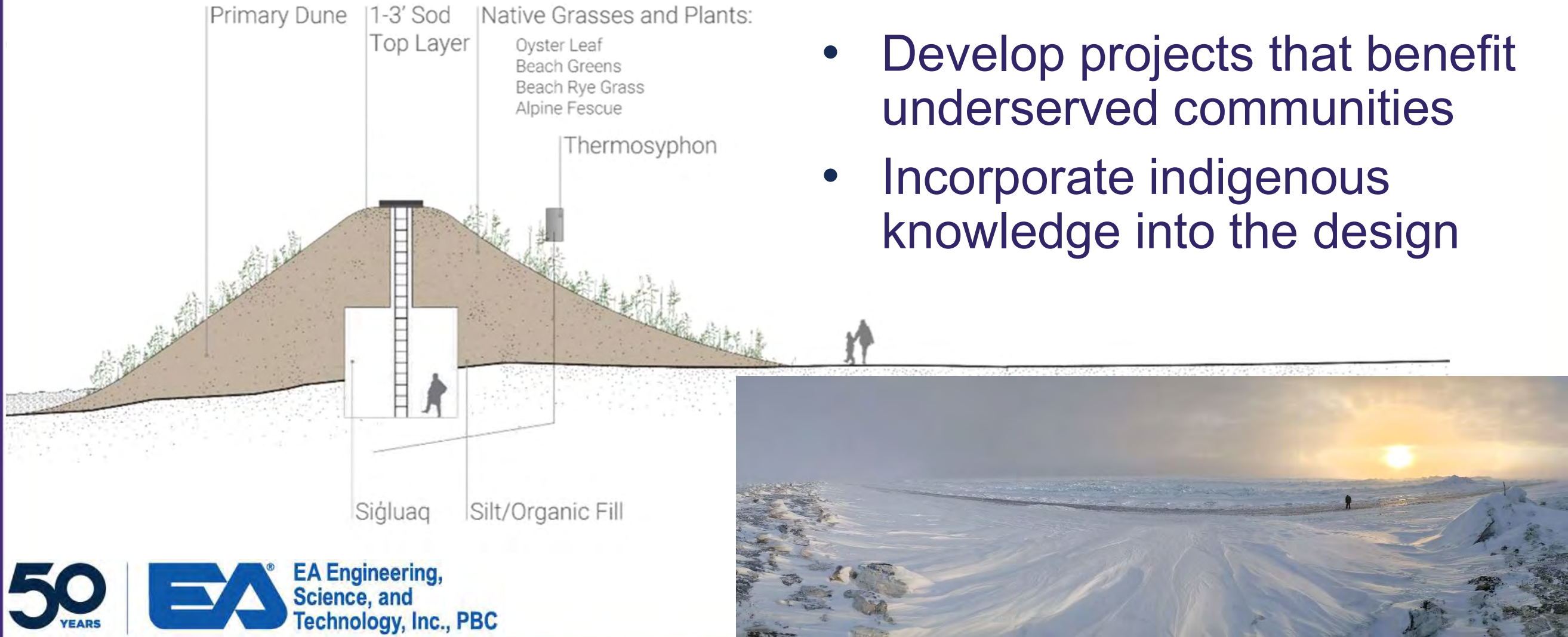
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Implementing Nature-based Solutions



Implementing Nature-based Solutions

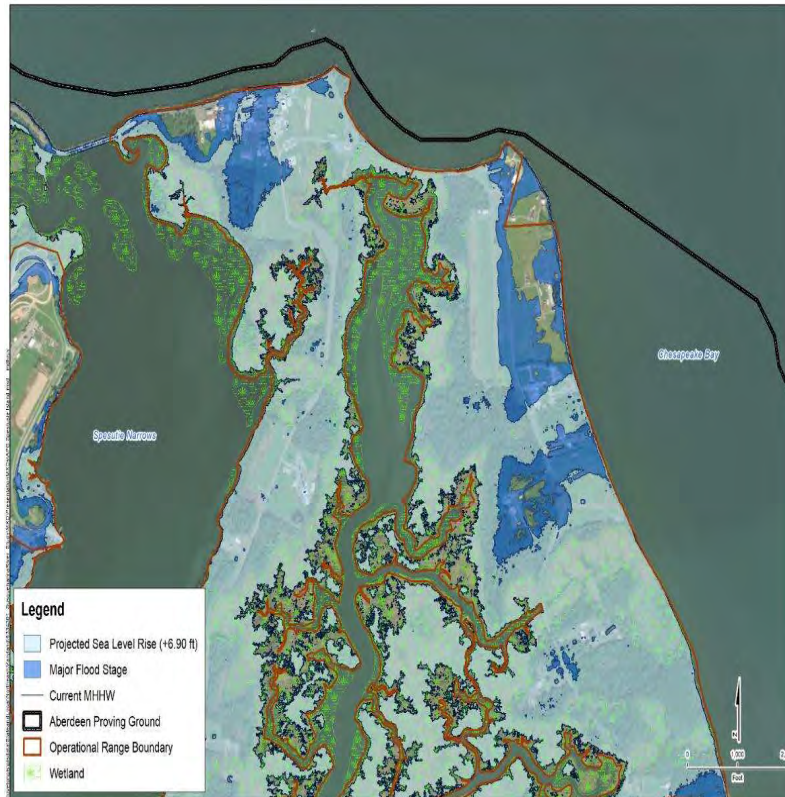


IMPROVING COASTAL RESILIENCE THROUGH THE USE
OF NATURE-BASED SOLUTIONS
**ABERDEEN PROVING GROUND
AND NEIGHBORING COMMUNITIES**

2100 HIGH
PROJECTION FOR
SEA LEVEL RISE



2100 High SLR Scenario 6.9 ft increase



- Need to take non-stationarity into account
- Design forward and not backwards – the idea of “restoration” no longer makes sense



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Implementing Nature-based Solutions

Constructability is a key concern



Photo Credit: Anne Post/USFWS



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Implementing Nature-based Solutions

[NEW] PROTECT Grants (discretionary)

Purpose	Planning, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure
Funding	\$1.4 B (FY 22-26) in Contract Authority from the HTF
Eligible entities	<ul style="list-style-type: none"> • State (or political subdivision of a State) • MPO • Local government • Special purpose district or public authority with a transportation function • Indian Tribe • Federal land management agency (applying jointly with State(s)) • <i>Different eligibilities apply for at-risk coastal infrastructure grants</i>
Eligible projects	<ul style="list-style-type: none"> • Highway, transit, intercity passenger rail, and port facilities • Resilience planning activities, including resilience improvement plans, evacuation planning and preparation, and capacity-building • Construction activities (oriented toward resilience) • Construction of (or improvement to) evacuation routes
Other key provisions	<ul style="list-style-type: none"> • Higher Federal share if the eligible entity develops a resilience improvement plan (or is in a State or area served by MPO that does) and the State or MPO incorporates it into its long-range transportation plan • May only use up to 40% of the grant for construction of new capacity



NFWF and NOAA Announce \$39.5 Million in Conservation Grants to Fund Coastal Resilience Projects Across the Nation



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Implementing Nature-based Solutions

BLUE CARBON – COASTAL MARSH CARBON SEQUESTRATION POTENTIAL

- Creation of new intertidal wetland features
- Submerged aquatic vegetation restoration/creation
- Need to keep up with rapidly changing policy and science

Blue carbon will be the next frontier of carbon crediting

The ocean and surrounding coastlands is a vast carbon sink that has yet to be fully tapped while offsetters and companies are chomping at the bit.

By [Jesse Klein](#)

Source: GreenBiz.com

November 9, 2022

Source: Restore America's Estuaries



In addition to sequestering carbon, algae, seagrasses, mangroves, and salt marshes provide critical resilience for shoreline environments. Consistent with Executive Order 14072, Strengthening the Nation's Forests, Communities and Local Economies, the DON will expand its efforts to protect and restore **blue carbon** ecosystems on installations and in neighboring defense communities.

