USACE Emergency Operations Mission to Assess Failing Coastal Infrastructure Caused by Hurricane Ian (and Nicole) in Volusia County, FL

Will Reilly, P.E.
Chief of Waterways Section
U.S. Army Corps of Engineers, Jacksonville District

Florida Shore & Beach Preservation Association 36<sup>th</sup> Annual National Conference on Beach Preservation Technology

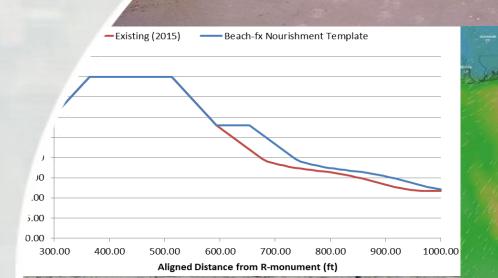
Fort Myers, FL

February 1, 2023





US Army Corps of Engineers BUILDING STRONG®



# OUTLINE



- USACE Emergency Operations
- Hurricane lan
- Mission Assignment
- Assessments and Recommendations
- Hurricane Nicole



#### **USACE EMERGENCY OPERATIONS**









#### **USACE EMERGENCY OPERATIONS CENTER**



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#### **APPROPRIATE AUTHORITY**

- 1 UNDER OUR OWN AUTHORITIES
- 2 IN SUPPORT OF FEMA
- 3 TO ANOTHER FEDERAL AGENCY

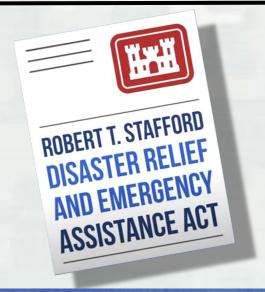




#### **USACE EMERGENCY OPERATIONS CENTER**



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**→** Emergency Support Functions (ESF)



#### **ESF#3 Core Mission**

- Debris Removal and Clearance
- Temporary Emergency Power
- Temporary Housing & Critical Public Facilities
- Temporary Roofing
- Emergency Infrastructure Assessment



#### **USACE EMERGENCY OPERATIONS CENTER**



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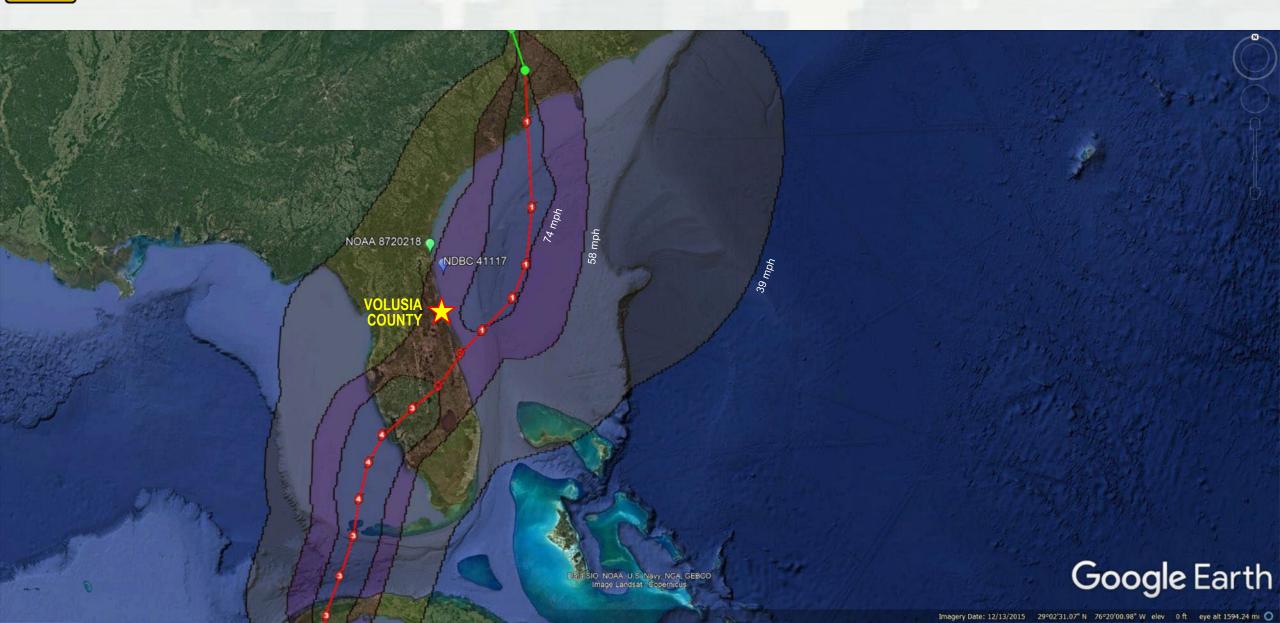


Local Gov. State DEM FEMA USACE EOC USACE SMEs



#### **HURRICANE IAN**

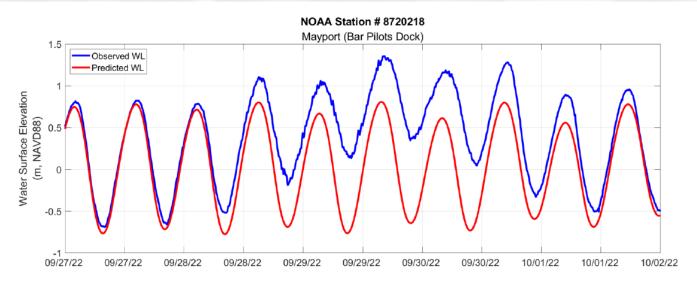






#### **HURRICANE IAN**









#### **HURRICANE IAN**



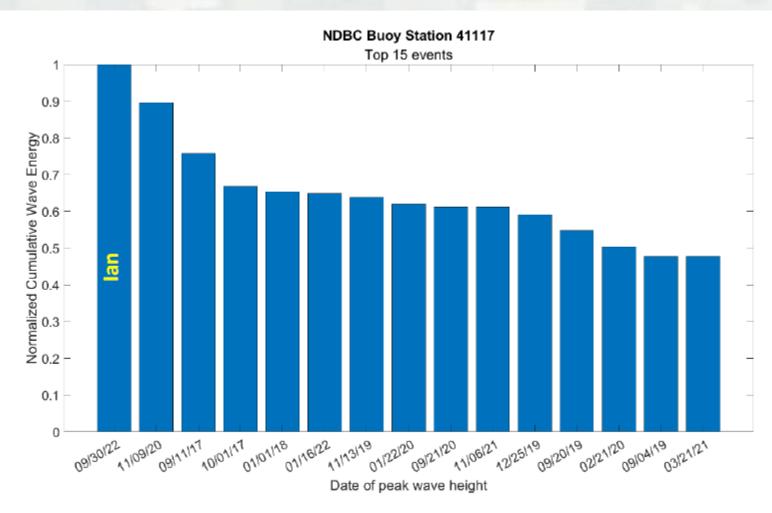


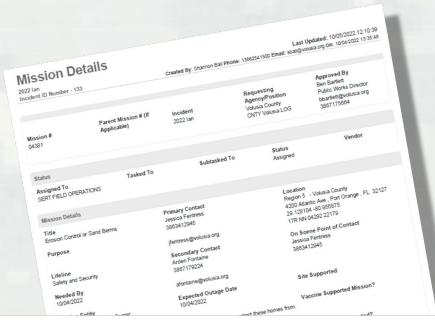
Figure 153: Top 15 storm events in terms of normalized cumulative wave energy at NDBC Buoy 41117



#### MISSION ASSIGNMENT



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#### Description

Approximately 30 homes effected by tidal erosion from Ian. Urgent need to protect these homes from further damage.







#### **VISUAL ASSESSMENTS**



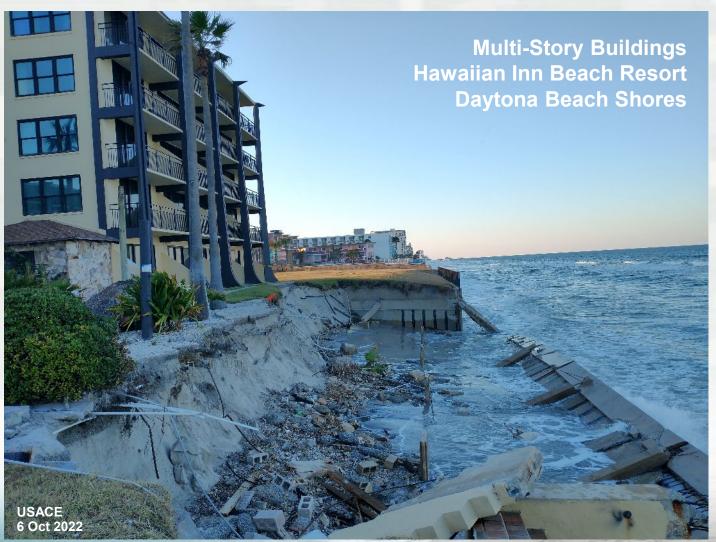


- Widespread seawall/retaining wall damage or collapse
- Significant erosion of dune bluff progressed close to several structures partially undermining the foundations



#### **VISUAL ASSESSMENTS**





- Widespread seawall/retaining wall damage or collapse
- Significant erosion of dune bluff progressed close to several structures partially undermining the foundations





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## Concrete Seawalls/Retaining Walls

October 19, 2022 CESAJ-EN-DS/GS/DW SUBJECT: Visual Assessment and Recommendations to Address Severe Erosion along the Volusia County, Florida Coastine Due to Hurricane Ian. PURPOSE: This assessment was performed to document observations and provide
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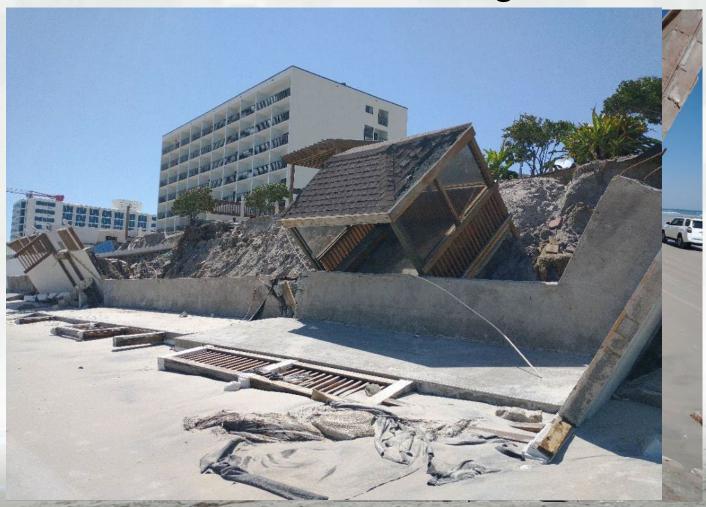




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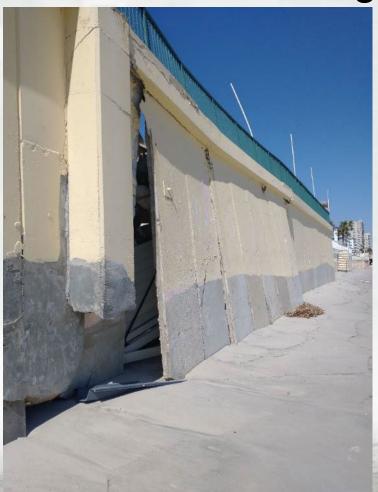




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## Sheetpile Seawalls

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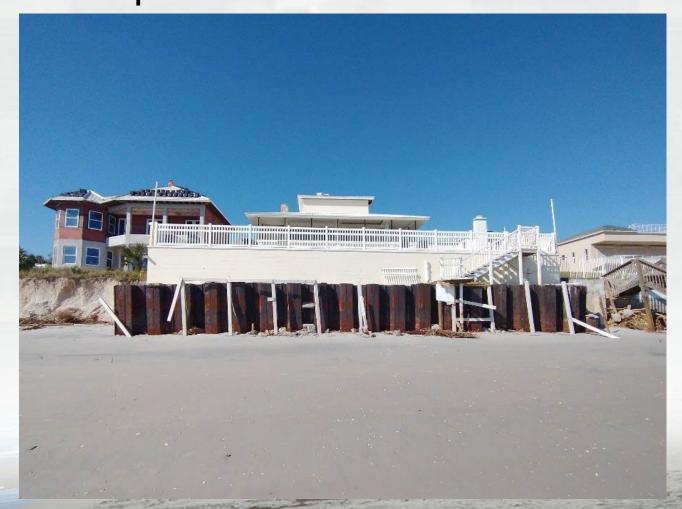




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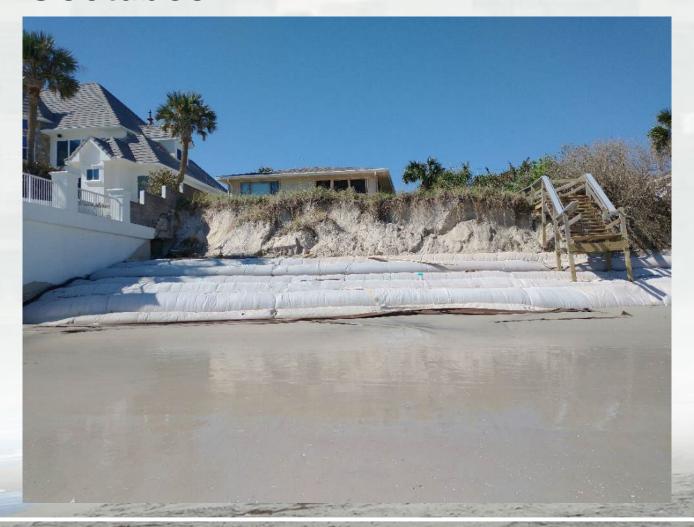




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#### Geotubes

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Patrick J. Snyder, P.E., CFM
Josinell Serrano, P.E.
Panadd Y. Pahandaro, D.E.
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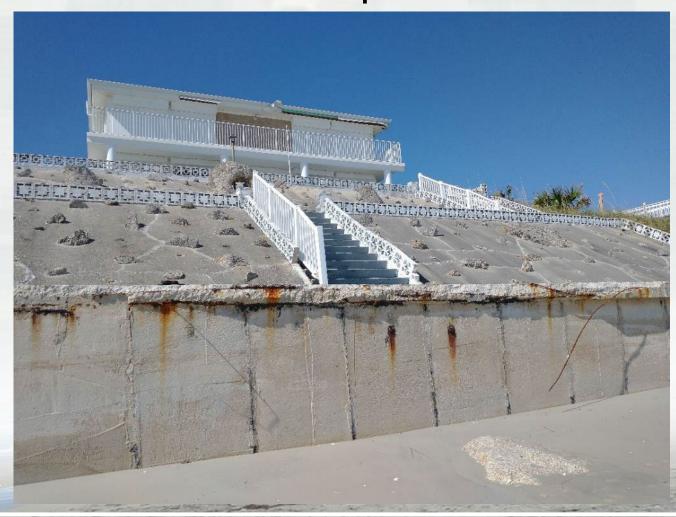






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#### Concrete lined slope



October 19, 2022

CESAJ-EN-DS/GS/DW

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#### **RECOMMENDATIONS**



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#### **TEMPORARY EROSION CONTROL**

SHORT/MID-TERM ALTERNATIVES



**HESCO BAGS** 



TRAP BAGS



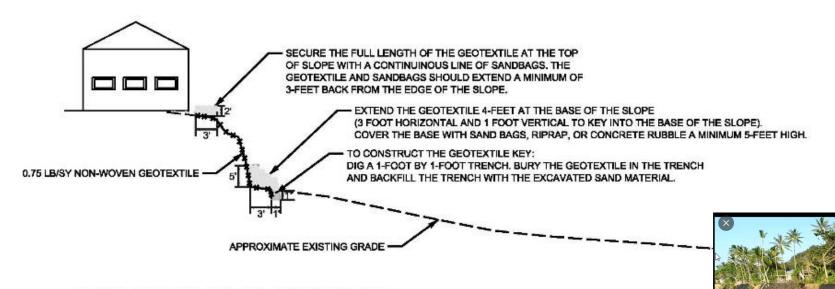
#### **RECOMMENDATIONS**



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#### **TEMPORARY EROSION CONTROL**

# SHORT-TERM ALTERNATIVES (HOME DEPOT ALTERNATIVE)



GEOTEXTILE FABRIC PLACEMENT

NOT TO

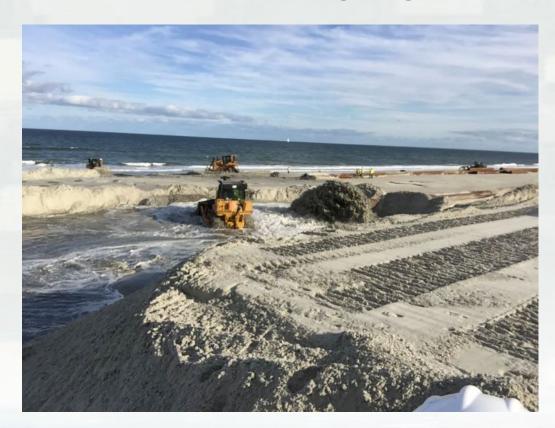


## **RECOMMENDATIONS**



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## **LONG-TERM ALTERNATIVE**



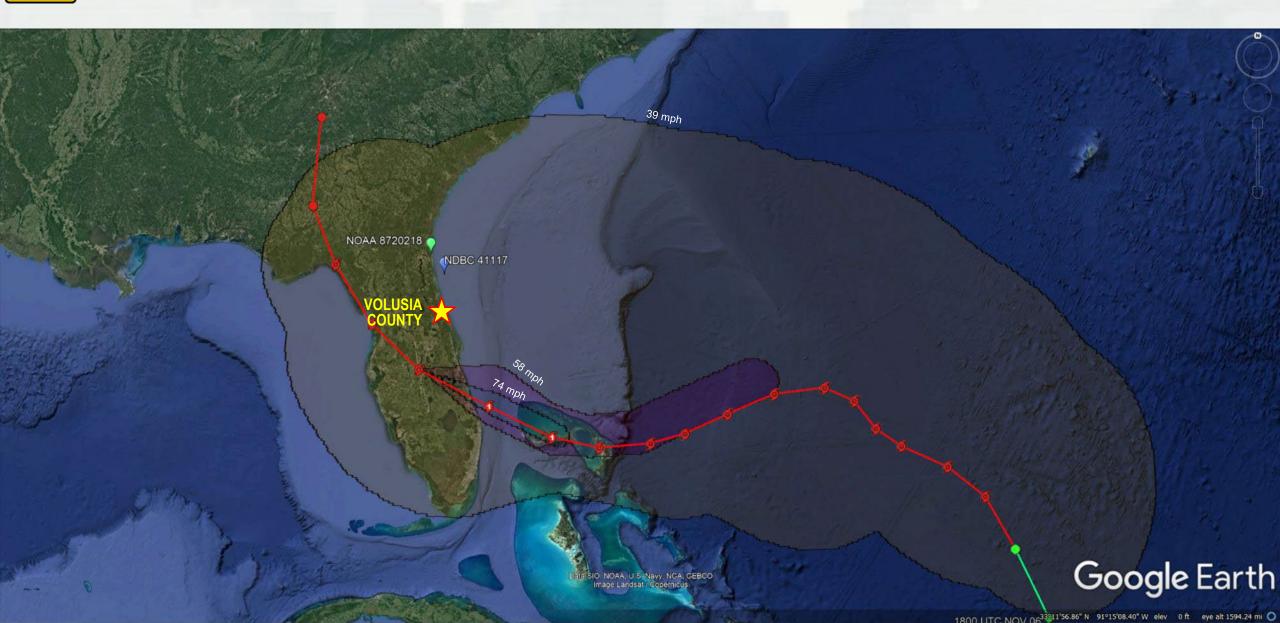


# **ENGINEERED BEACHES AND DUNES**



# **HURRICANE NICOLE**



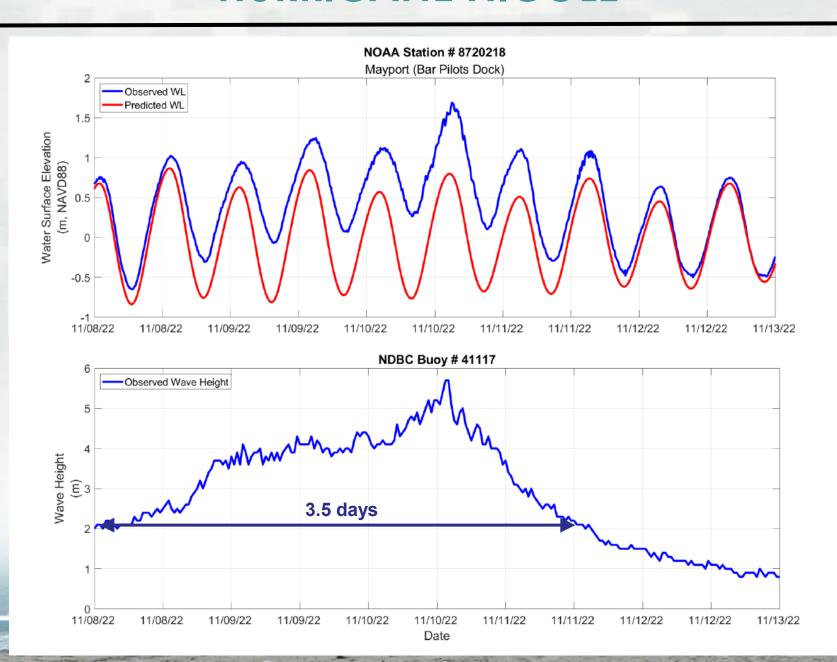




#### **HURRICANE NICOLE**









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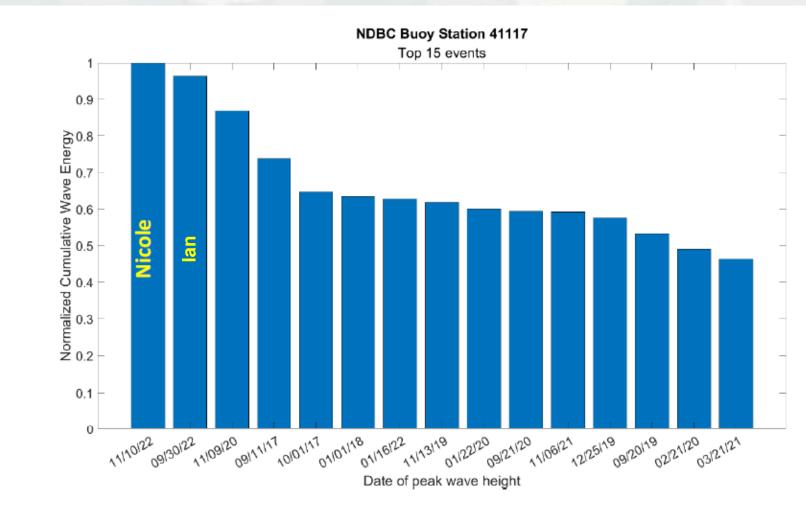


Figure 75: Top 15 storm events in terms of normalized cumulative wave energy at NDBC Buoy 41117



# POST HURRICANE NICOLE





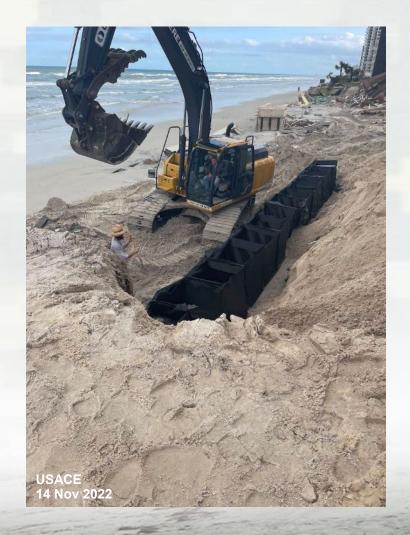




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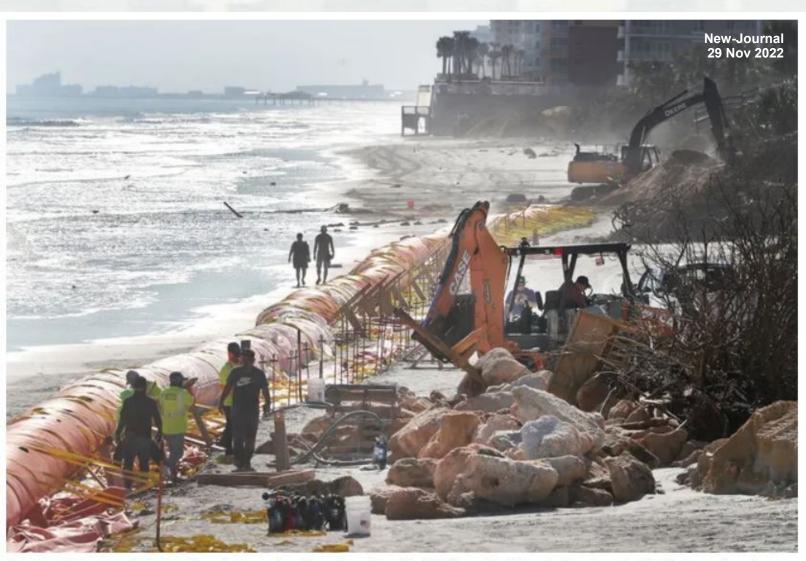






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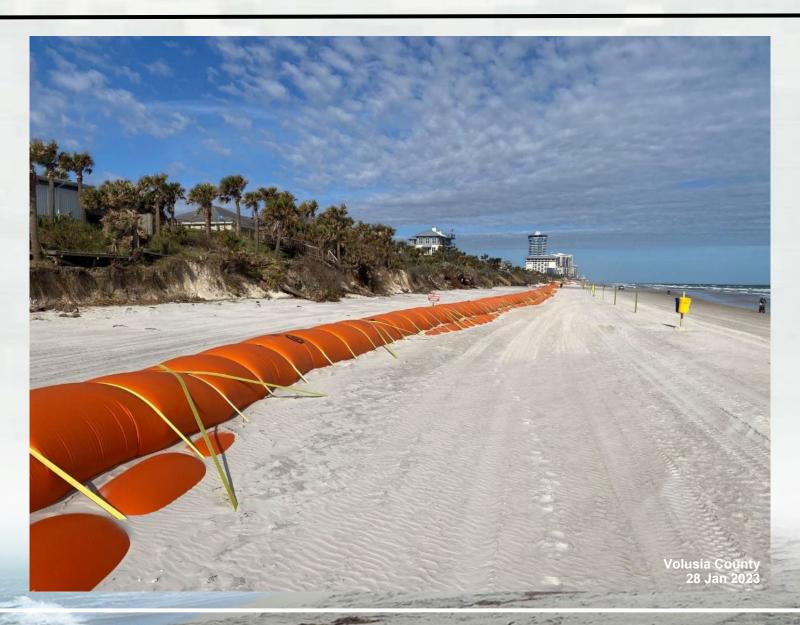


Construction crews install a Tiger Dam system Tuesday, Nov. 29, 2022, south of Frank Rendon Park in Daytona Beach Shores. The system is intended to offer a temporary protection against future erosion caused by storms. *David Tucker/News-Journal* 



#### TIGER DAM





# **QUESTIONS**



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Thank you!

William.L.Reilly@usace.army.mil

