

An aerial photograph of a coastal town, likely in the Turks and Caicos Islands, showing a mix of residential buildings, green vegetation, and turquoise water. The town is built on a peninsula or island, with a road network and several buildings visible. The water is a vibrant turquoise color, and there are some sandy areas and what appears to be a beach or pier area in the foreground. The overall scene is bright and sunny, with clear skies.

SHOAL GRASS TOLERANCE TO HURRICANE IRMA IN ARAGONITE SILTS, TURKS & CAICOS ISLANDS

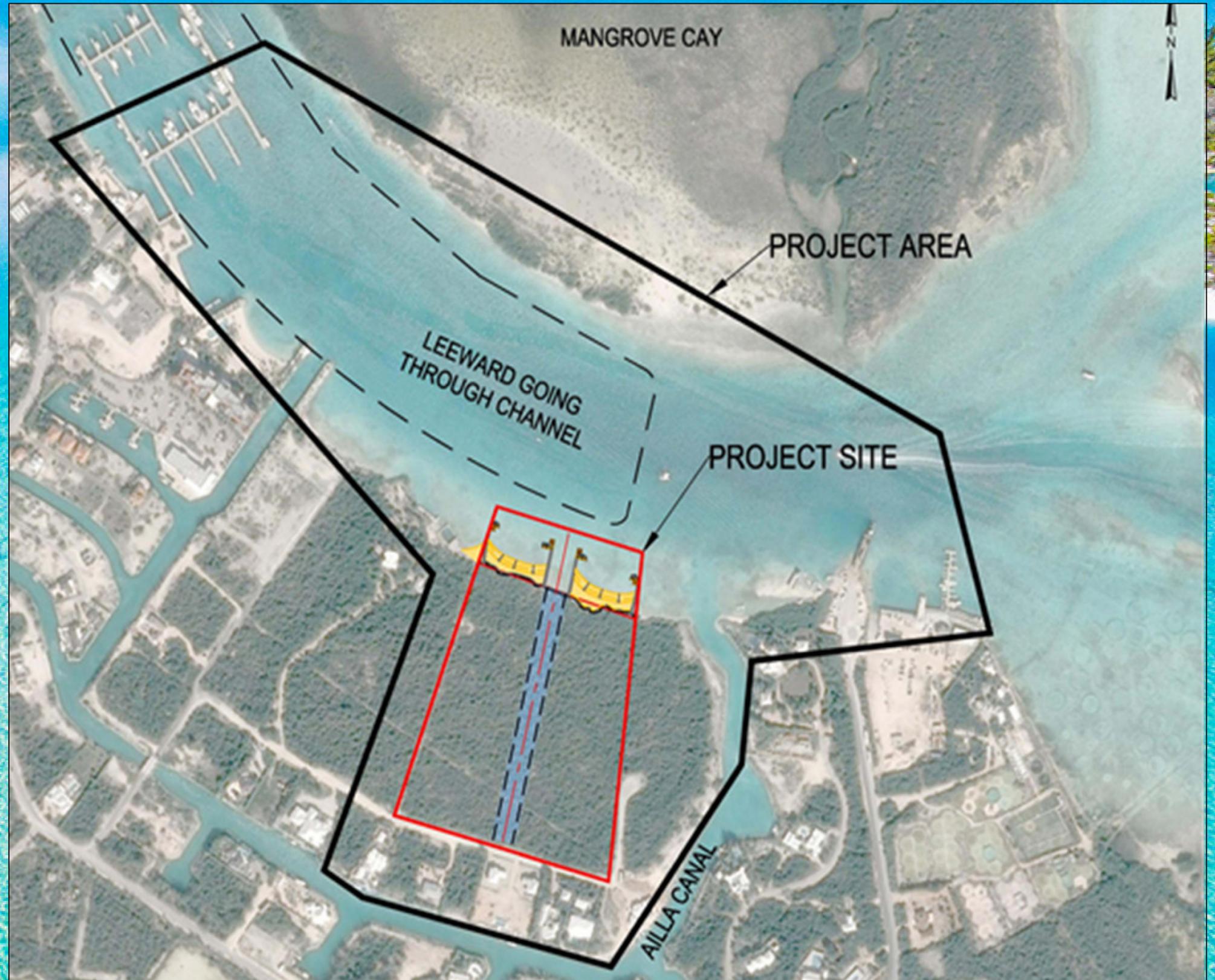
2024 FSBPA Conference

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Erickson Consulting Engineers, a GRAEF Company
William Precht, PHD
Dial Cordy Associates



PROJECT SITE

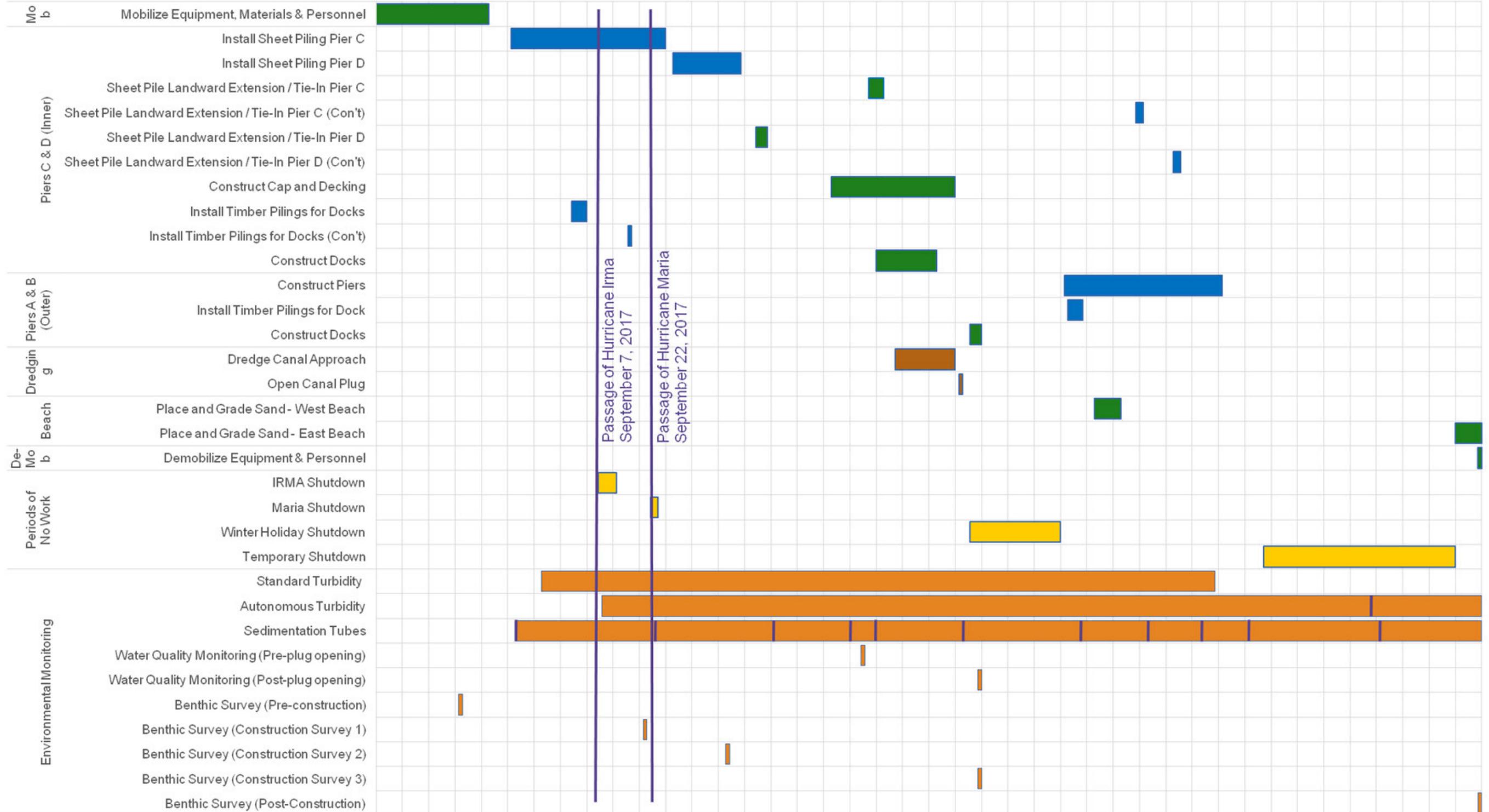
LEEWARD -GOING-THROUGH



Work Occuring Above/Landward of MHWL
Marine-Based Activities Except Dredging
Dredging
No Work

BLUE CAY ESTATES: COASTAL INFRASTRUCTURE PROJECT

10-Jul-2017 17-Jul-2017 24-Jul-2017 31-Jul-2017 7-Aug-2017 14-Aug-2017 21-Aug-2017 28-Aug-2017 4-Sep-2017 11-Sep-2017 18-Sep-2017 25-Sep-2017 2-Oct-2017 9-Oct-2017 16-Oct-2017 23-Oct-2017 30-Oct-2017 6-Nov-2017 13-Nov-2017 20-Nov-2017 27-Nov-2017 4-Dec-2017 11-Dec-2017 18-Dec-2017 25-Dec-2017 1-Jan-2018 8-Jan-2018 15-Jan-2018 22-Jan-2018 29-Jan-2018 5-Feb-2018 12-Feb-2018 19-Feb-2018 26-Feb-2018 5-Mar-2018 12-Mar-2018 19-Mar-2018 26-Mar-2018 2-Apr-2018 9-Apr-2018 16-Apr-2018 23-Apr-2018 30-Apr-2018



Passage of Hurricane Irma
September 7, 2017

Passage of Hurricane Maria
September 22, 2017

TURKS & CAICOS ISLANDS



BEFORE AND AFTER
HURRICANE IRMA

(NOAA, 2017)

GRÄEF

HURRICANE IRMA
IMPACT TO PROVIDENCIALES



CHALK SOUND



TURTLE COVE



DOWNTOWN



GRÄEF

PROJECT SITE



GAUGE LOCATION



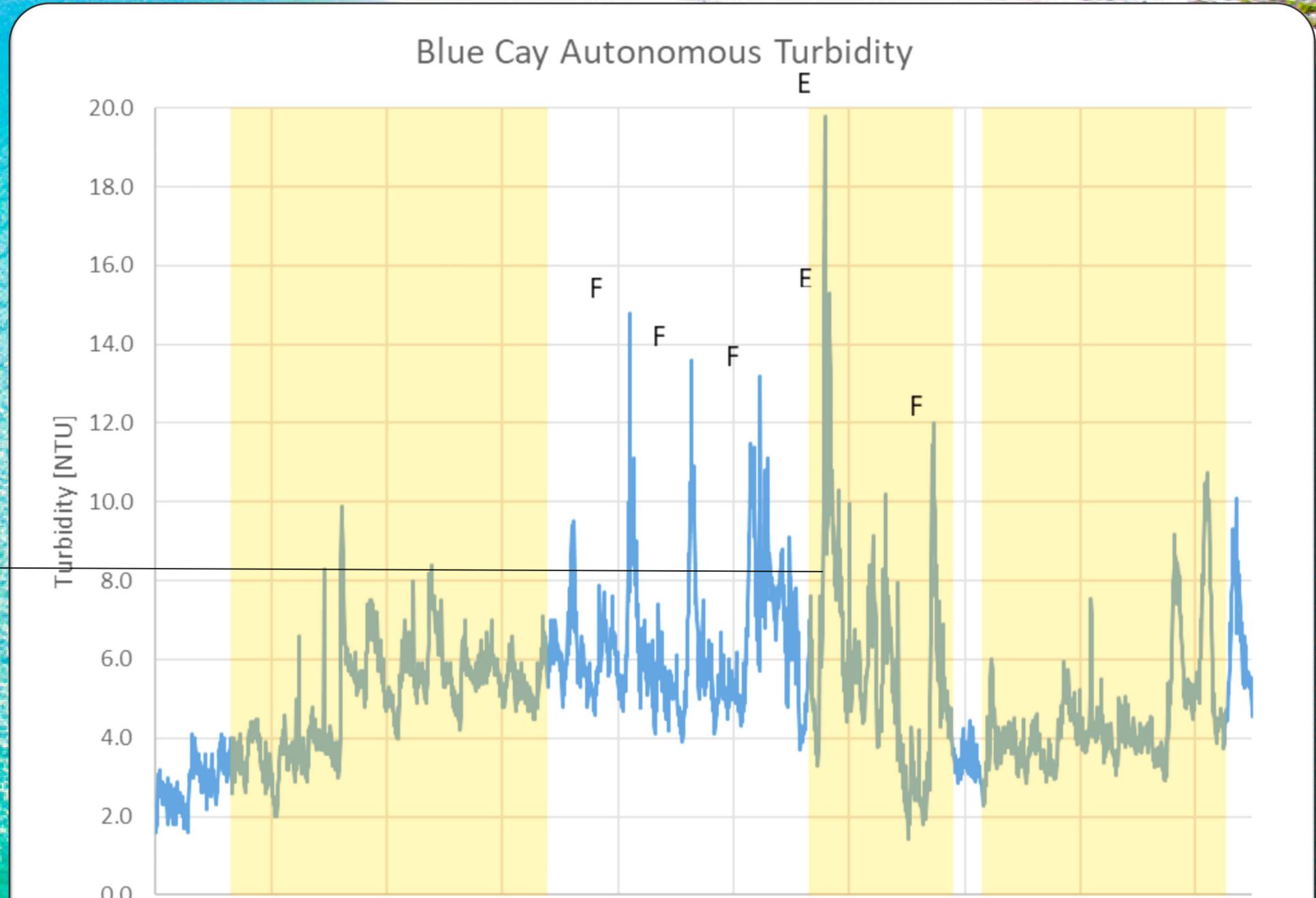
CANAL
PLUG BREACH

GRāEF

IN-SITU DATA

YSI 600 OMS
Turbidity
Conductivity
Temp

Flood tide turbidity from
project, Ebb tide from west

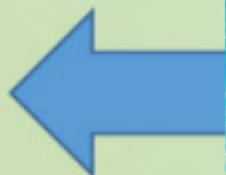


GRAEF

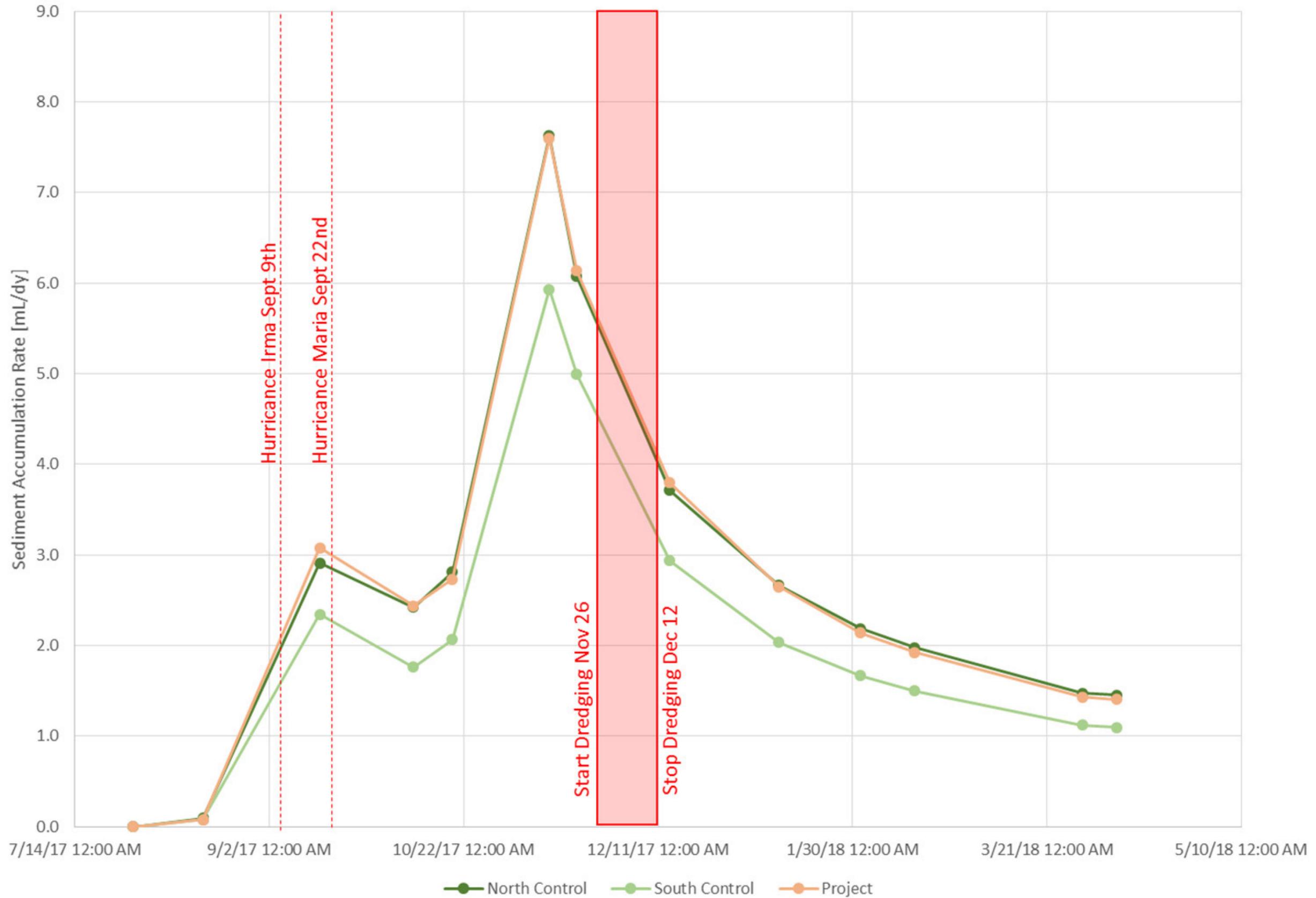


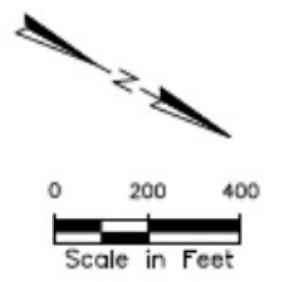
POSTIRMA BENTHIC SURVEY

SEDIMENTATION IMPACTS



Blue Cay Sediment Accumulation Rates

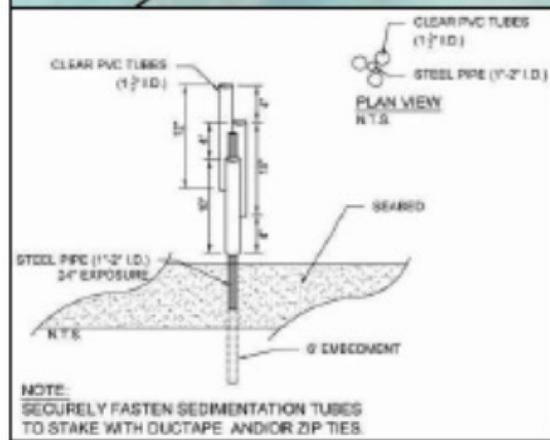
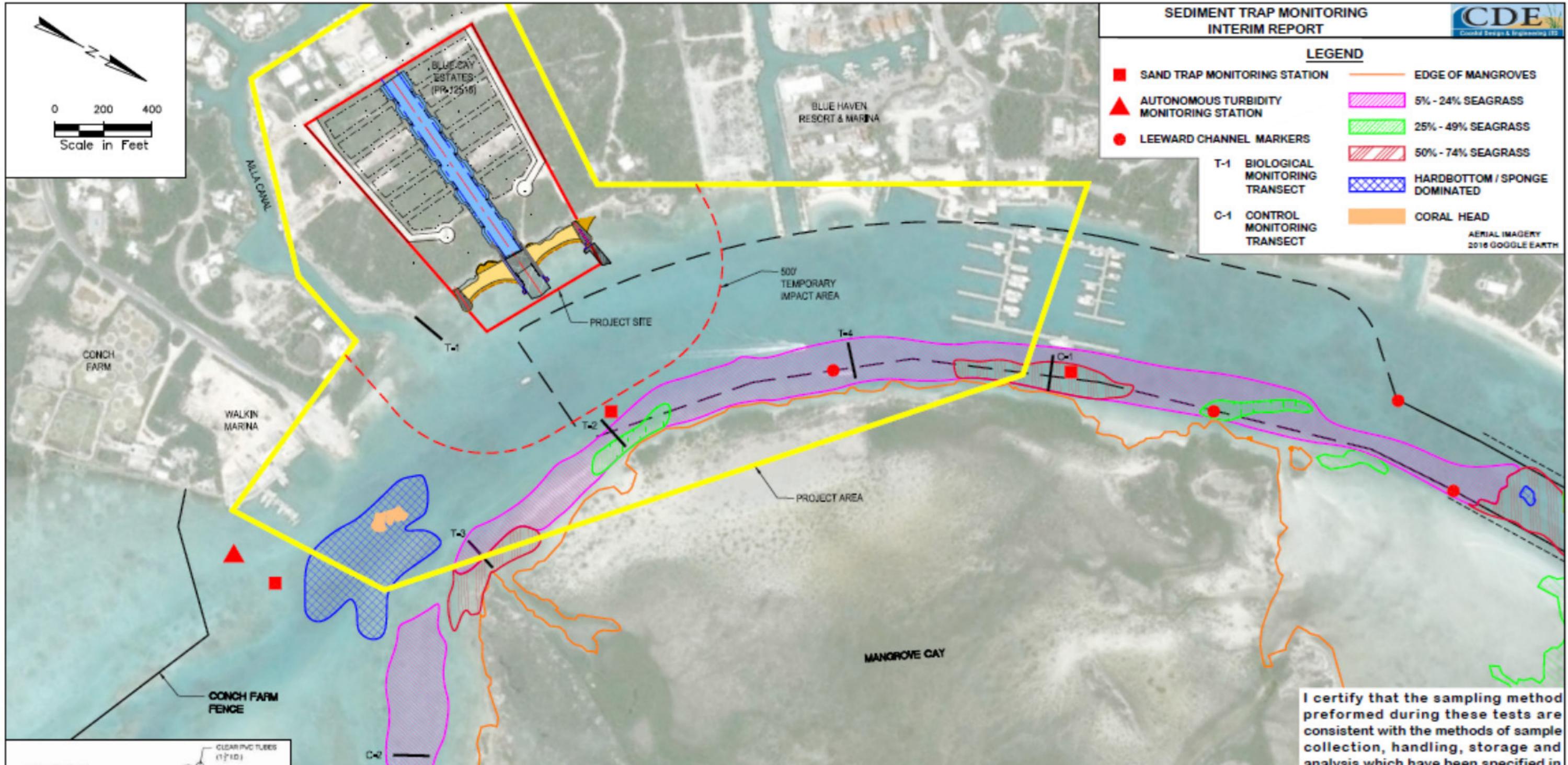




LEGEND

- SAND TRAP MONITORING STATION
- ▲ AUTONOMOUS TURBIDITY MONITORING STATION
- LEEWARD CHANNEL MARKERS
- EDGE OF MANGROVES
- 5% - 24% SEAGRASS
- 25% - 49% SEAGRASS
- 50% - 74% SEAGRASS
- HARDBOTTOM / SPONGE DOMINATED
- CORAL HEAD
- T-1 BIOLOGICAL MONITORING TRANSECT
- C-1 CONTROL MONITORING TRANSECT

AERIAL IMAGERY
2016 GOOGLE EARTH



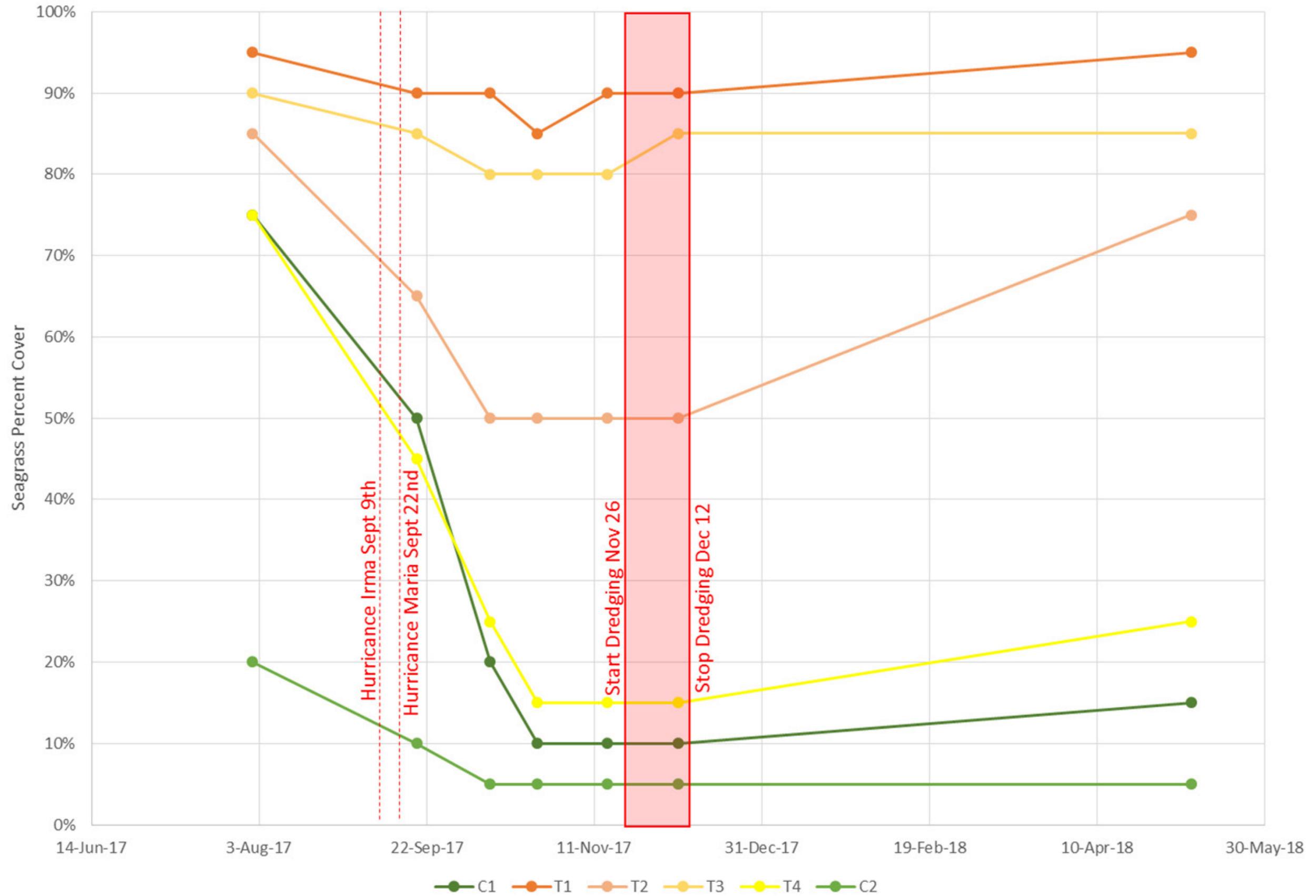
REPORT #:	3	SEDIMENT TRAP ID:		SEDIMENT TRAP ID:		SEDIMENT TRAP ID:	
INSTALLATION DATE:	2017/08/16	CONTROL (NORTH)	VOLUME (ml)	CONTROL (SOUTH)	VOLUME (ml)	COMPLIANCE	VOLUME (ml)
RETRIEVAL DATE:	2017/10/09	TUBE A	150	TUBE A	71	TUBE A	112
		TUBE B	152	TUBE B	91	TUBE B	156
		TUBE C	85	TUBE C	119	TUBE C	123

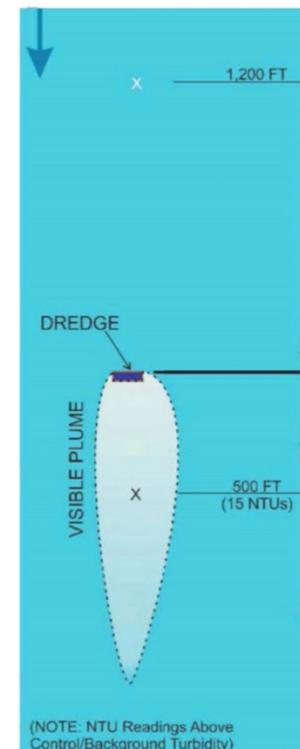
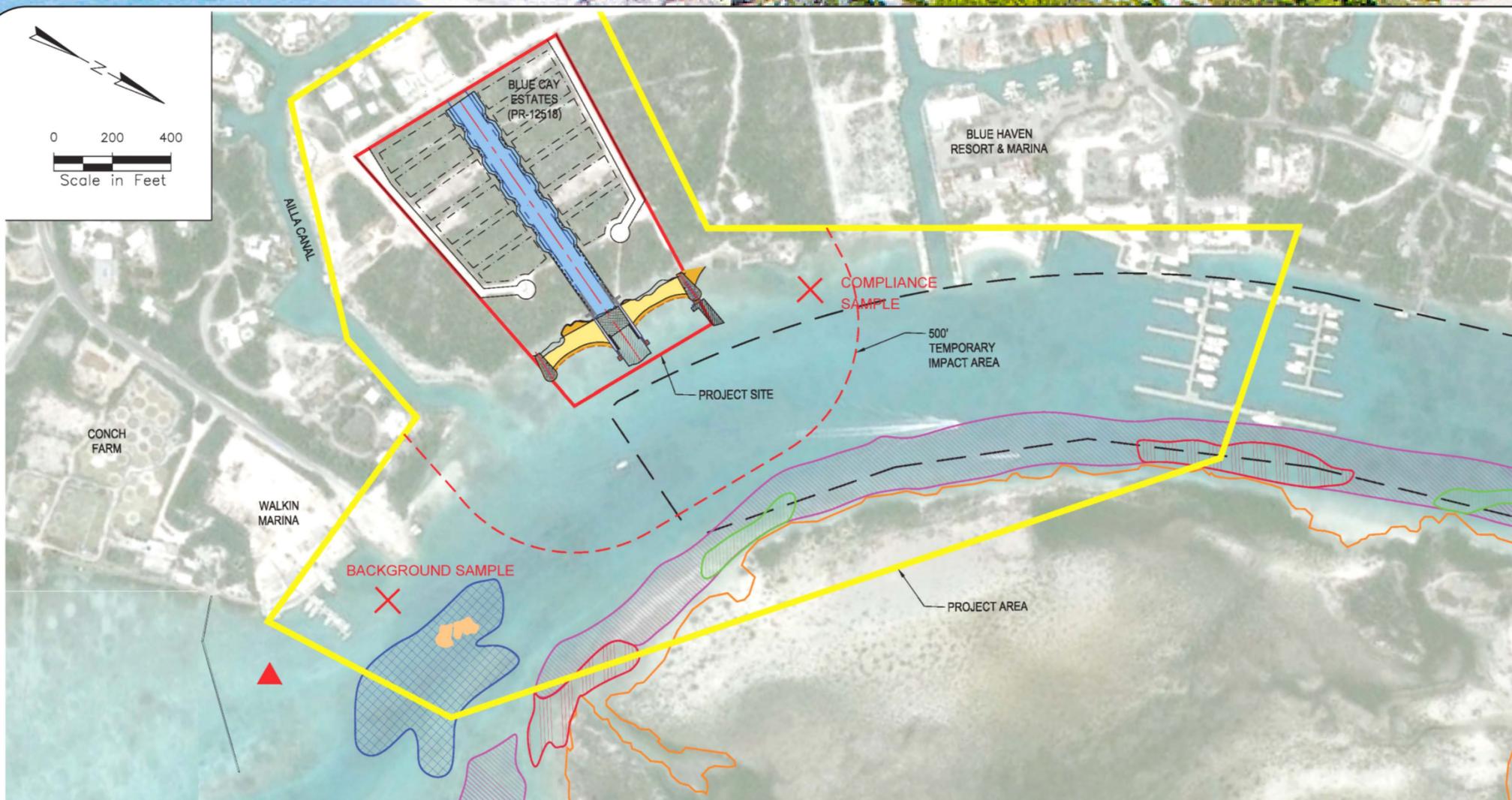
I certify that the sampling method preformed during these tests are consistent with the methods of sample collection, handling, storage and analysis which have been specified in the Projects Environmental Monitoring & Mitigation Plan and in all additional pertinent documentation for this project and that the tests results and methodologies represented here are in compliance with all required permits.

Signature of Authorized Technician:

 Leaf S. Erickson, PhD
 Date: 2017/10/09

Blue Cay Seagrass Abundance





- Pre- and Post- Construction In-Situ Turbidity Monitoring Sample
- x Background Sample (During Active Construction)
- x Compliance Sample (During Active Construction)
- ↓ Current Direction

Method: Collected more than 2 hours after sunrise and more than 2 hours prior to sunset following at least 1 hour of continuous construction activity or dredging at: (a) 1,200 feet up-current from the construction activity or dredge (Background), (b) 500 feet down-current of the dredge within the densest visible plume (Compliance). A surface sample (S) and mid-depth sample (M) shall be collected at each location.



REPORT #:	18	CONSTRUCTION ACTIVITY:	Storm Shutdown			SAMPLE COLLECTION DATE:	September 13, 2017		
WIND (DIR, VELOCITY):	SE, 5-10 mph	WAVES (HEIGHT):	0.5 ft	CURRENT (DIRECTION):	W	TIDE (IN/OUT):	Outgoing		
SAMPLE LOCATION	SAMPLE COLLECTION TIME	GPS WESTING	GPS NORTHING	WATER DEPTH	SURFACE SAMPLE TURBIDITY (NTU)			MID-DEPTH SAMPLE TURBIDITY (NTU)	
Project Site	12:35	72d8'36.2"	21d48'53.8"	3 ft	28.72	28.29	26.5		
					27.84				

INSTRUMENT CALIBRATION: 0.2 NTU

*THREE REPLICATE MEASUREMENTS WERE TAKEN FOR EACH SAMPLE, THE RESULTS ARE AVERAGED AS SHOWN.

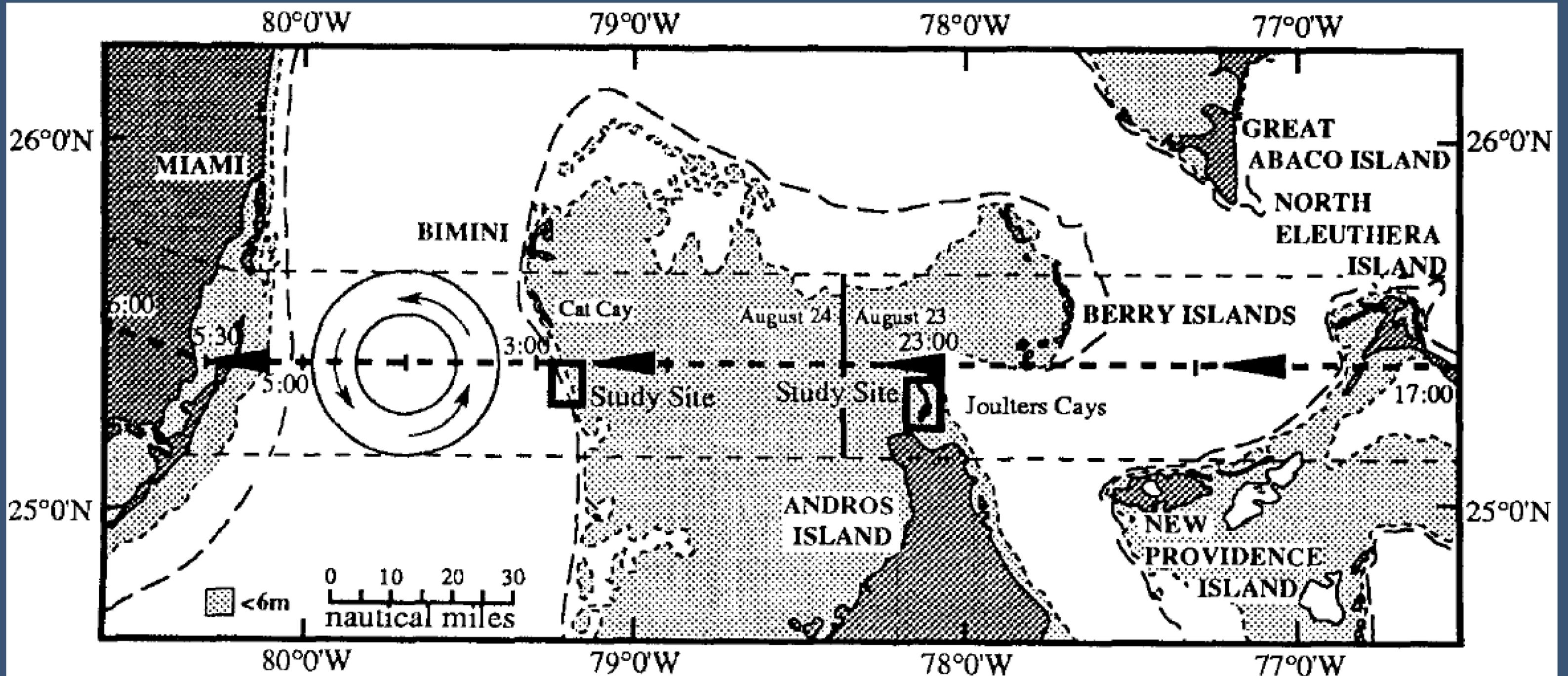
I certify that these data are genuine and reliable. I certify that the sample collection and analysis instrumentation has been calibrated with appropriate standards prior to each sampling period. I certify that the sampling methodology performed during these tests are consistent with the methods of sample collection, handling, storage and analysis which have been specified in the Environmental Monitoring and Mitigation Plan and in all additional pertinent documentation for this project and that the tests results and methodologies represented here are in compliance with all required permits.

Name and Signature of Authorized Technician:

Leaf S. Erickson, PhD.

Date: September 13, 2017

HISTORICAL PRECEDENT ANDROS & HURRICANE ANDREW (Shinn et al., 1993)





QUESTIONS?
STAY IN TOUCH



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