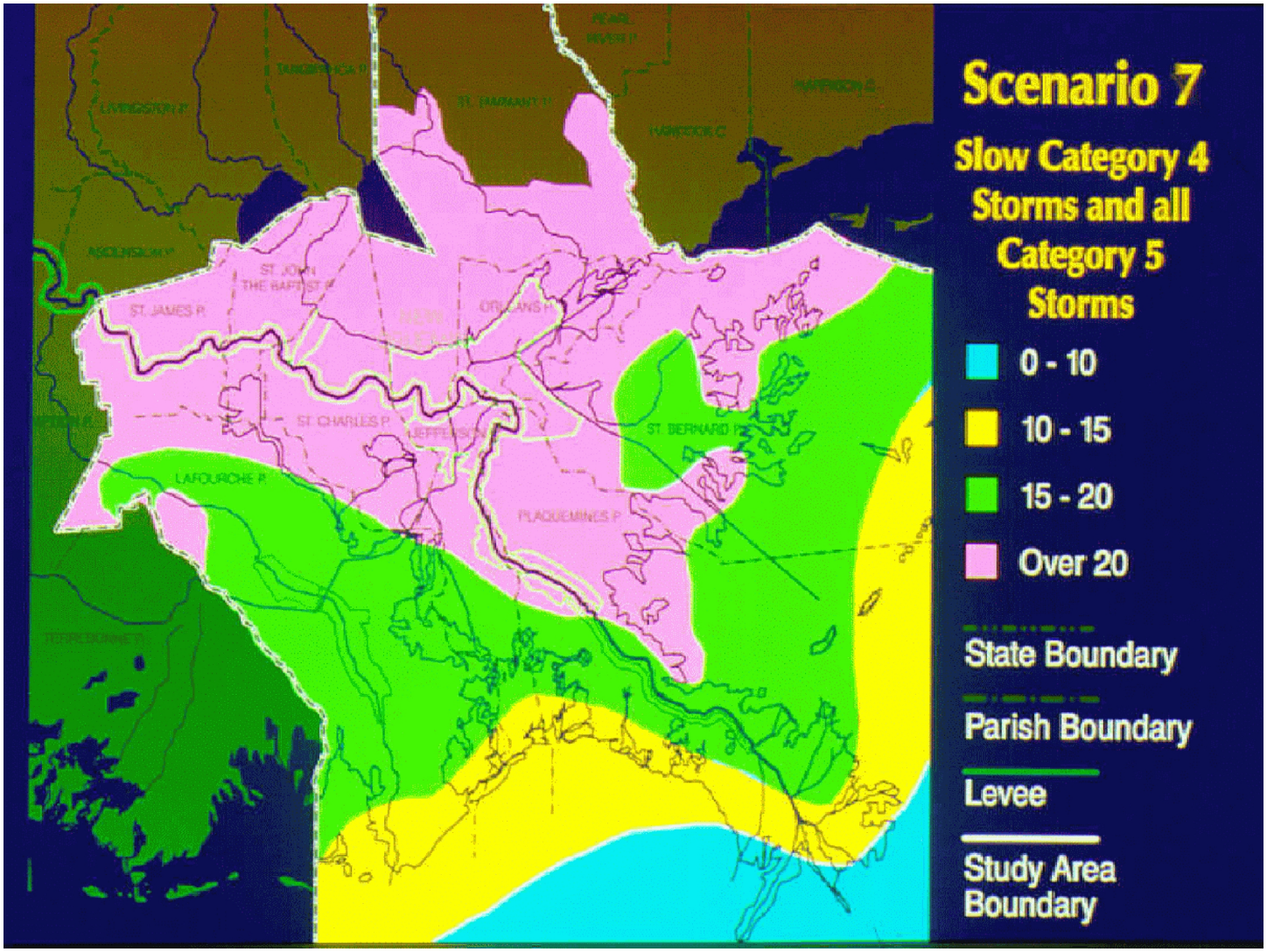
St. Tammany
Lake Pontchartrain
Orleans
New Orleans East Landbridge
The Rigolets
Little Lake
St. Tammany
Mississippi Sound
N
W
E
S
GIWW Levee
Gulf Intracoastal Waterway
Paris Rd
Lake Borgne
Bayou Bienvenue
IHNC
40 Arpent Levee
MRGO Levee
Chalmette
New Orleans
Bayou Dupre
St. Bernard
Miss. River Gulf Outlet
Jefferson
Grand Bayou
La Loutre Ridge
Shell Beach
Bayou La Loutre
Morgan Harbor
Yscloskey
Six Mile Lake
Reggio
Hopedale
Caenarvon
St. Charles
Delacroix
Plaquemines
Eloi Bay
Bayou Lery
MRGO Mouth
Storm Surge Hydrograph Location
Levees and Key Roadway Embankments
Parish Boundries
I:\GIS\MRGO_2006\Report_figs_20706\MRGO_Projectarea_Fig1.mxd
0 10,000 20,000 40,000
Feet

Figure 1

Project Area

Corps Estimate of Regional Inundation from Slow Category 4 Storm Surge

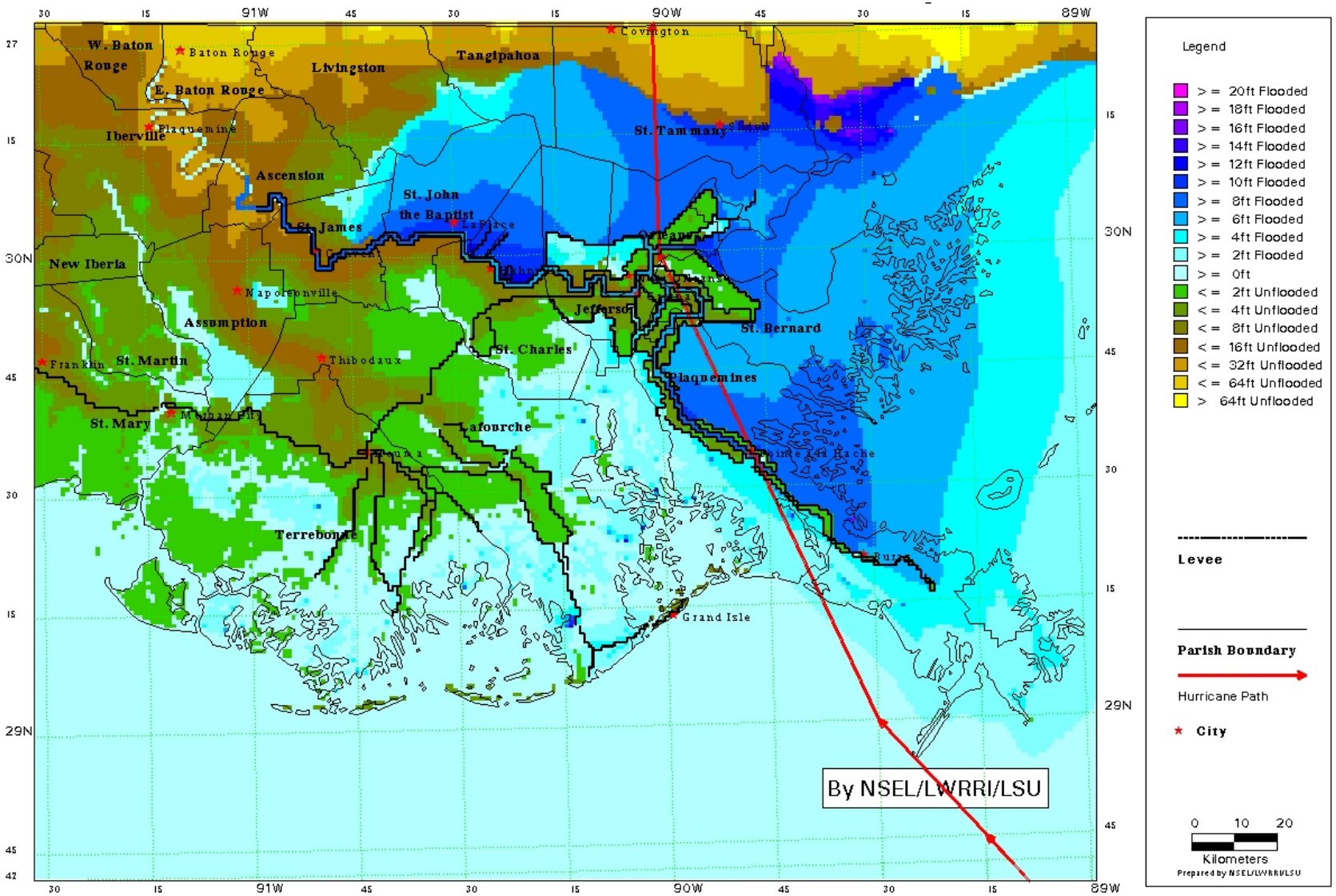


Source: US Army Corps of Engineers, 1998 inundation in feet MSL

URS

Figure 2

Estimate of Regional Inundation from Hurricane Georges (1998) Prior to Track Turn



Source: LWRRI, 1997 based on advisory 44 inundation in feet MSL

URS

Figure 3

Full 2003 ACIRC Grid

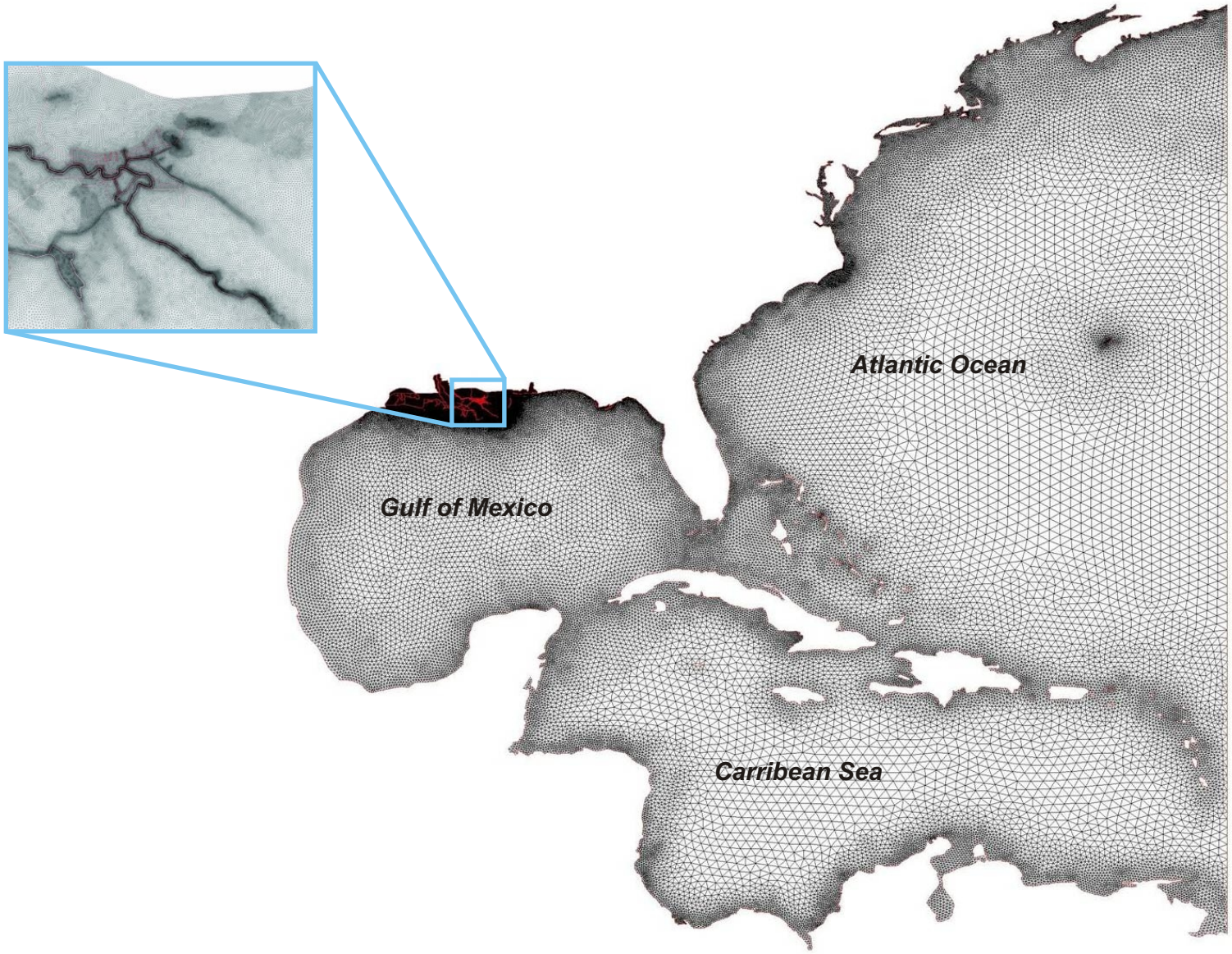
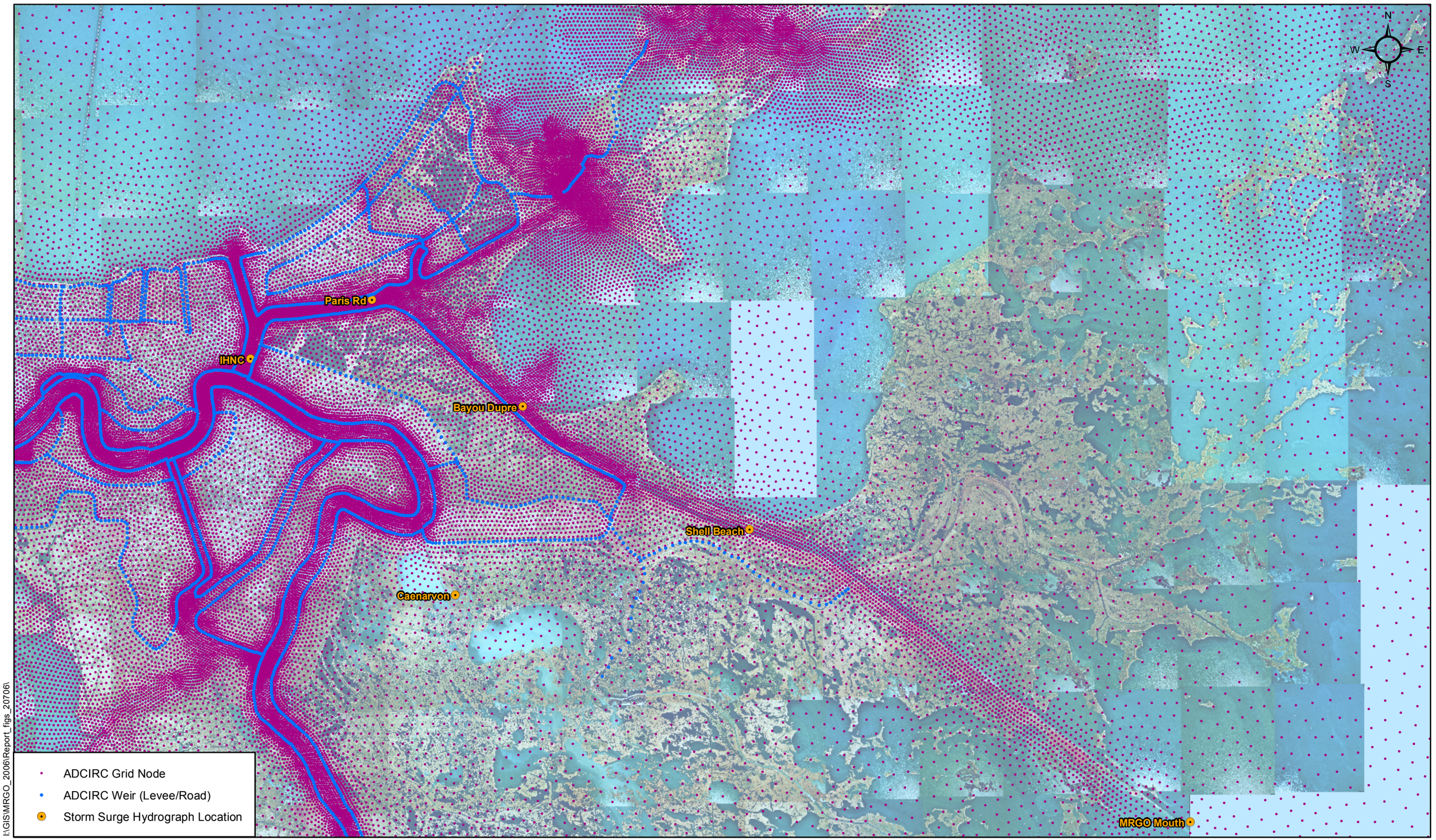


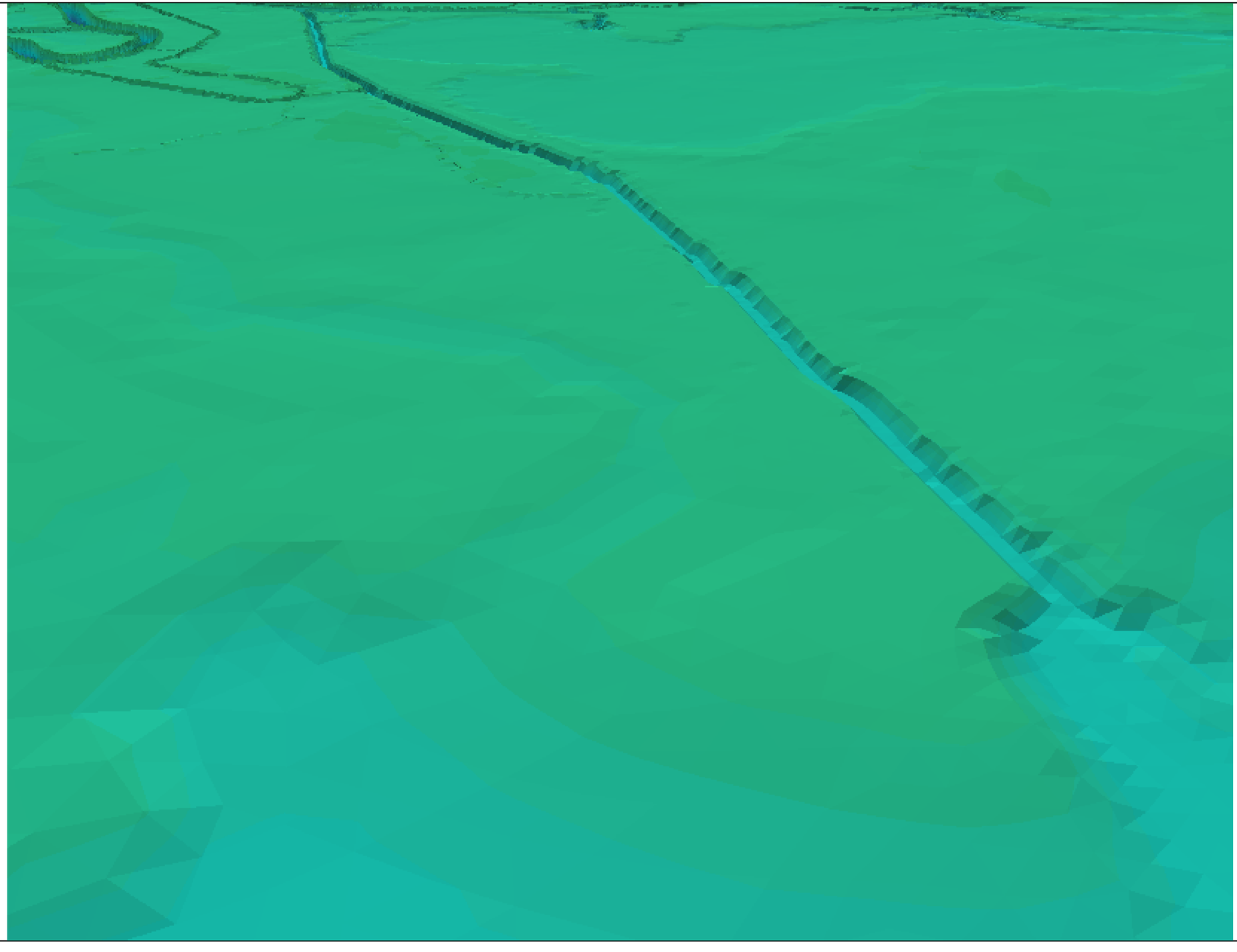
Figure 4



URS

Figure 5

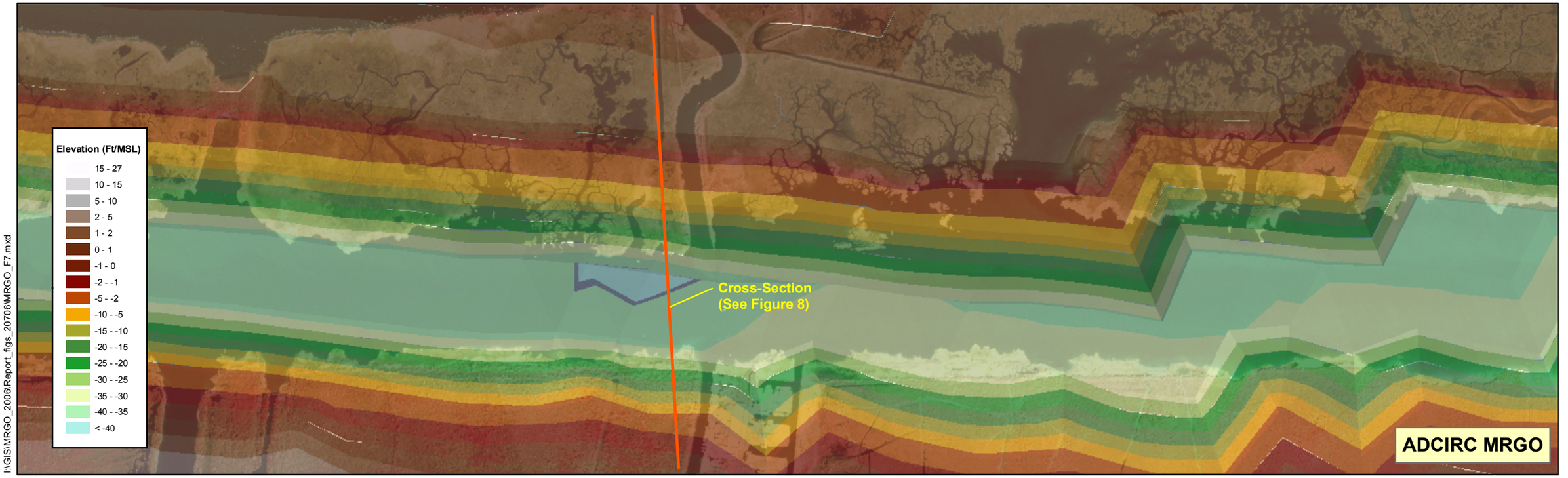
Detail of 2003 ADCIRC Grid for MRGO and Surrounding Area



I:\GIS\MRGO_2006\Report_figs_20706\MRGO_F6.mxd

Note: Image created in ArcScene. Vertical Exaggeration 25x.
G:\LDNR\MRGO\ArcScene\MRGO_F6.sxd
NOT TO SCALE

Figure 6
3D Depiction of 2003 ADCIRC Terrain for MRGO and Surrounding Area



I:\GIS\MRGO_2006\Report_figs_20706\MRGO_F7.mxd

1,000 0 1,000 2,000 Feet

Figure 7
Comparison of Surveyed vs. 2003 ADCIRC MRGO Channel Near Shell Beach, Plan View

G:\LDNR\MRGO\DWG\MRGO_F8.dwg

NOTE: Corps survey depth is in NAVD-88 and ADCIRC Grid is MSL.
Differences in datum have been ignored for purposes of this figure.

URS

Figure 8

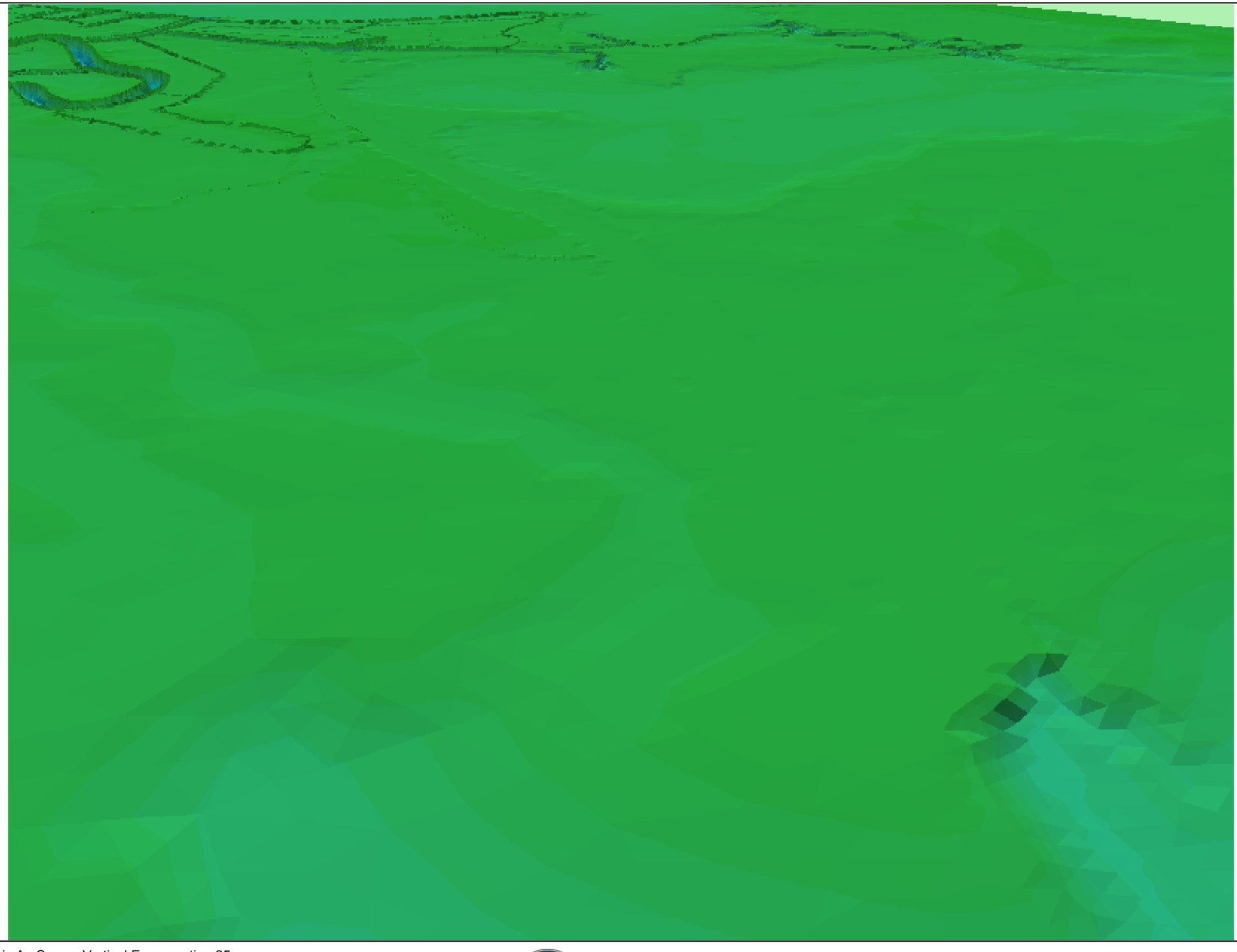
Comparison of Surveyed vs. 2003 ADCIRC MRGO Channel Near Shell Beach, Cross-Section

I:\GIS\MRGO_2006\Report_figs_20706\MRGO_HurricaneTracks_Fig9.mxd

URS

Figure 9

Tracks for Hurricane Simulations



I:\GIS\MRGO_2006\Report_figs_20706\MRGO_F10.mxd

Note: Image created in ArcScene. Vertical Exaggeration 25x.
G:\LDNR\MRGO\ArcScene\MRGO_F10.sxd
NOT TO SCALE

URS

Figure 10
3D Depiction of 2003 ADCIRC Terrain for MRGO and Surrounding Area with Closed MRGO

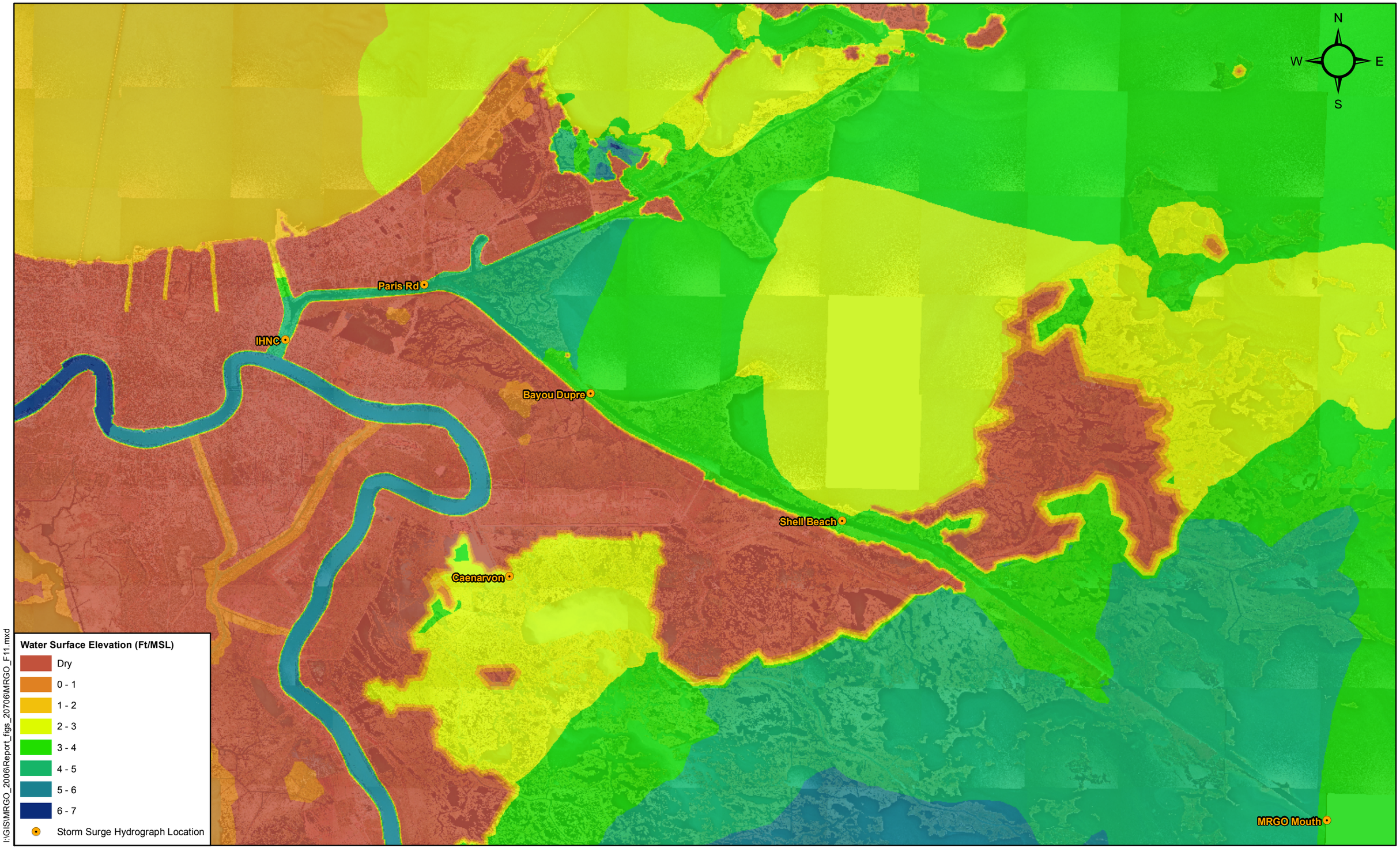


Figure 11

Maximum Water Surface Elevation for 124-Knot-Fast Storm, Baseline MRGO

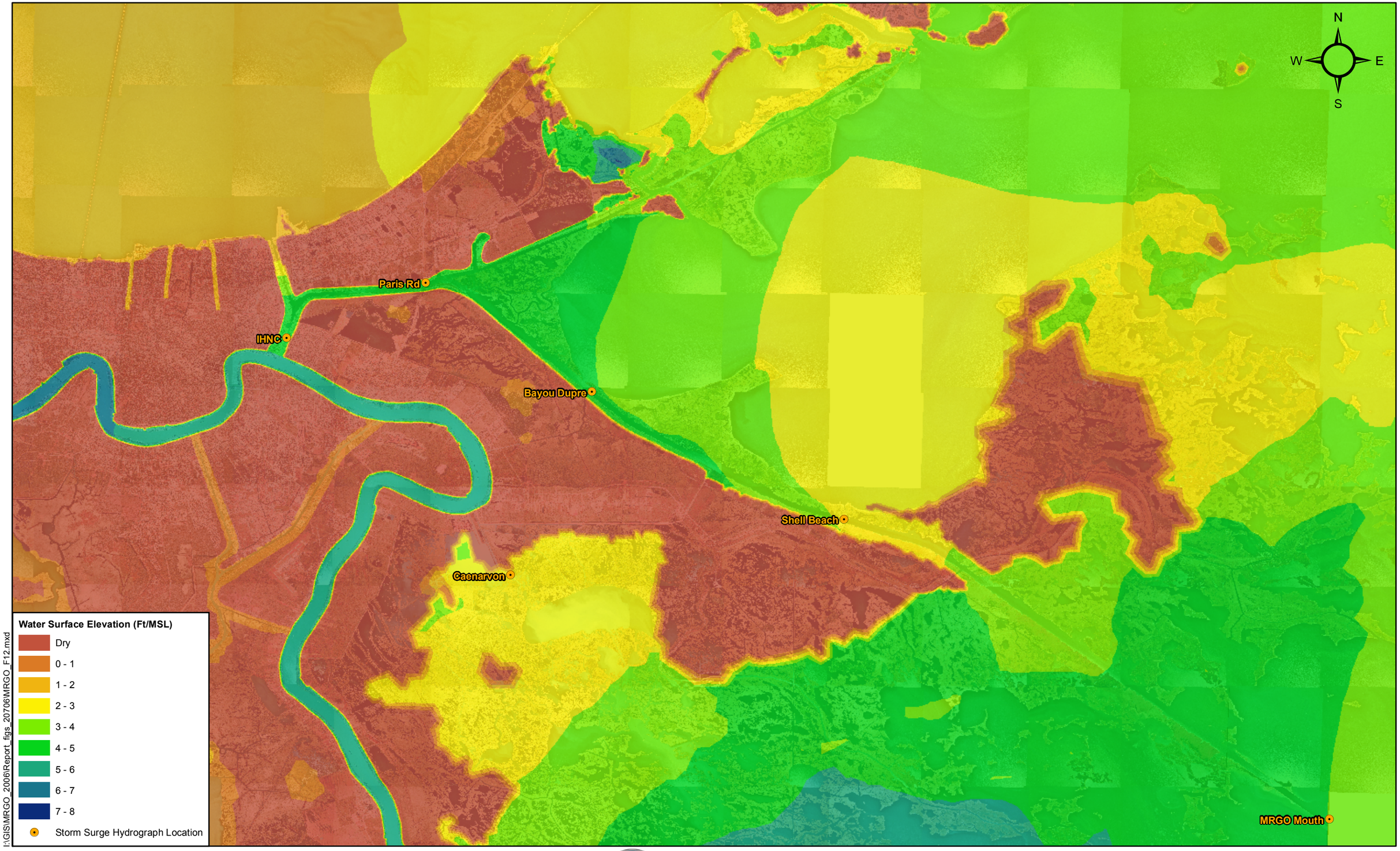


Figure 12

Maximum Water Surface Elevation for 124-Knot-Fast Storm, Closed MRGO

N
W
E
S

Paris Rd
IHNC
Bayou Dupre
Shell Beach
Caenarvon
MRGO Mouth

Surge Change With Closure (Ft)

- -6.5 - -5
- -5 - -2
- -2 - -1
- -1 - -0.5
- -0.5 - -0.25
- -0.25 - 0.25
- 0.25 - 1
- 1 - 2
- 2 - 4
- 4 - 5
- 5 - 7.959
- Storm Surge Hydrograph Location

I:\GIS\MRGO_2006\Report_figs_20706\MRGO_F13.mxd

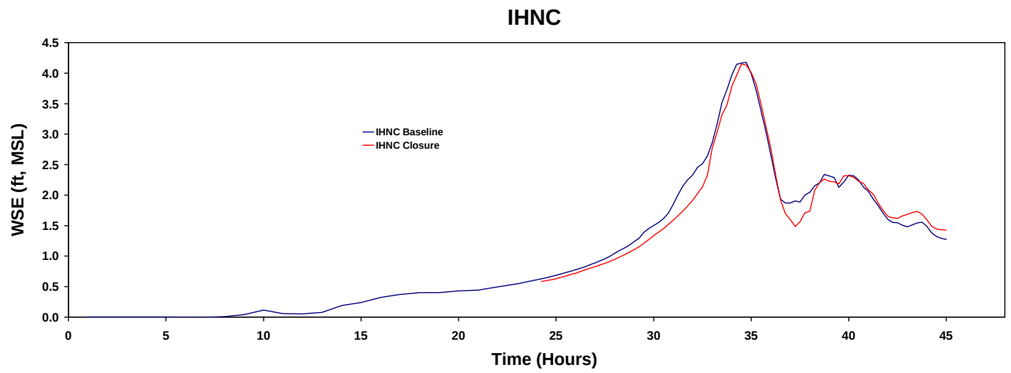
NOTE: Surge Reduction with Closure is Negative (Green).
Surge Increase with Closure is Positive (Red).

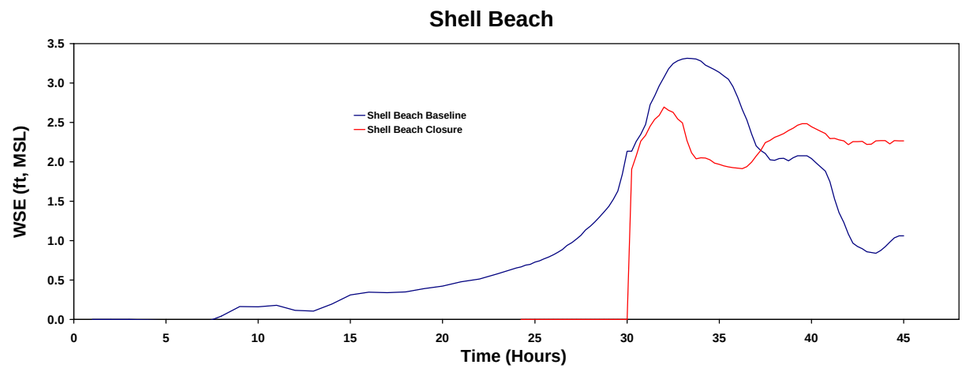
0 10,000 20,000 40,000 Feet

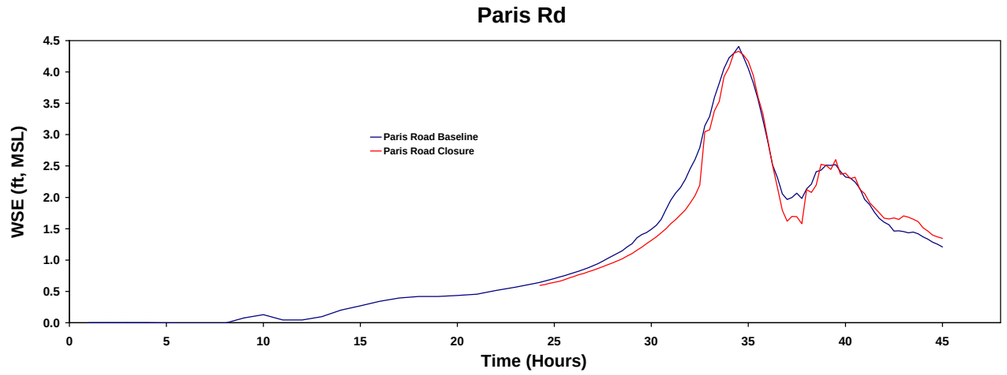
URS

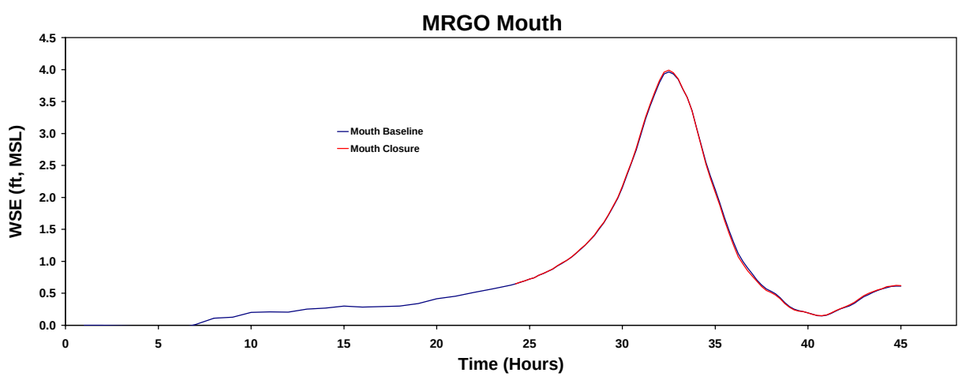
Figure 13

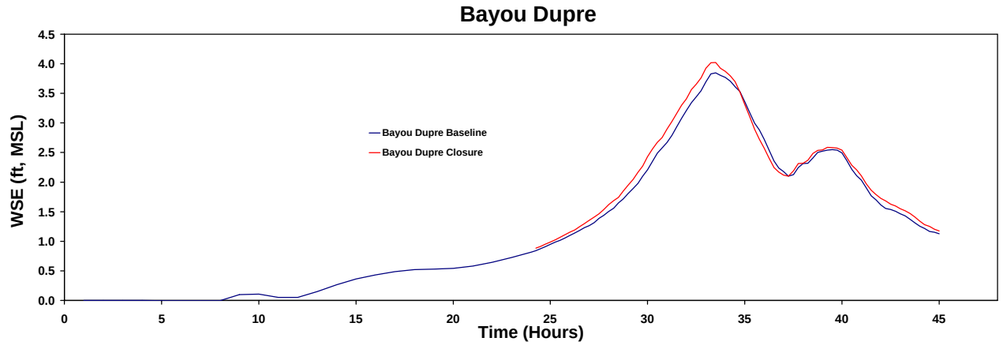
Difference in Maximum Water Surface Elevation for 124-Knot-Fast Storm, Baseline vs. Closed MRGO











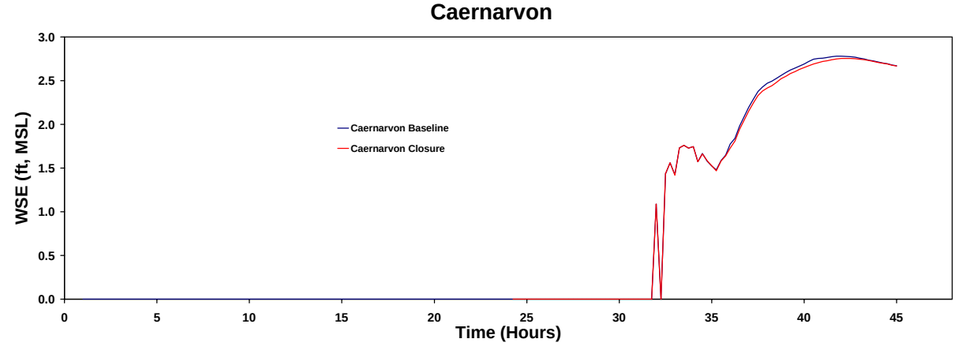
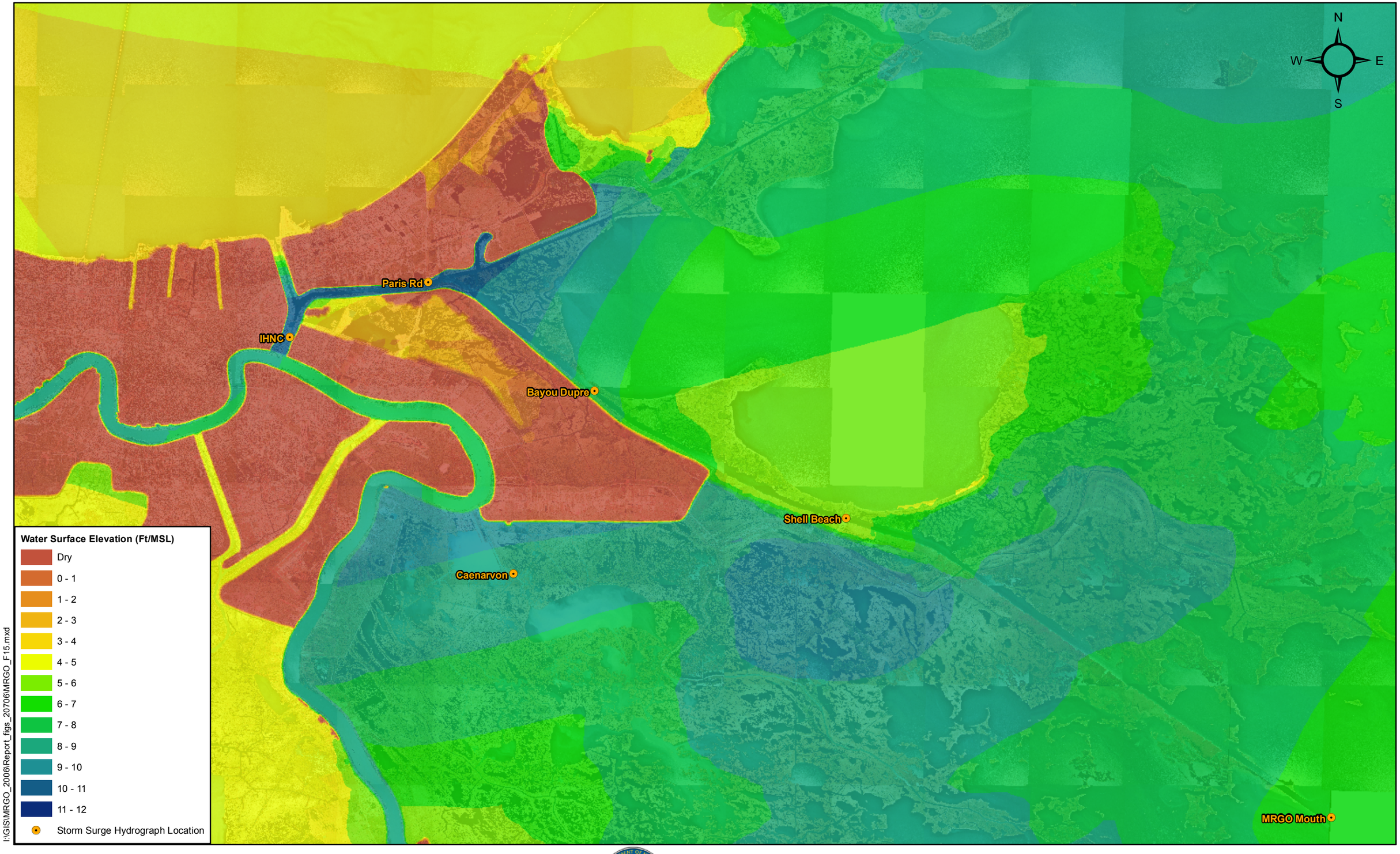


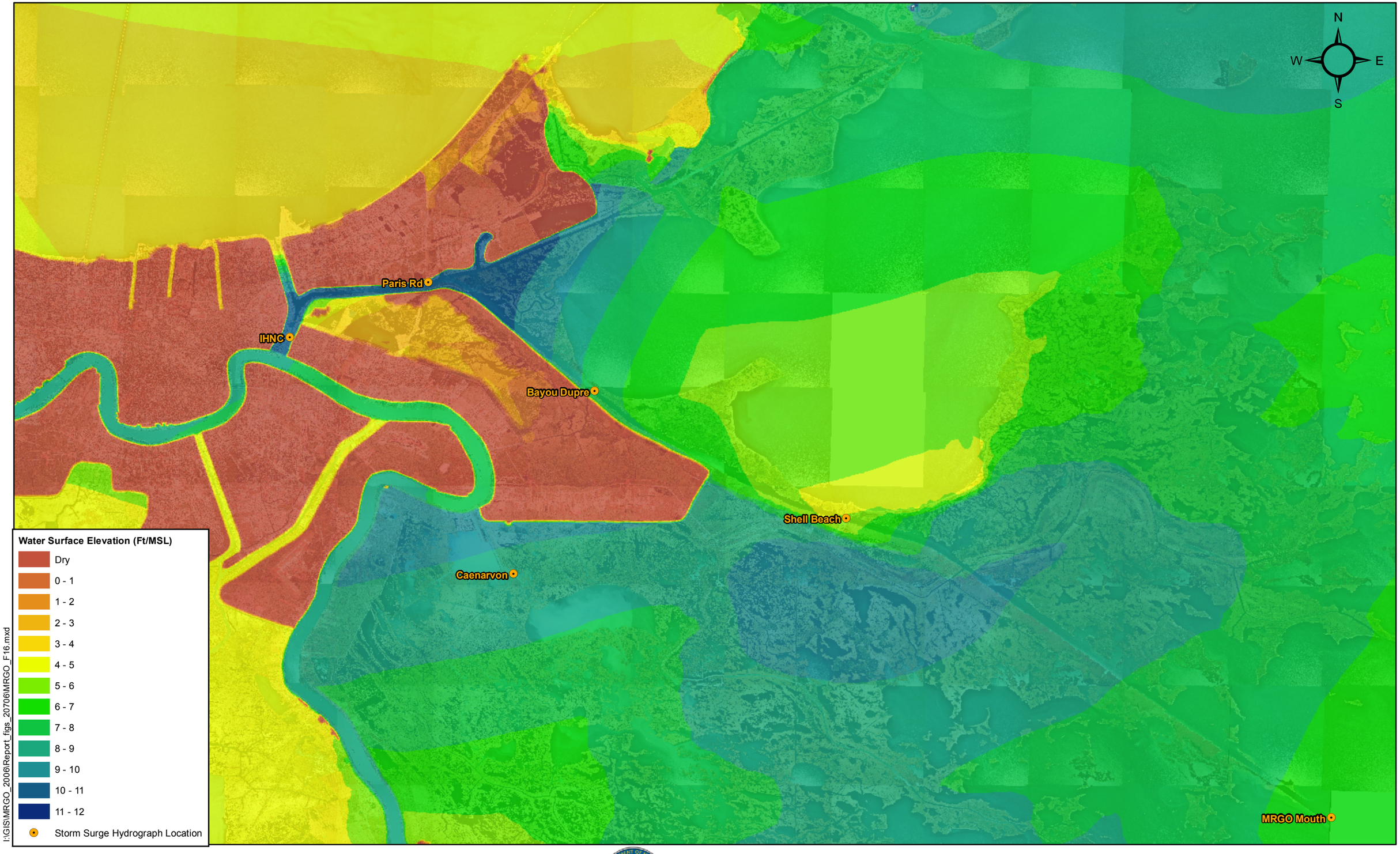
Figure 14
Storm Surge Stage Hydrographs, 124-Knot-Fast Storm, Baseline versus Closed MRGO



URS

Figure 15

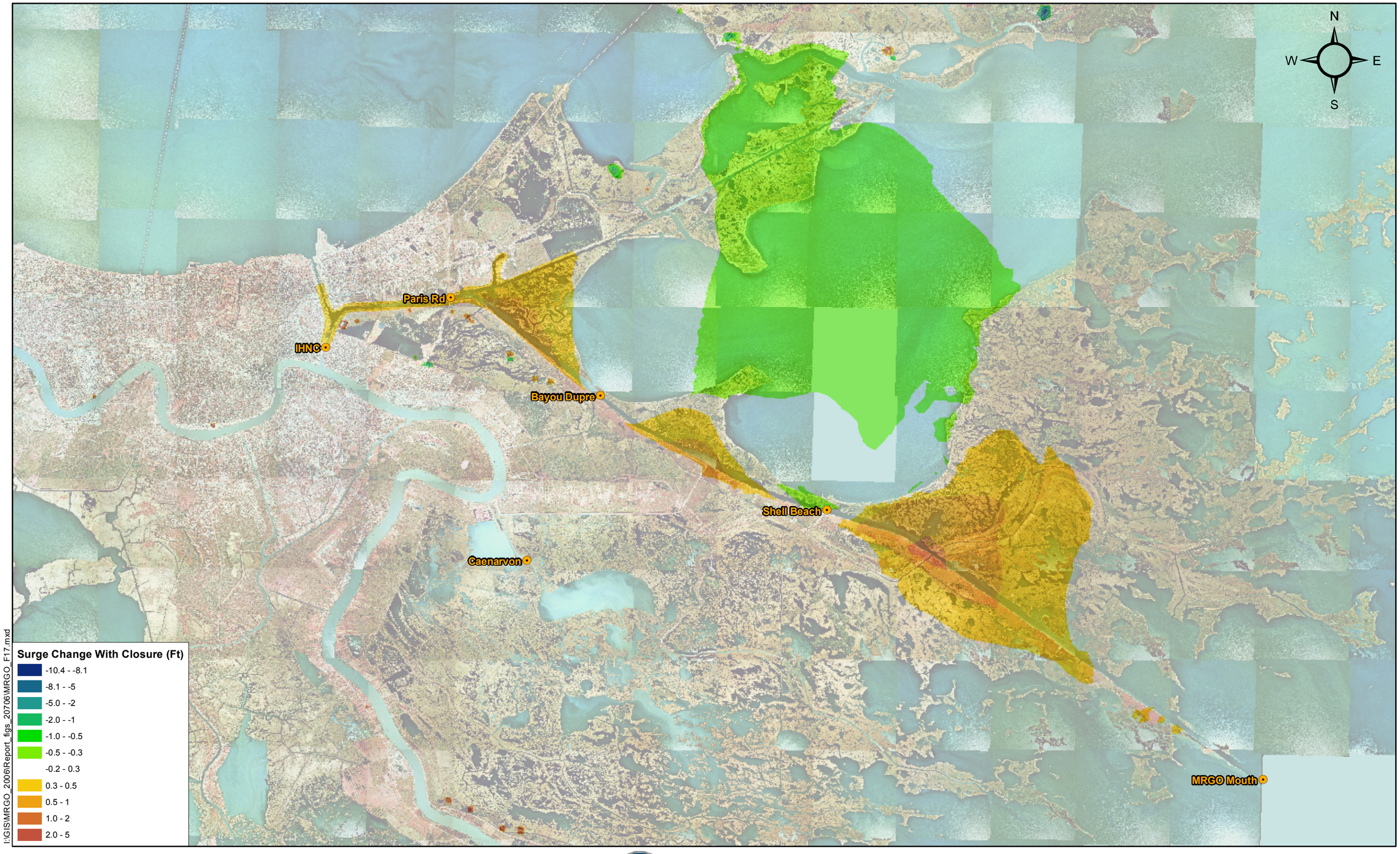
Maximum Water Surface Elevation for Hurricane Betsy, Baseline MRGO



URS

Figure 16

Maximum Water Surface Elevation for Hurricane Betsy, Closed MRGO



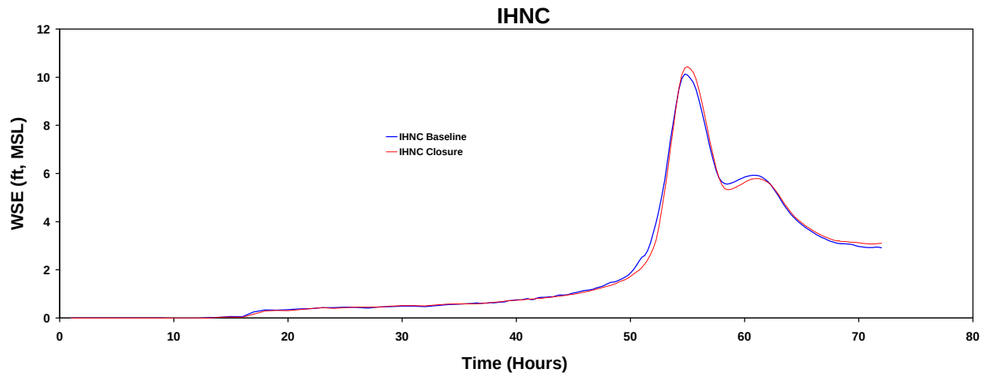
NOTE: Surge Reduction with Closure is Negative (Green).
Surge Increase with Closure is Positive (Red).

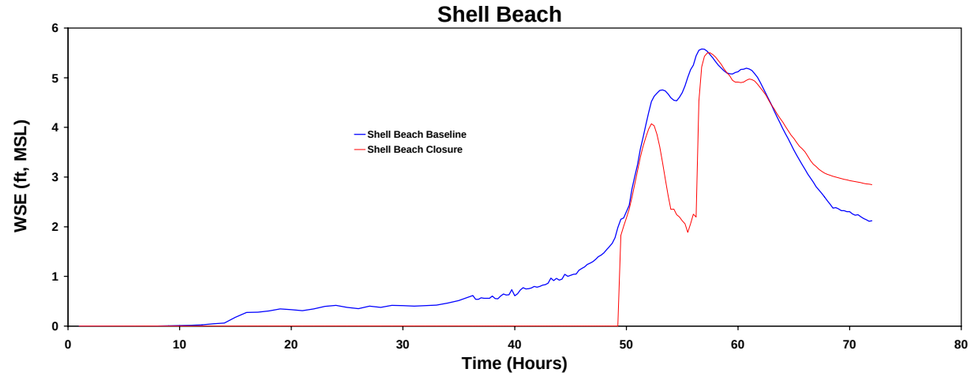
0 10,000 20,000 40,000 Feet

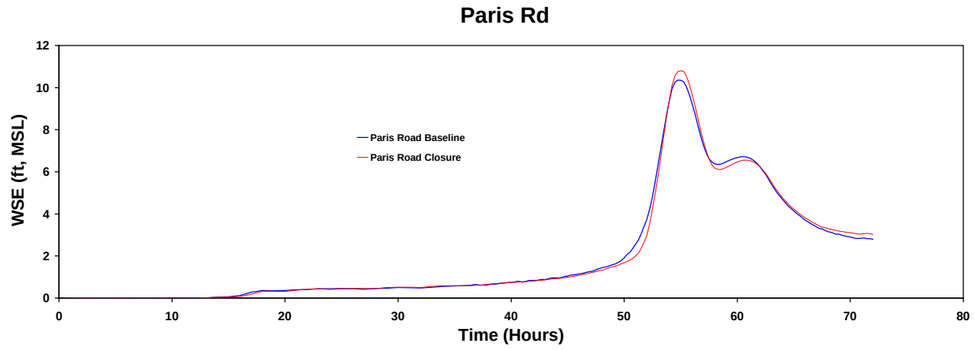
URS

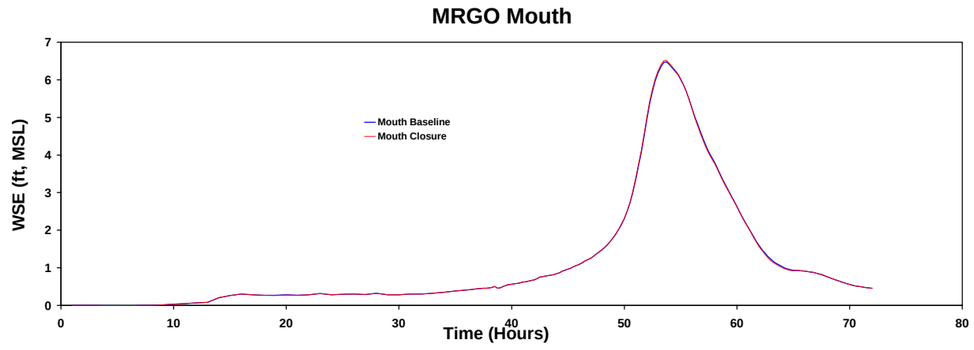
Figure 17

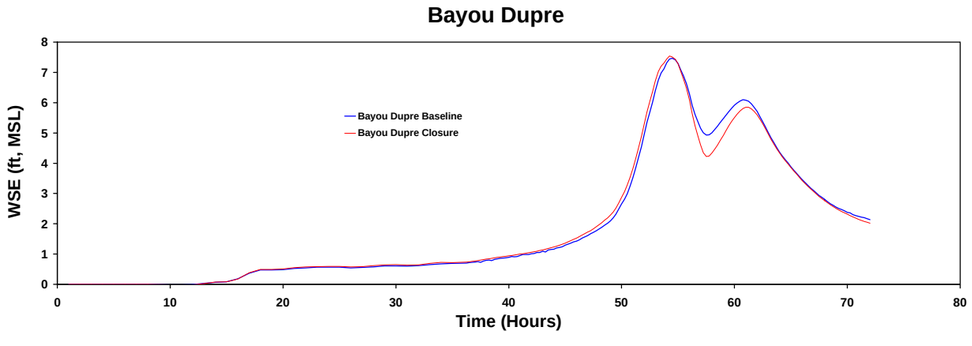
Difference in Maximum Water Surface Elevation for Hurricane Betsy, Baseline vs. Closed MRGO











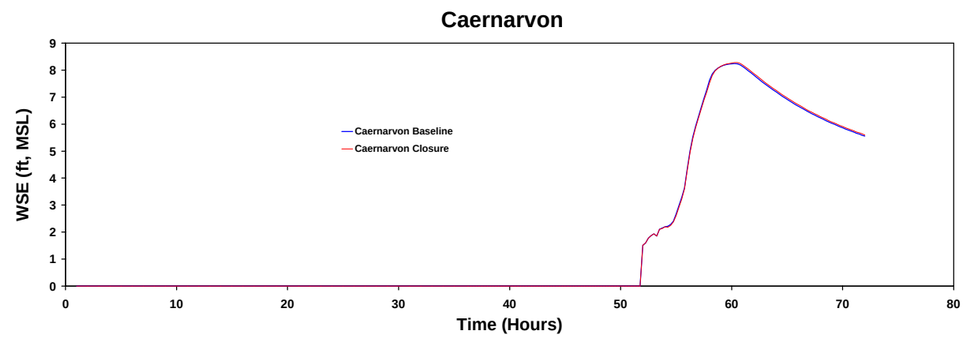
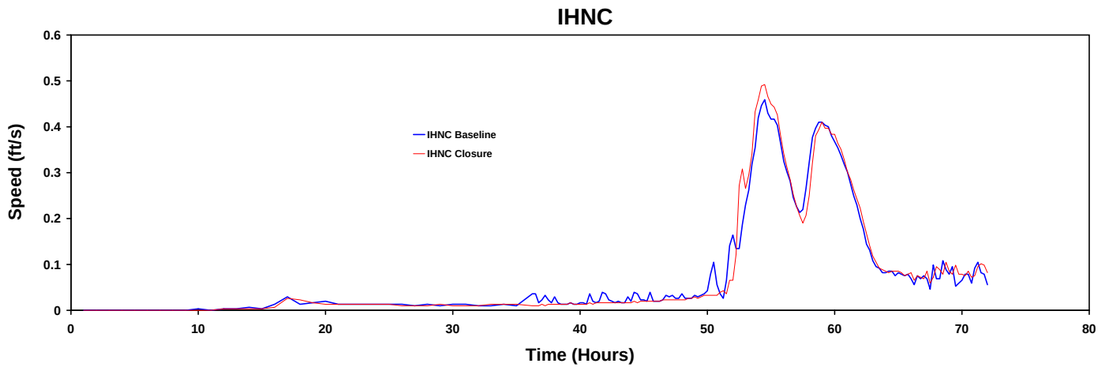
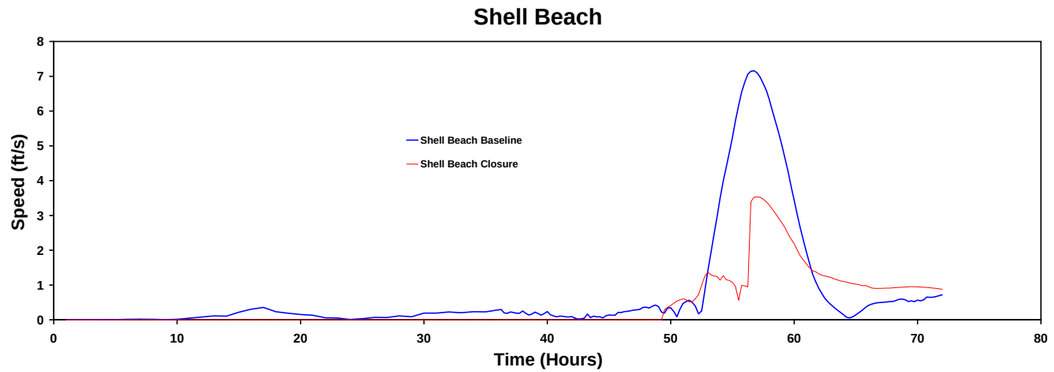
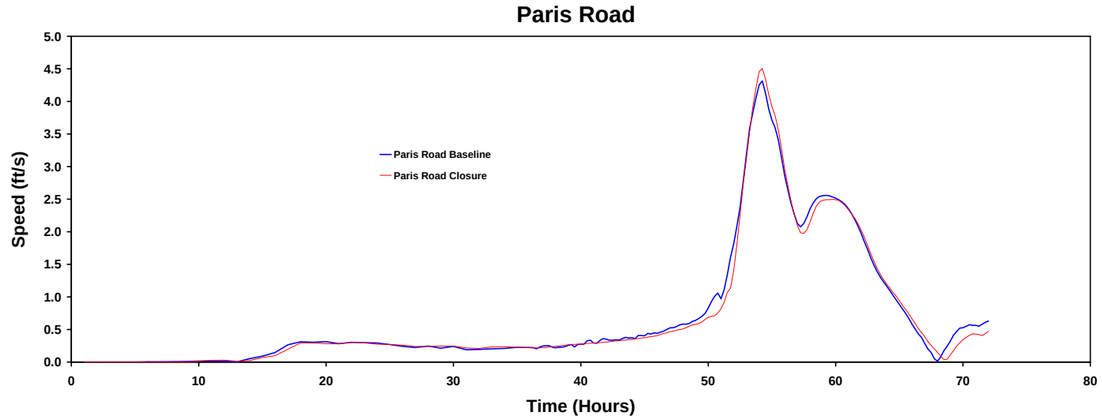
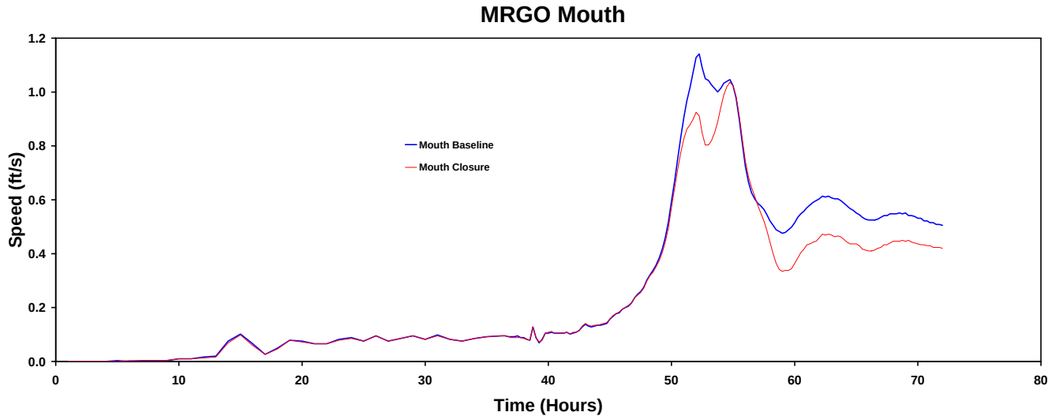


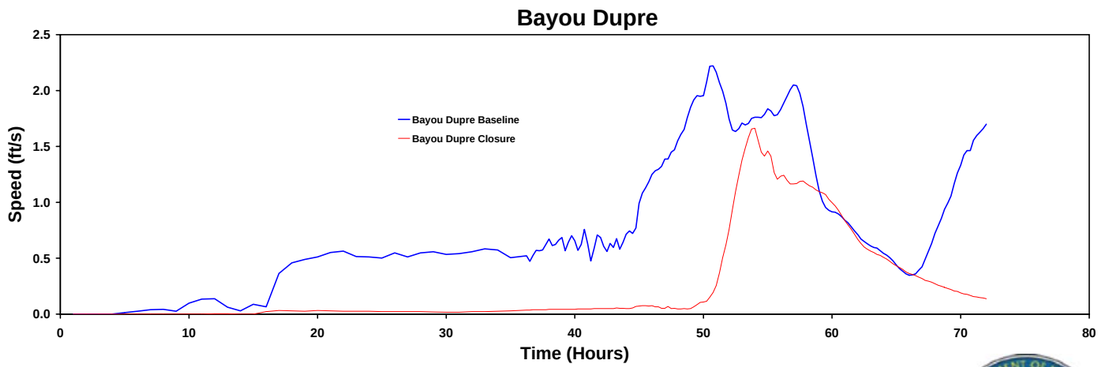
Figure 18
Storm Surge Stage Hydrographs, Betsy (WOT), Baseline versus Closed MRGO











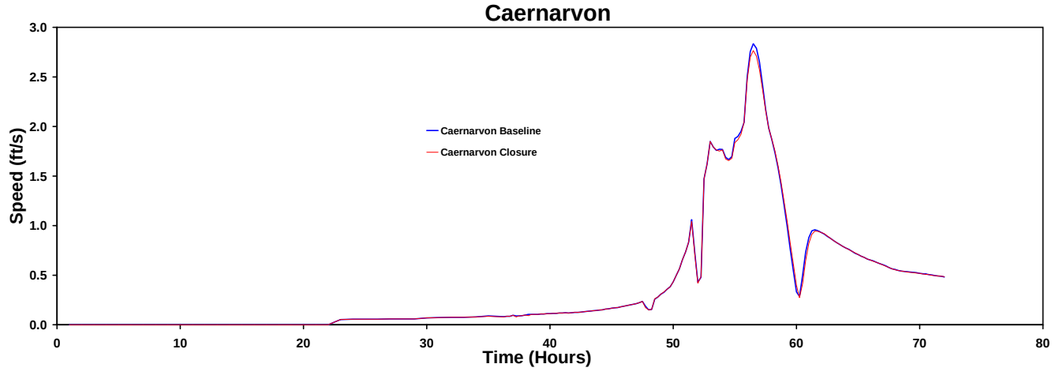


Figure 19
Storm Surge Current Speed Hydrographs, Betsy (WOT), Baseline versus Closed MRGO

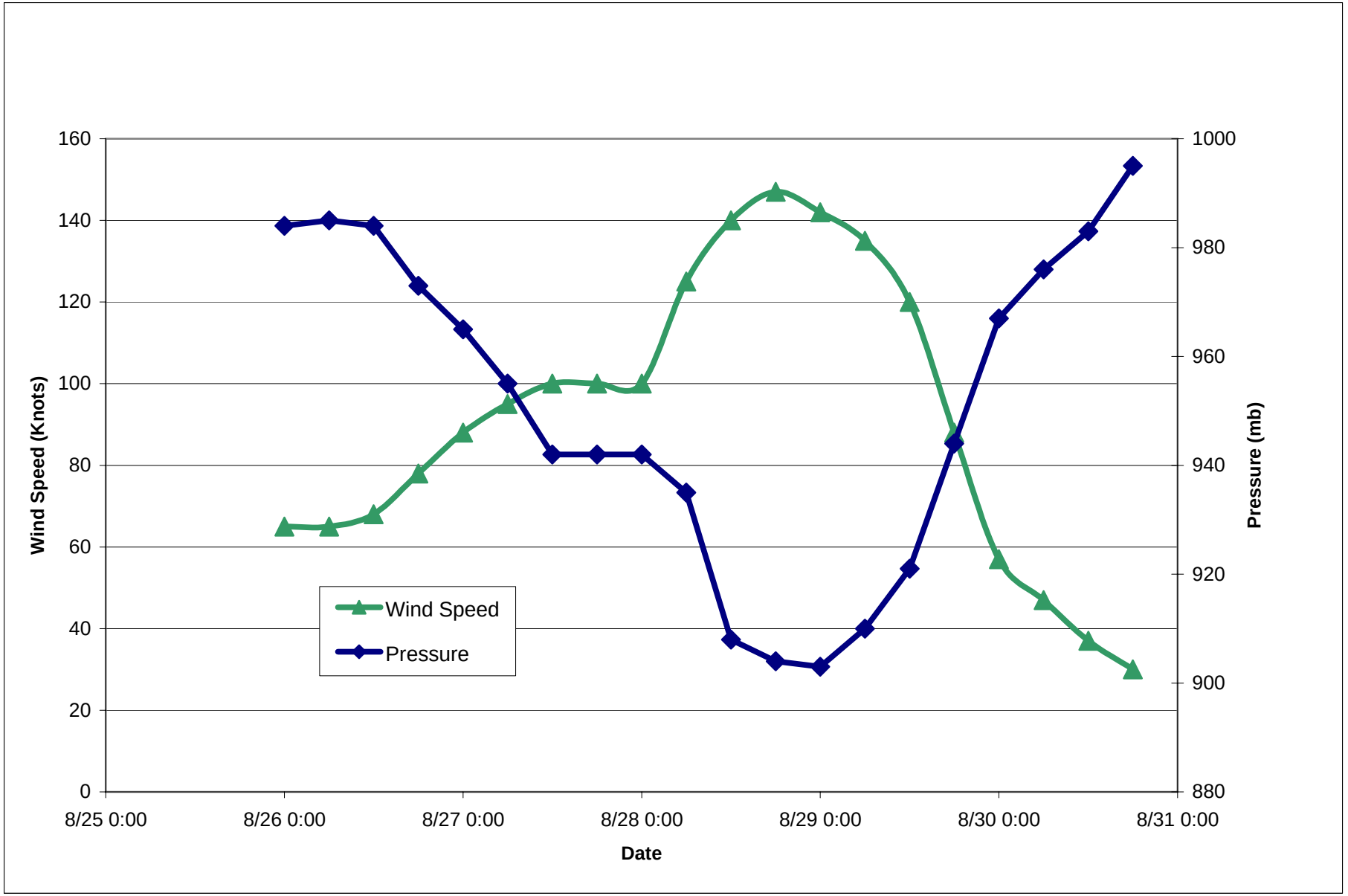


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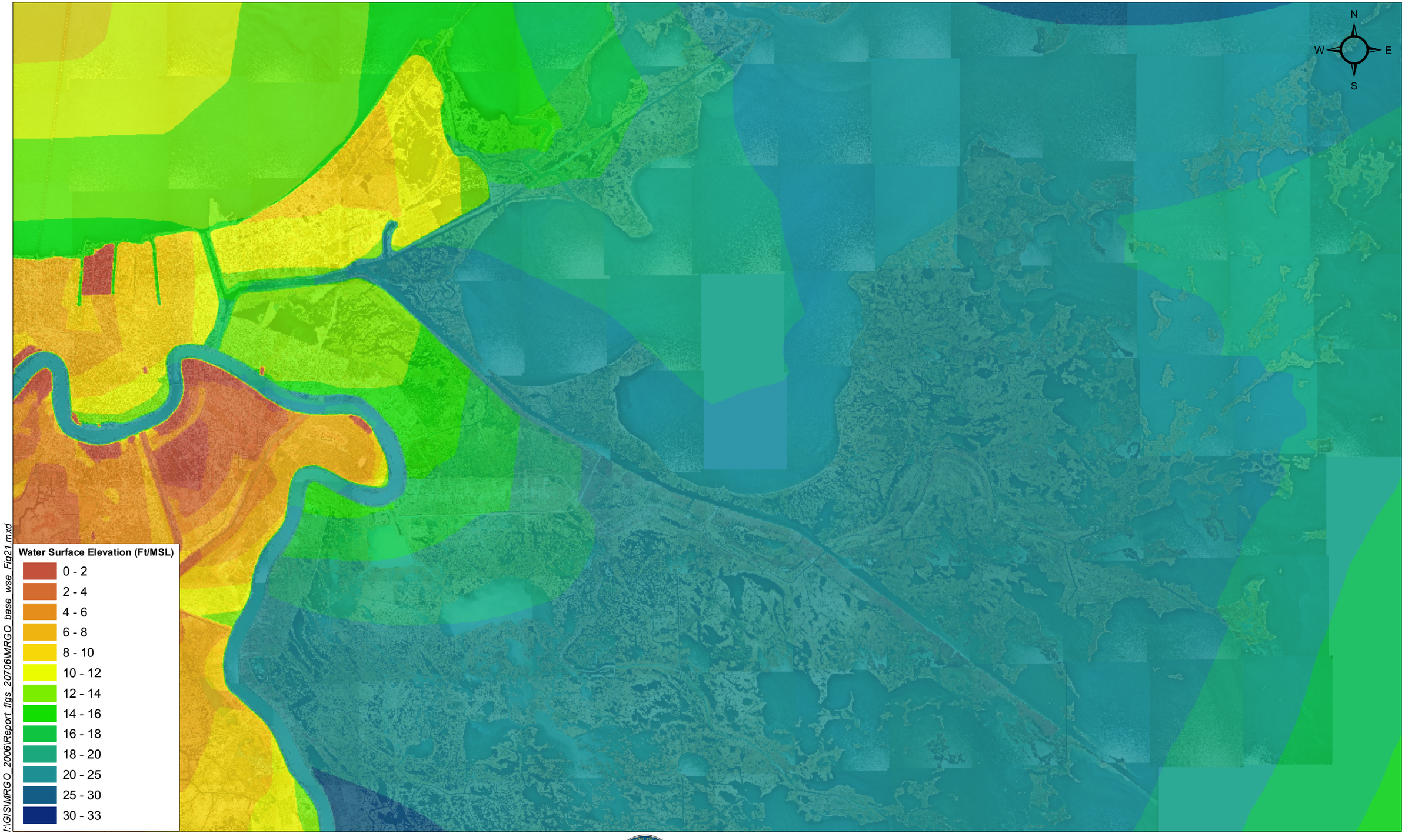
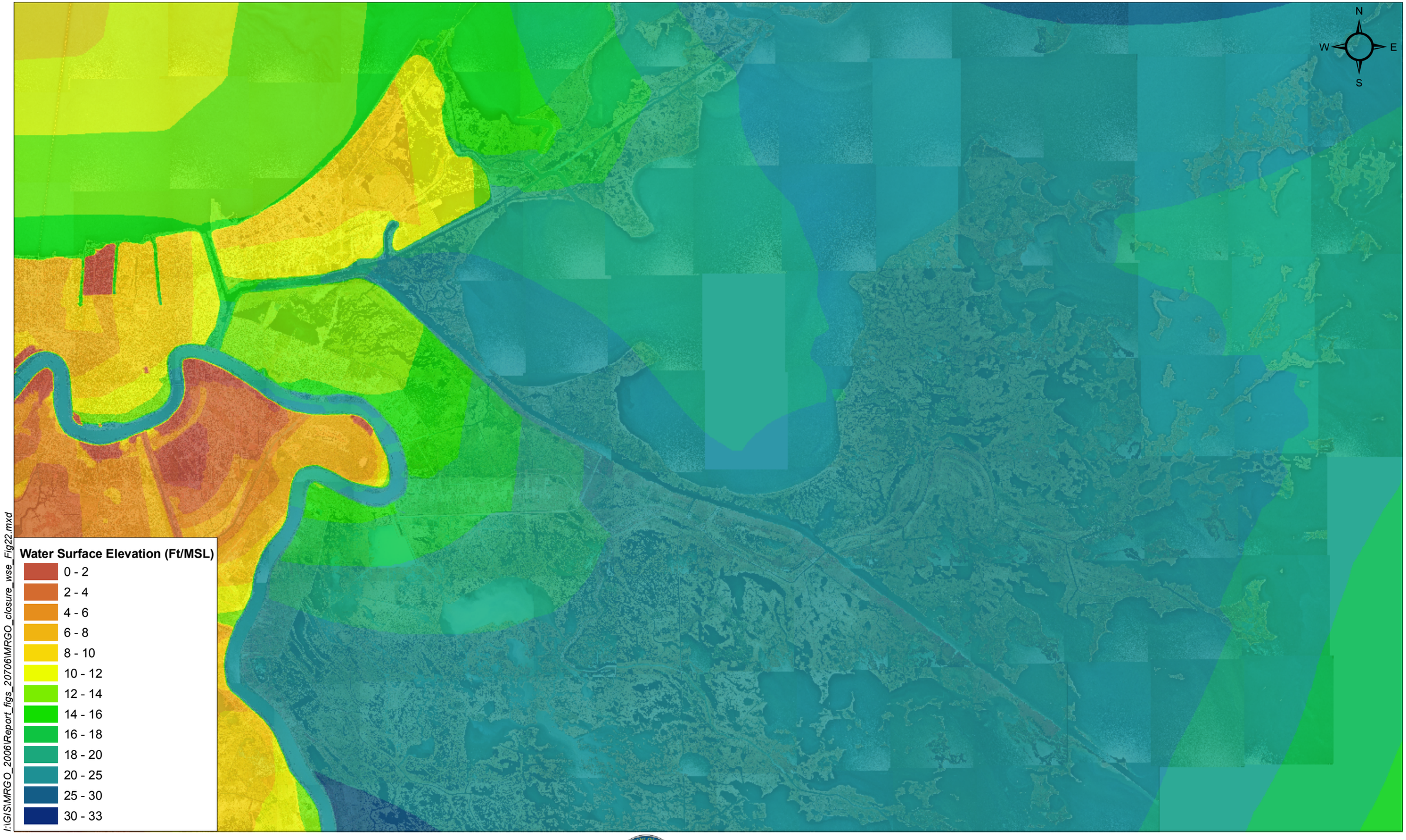
Figure 20
Hurricane Katrina Simulation



URS

Figure 21

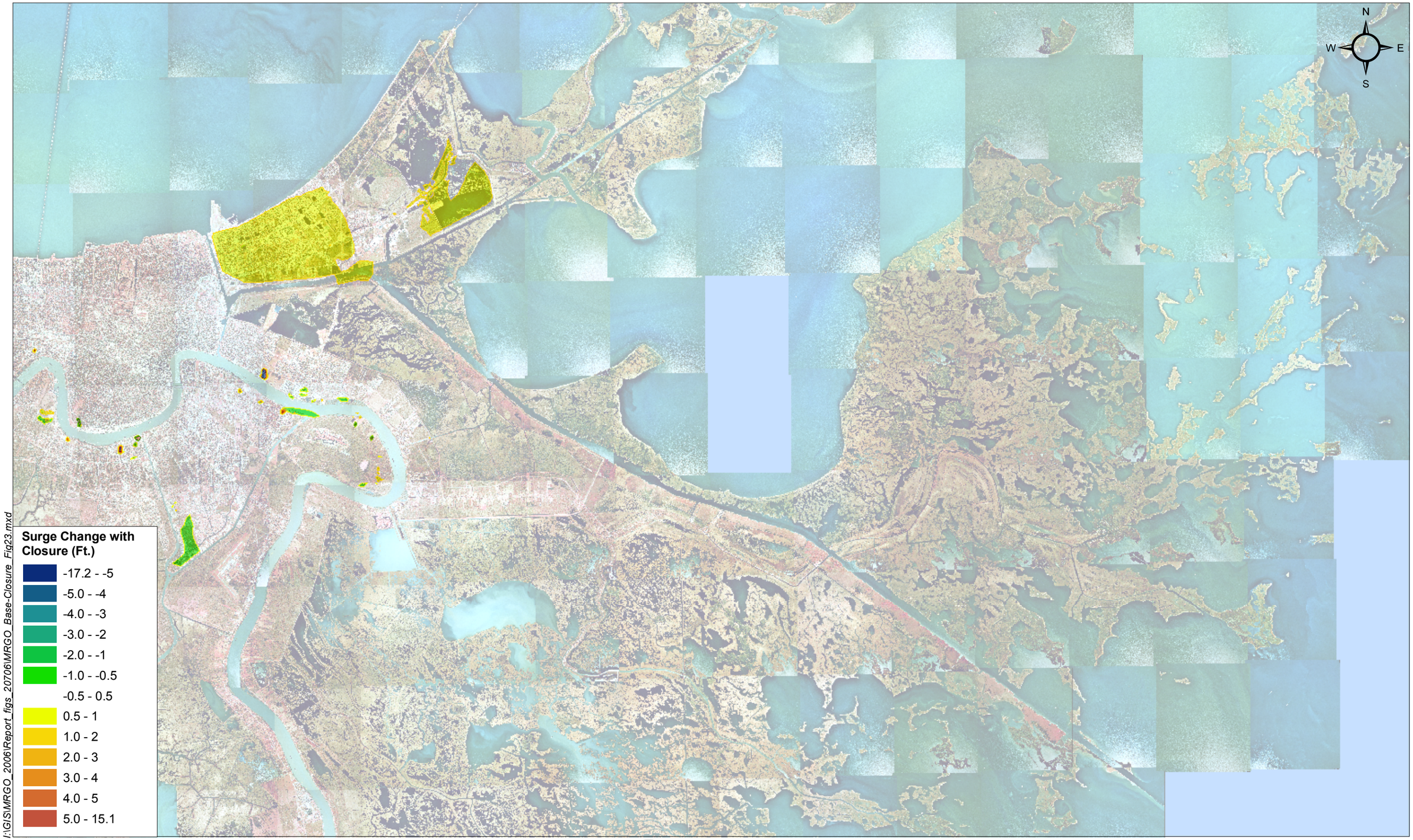
Maximum Water Surface Elevation for Hurricane Katrina, Baseline MRGO



URS

Figure 22

Maximum Water Surface Elevation for Hurricane Katrina, Closed MRGO



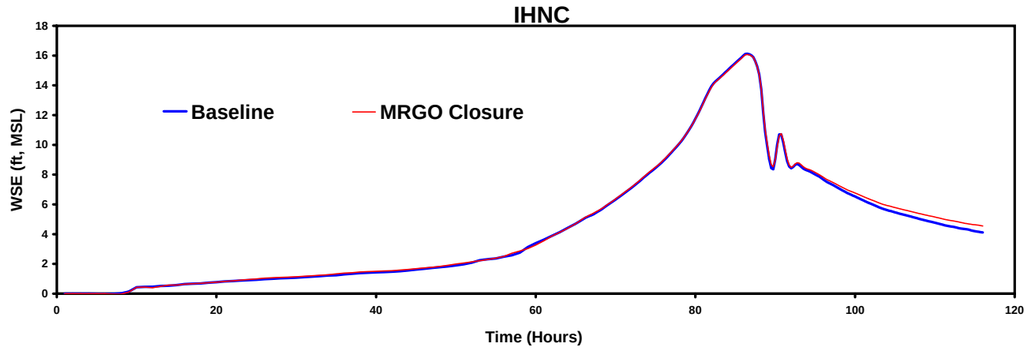
NOTE: Surge Reduction with Closure is Negative (Green).
Surge Increase with Closure is Positive (Red).

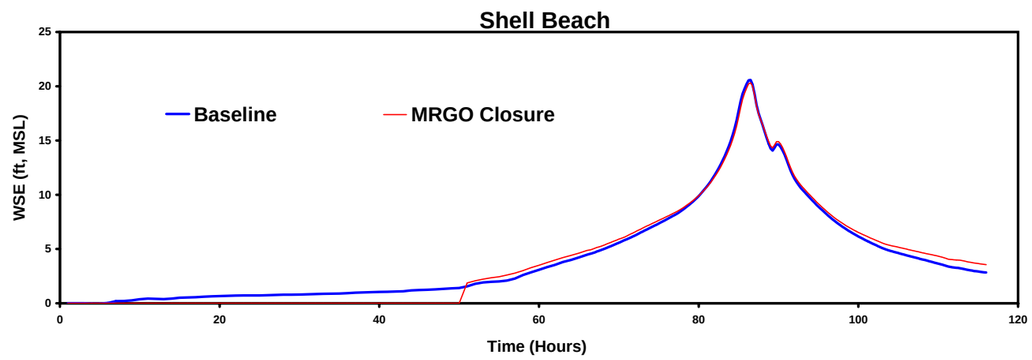
0 10,000 20,000 40,000 Feet

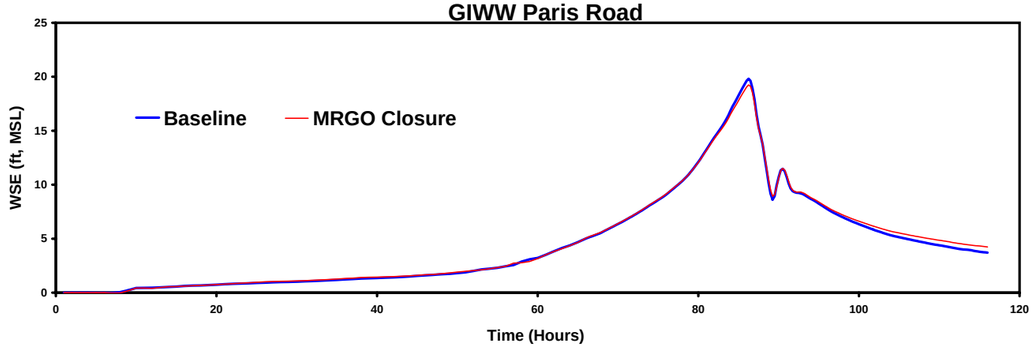
URS

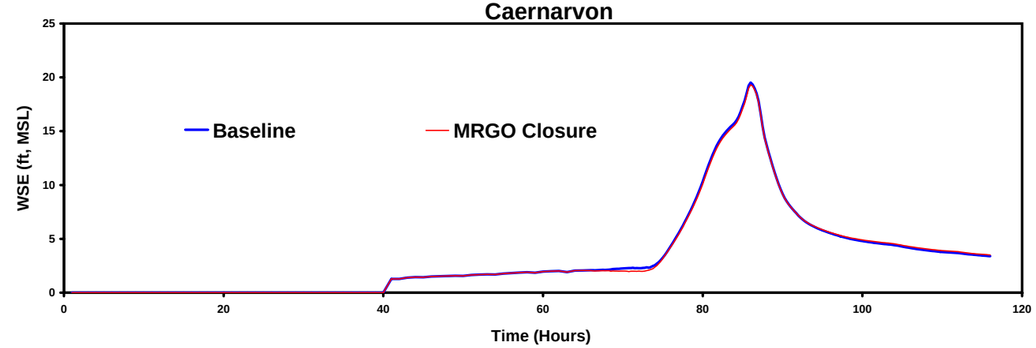
Figure 23

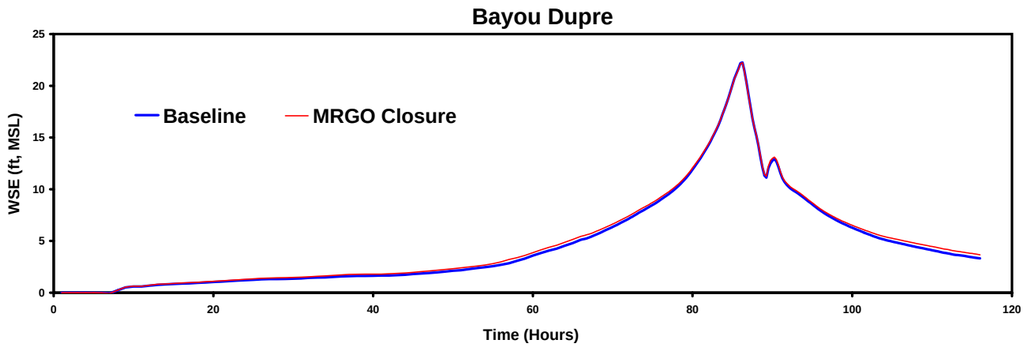
Difference in Maximum Water Surface Elevation for Hurricane Katrina, Baseline vs. Closed MRGO











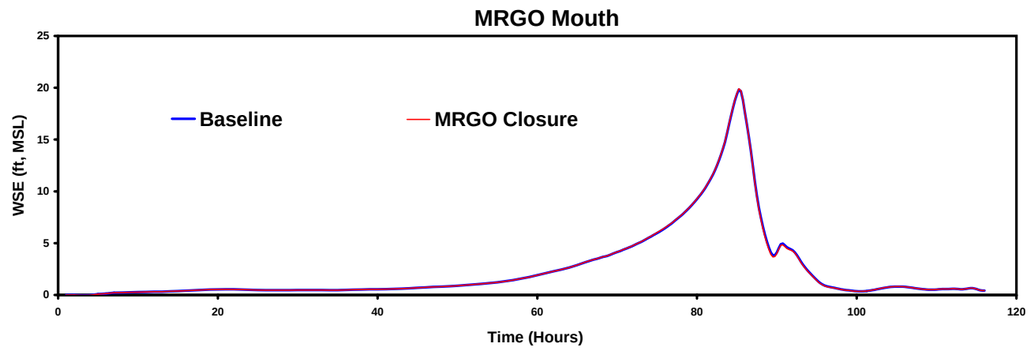
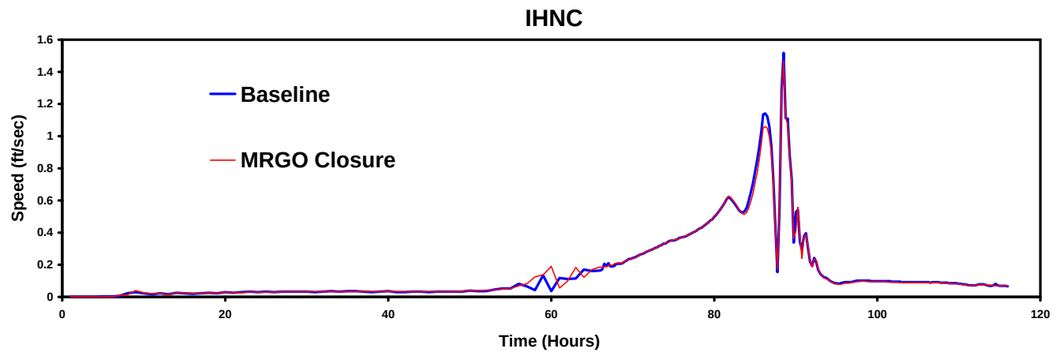
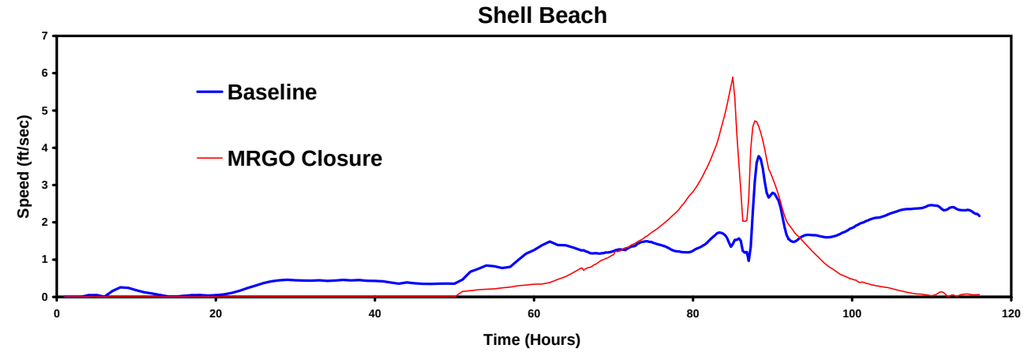
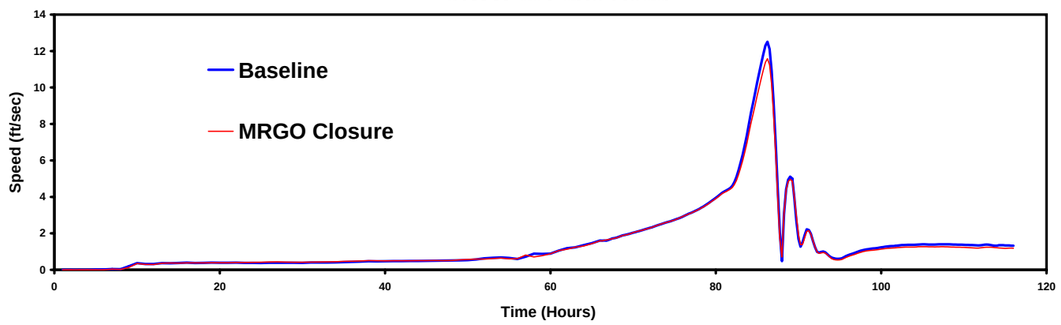
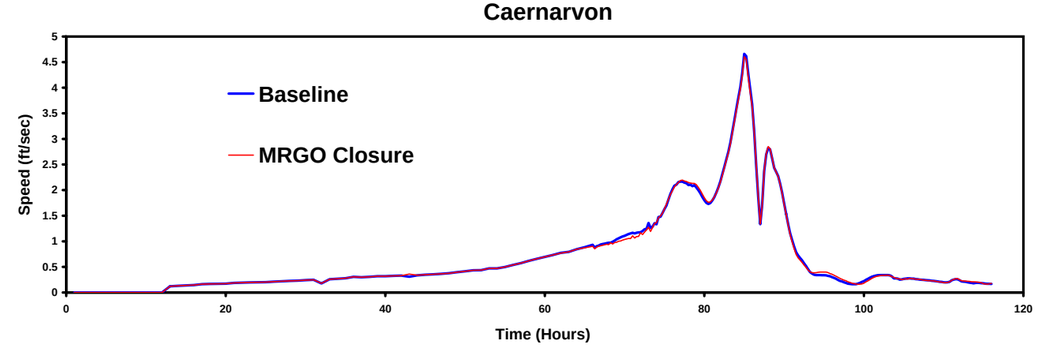


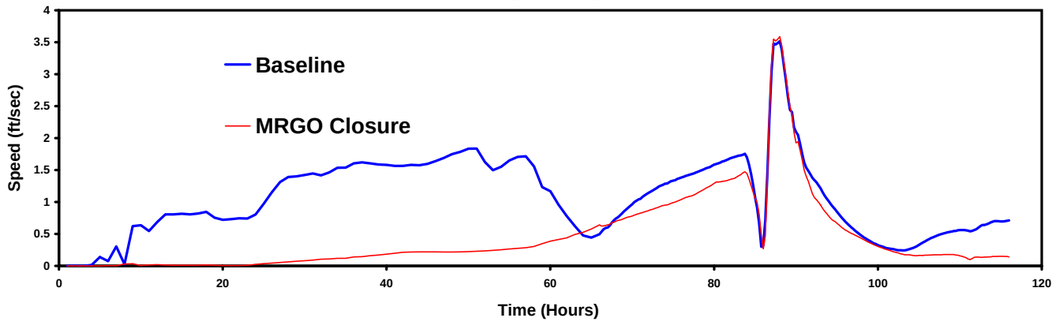
Figure 24
Storm Surge Hydrographs, Hurricane Katrina, Baseline versus Closed MRGO











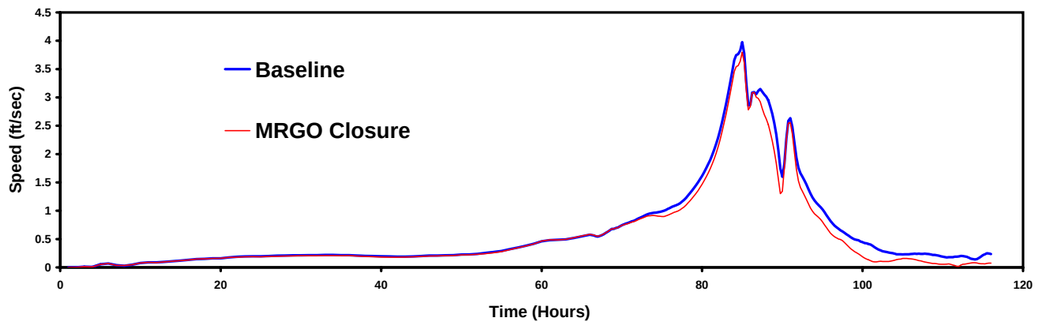


Figure 25
Storm Surge Current Speed Hydrographs, Hurricane Katrina, Baseline versus Closed MRGO

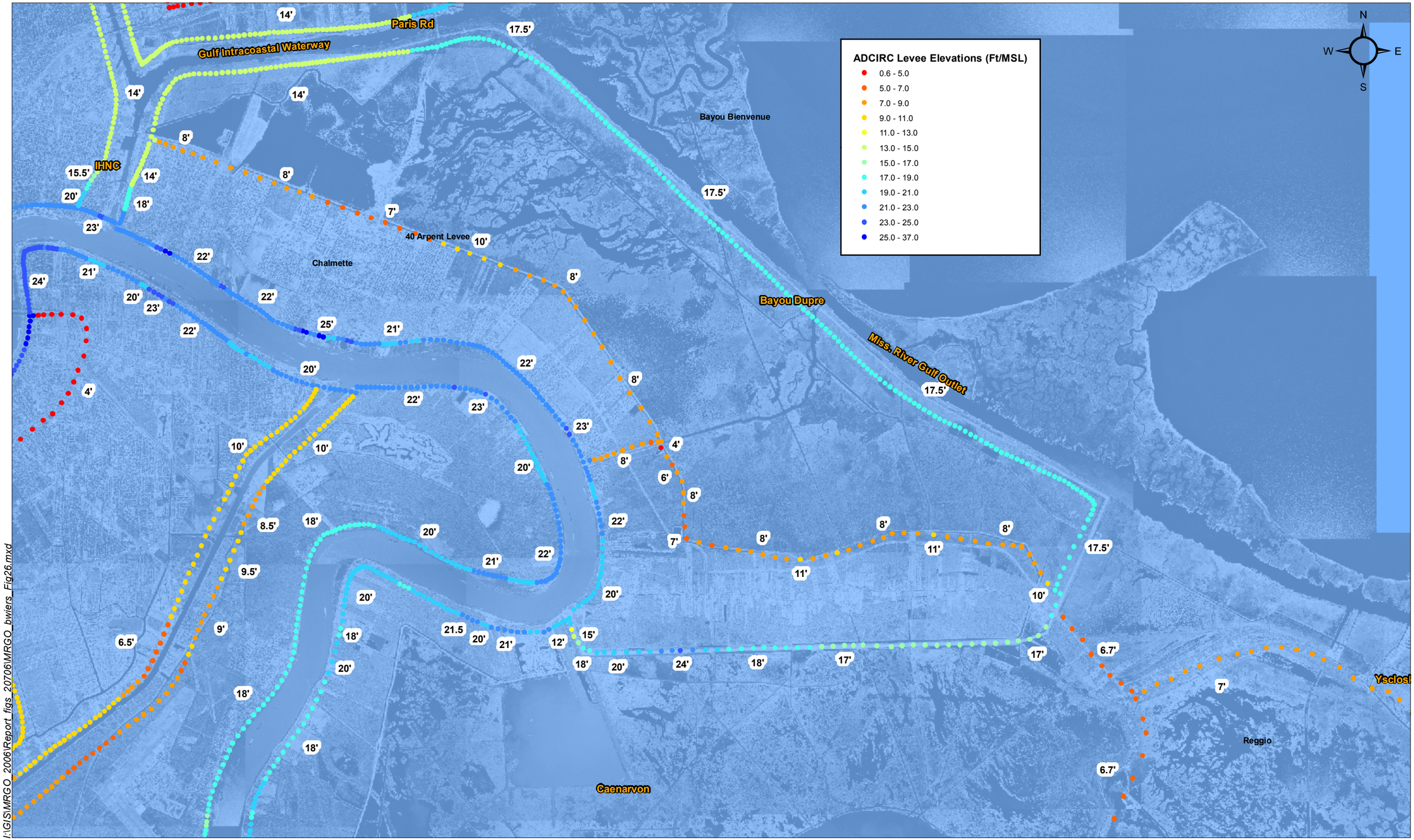


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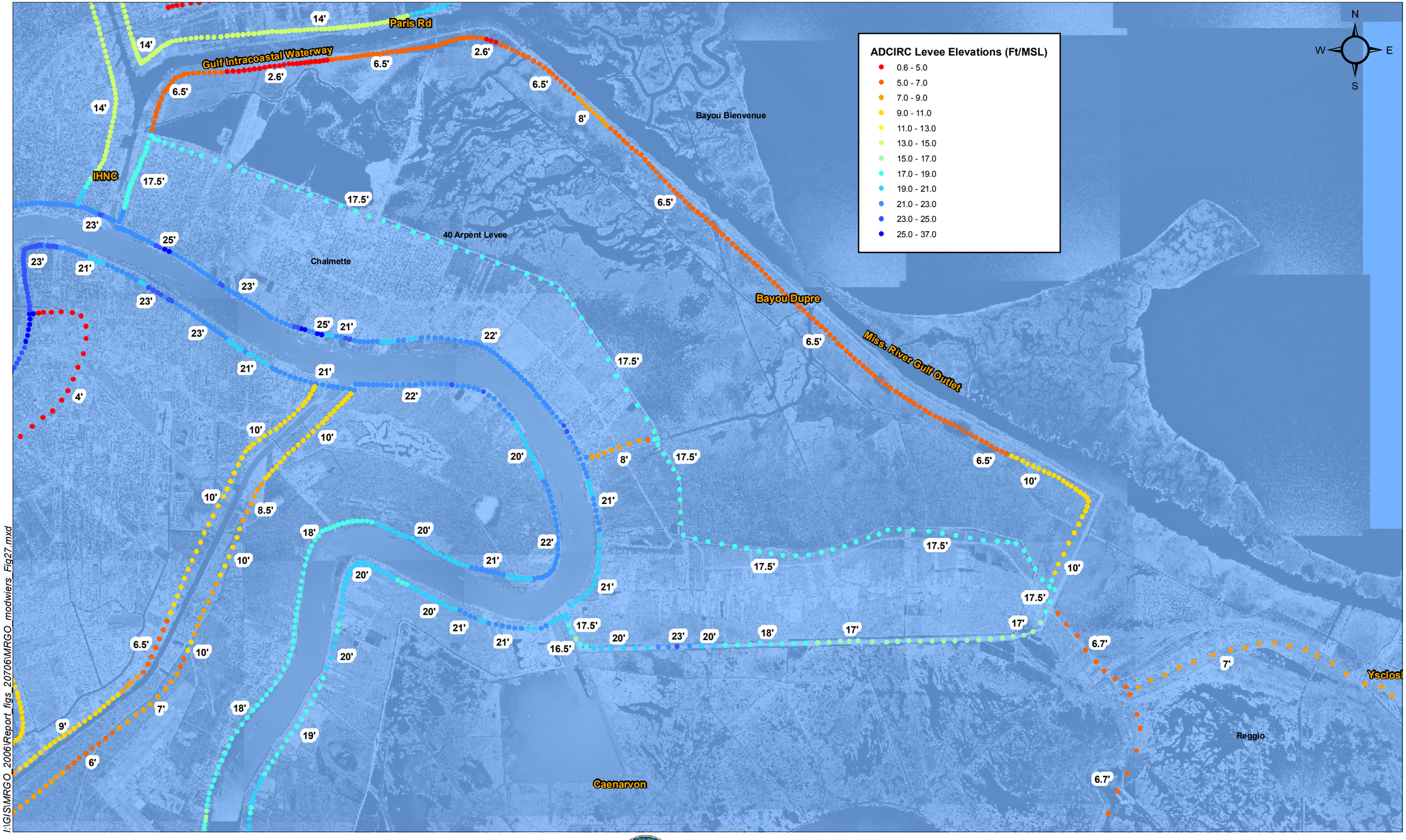
Figure 26
Baseline/2003 ADCIRC Levees
ADCIRC Grid



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0 10,000 20,000 40,000 Feet

URS

Note: Reduced levee elevations along the MRGO and GIWW were based on the elevation of the existing grid points behind the levees.

Figure 27
Modified Levees

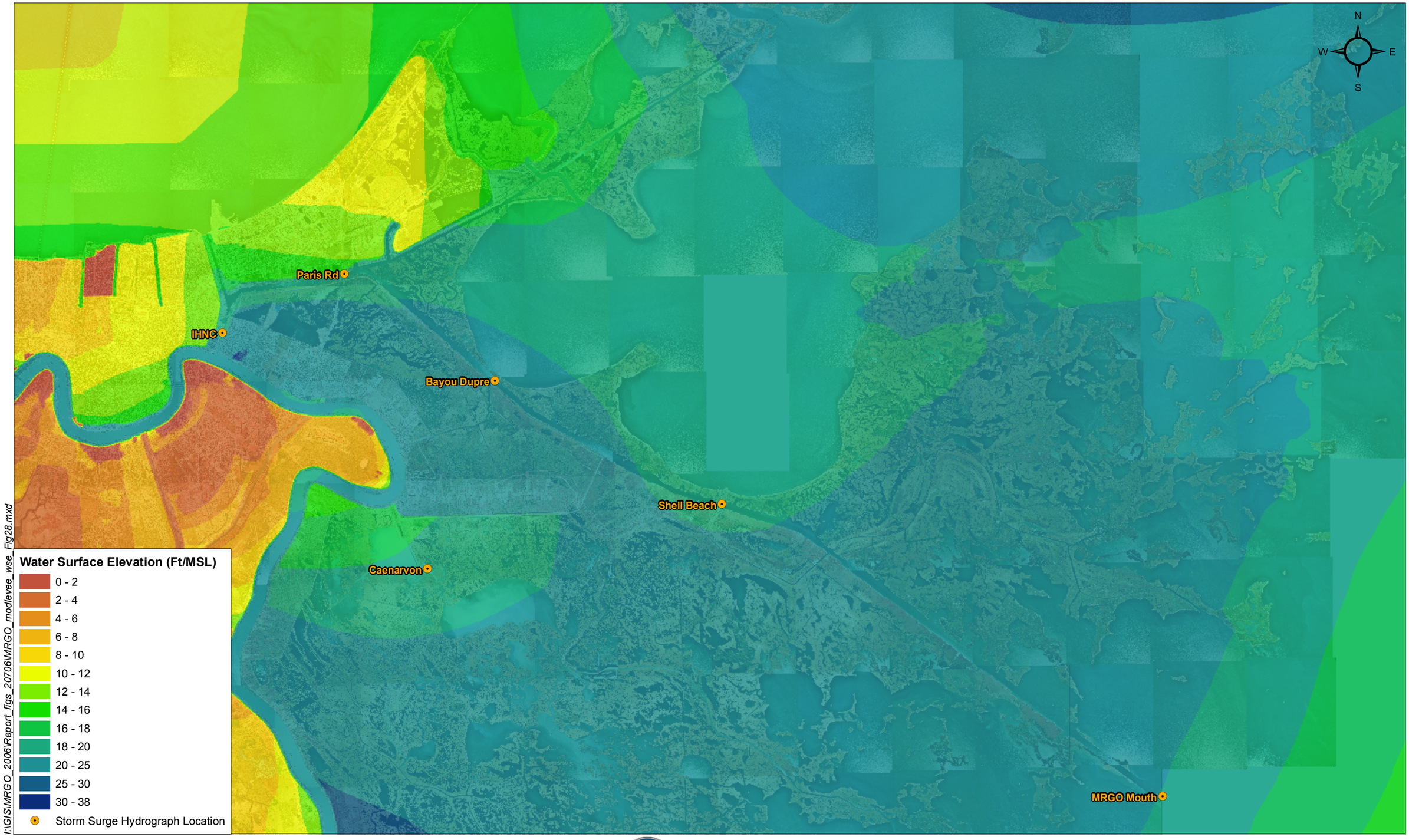
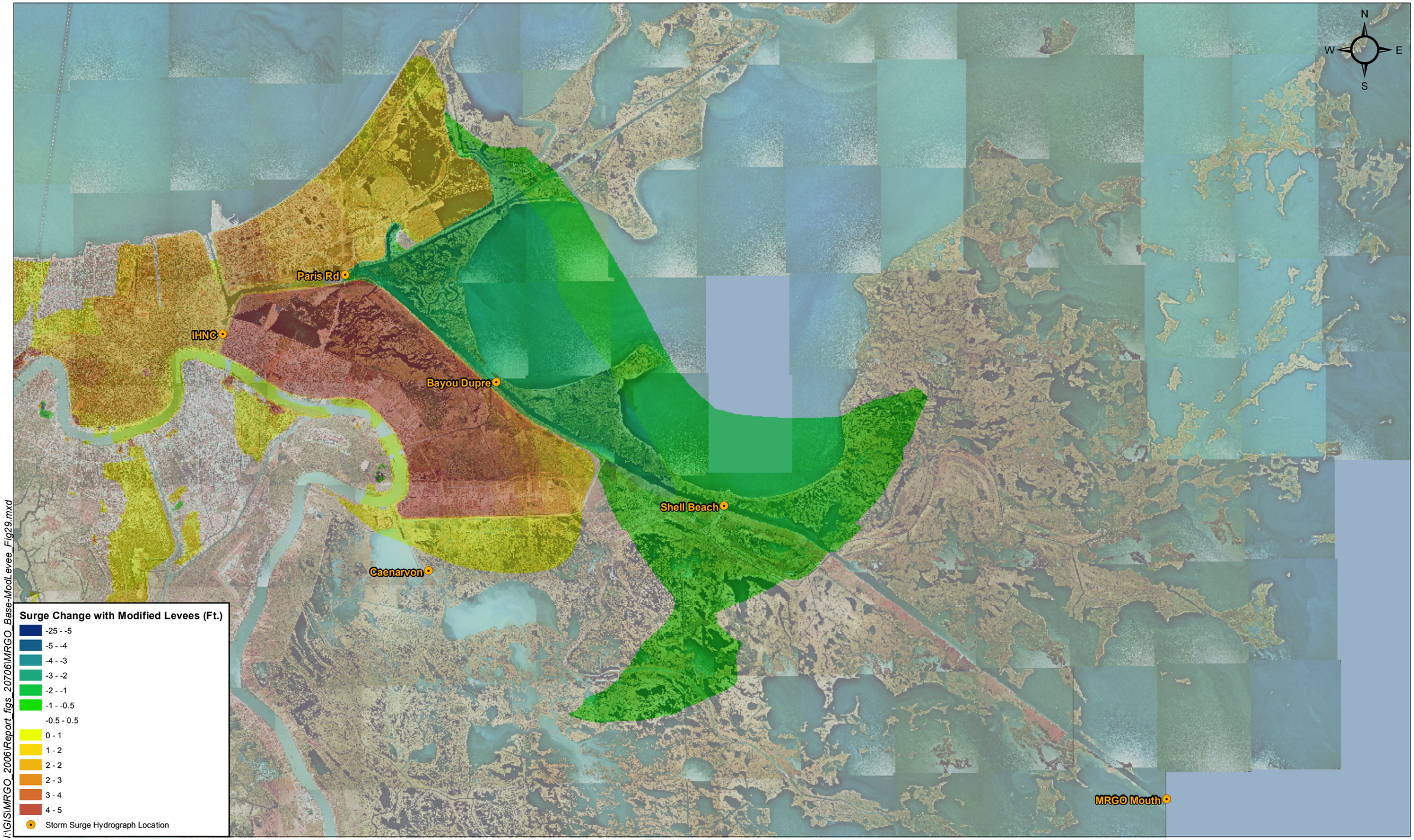


Figure 28

Maximum Water Surface Elevation for Hurricane Katrina, Modified Levee MRGO



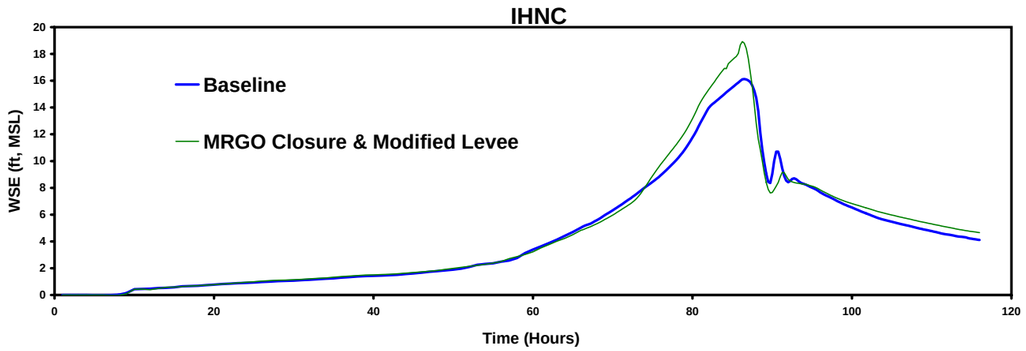
NOTE: Surge Reduction with Modification is Negative (Green).
Surge Increase with Modification is Positive (Red).

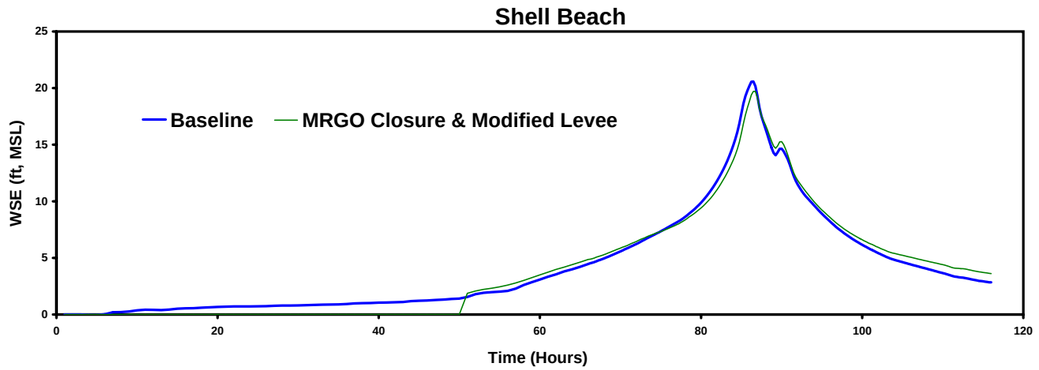
0 10,000 20,000 40,000 Feet

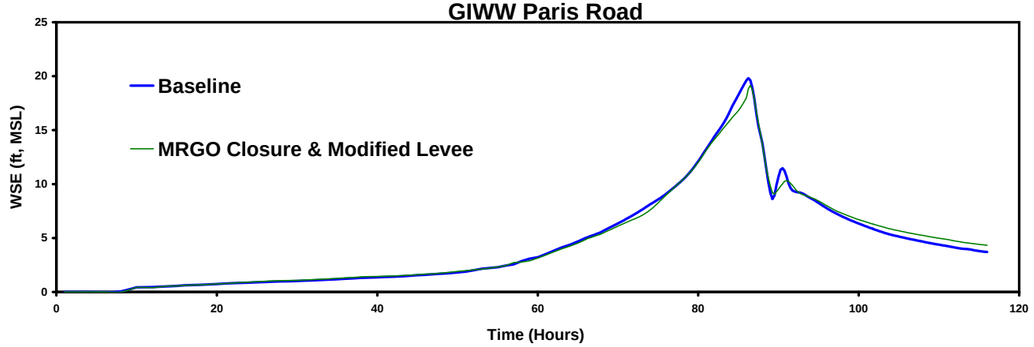
URS

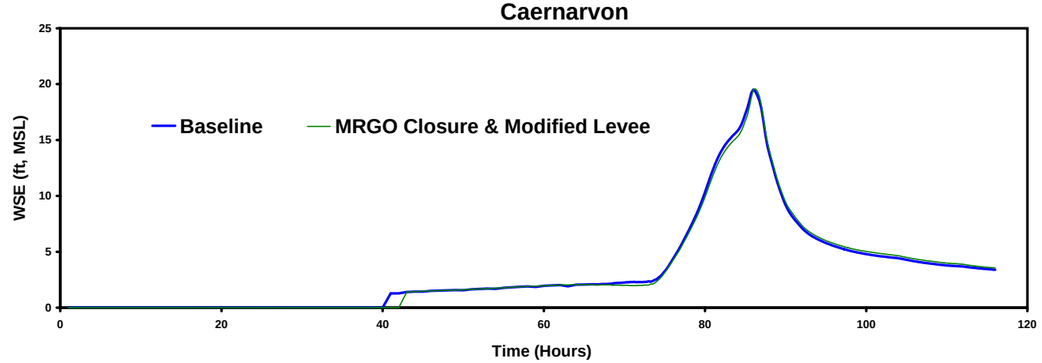
Figure 29

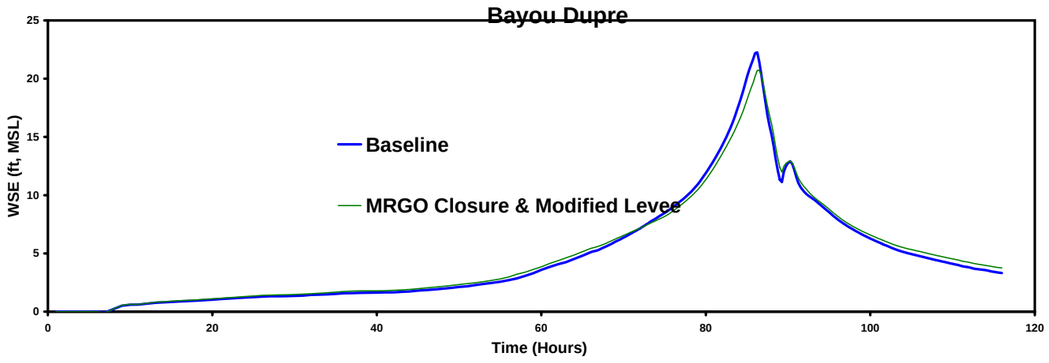
Difference in Maximum Water Surface Elevation for Hurricane Katrina, Baseline vs. Modified Levees MRGO











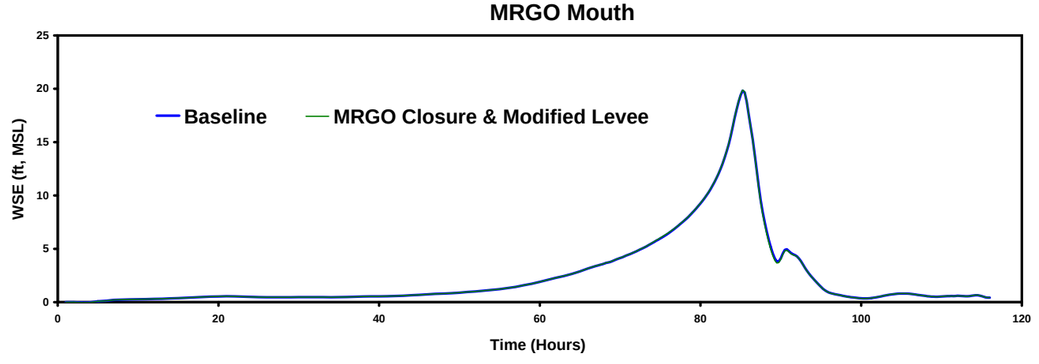
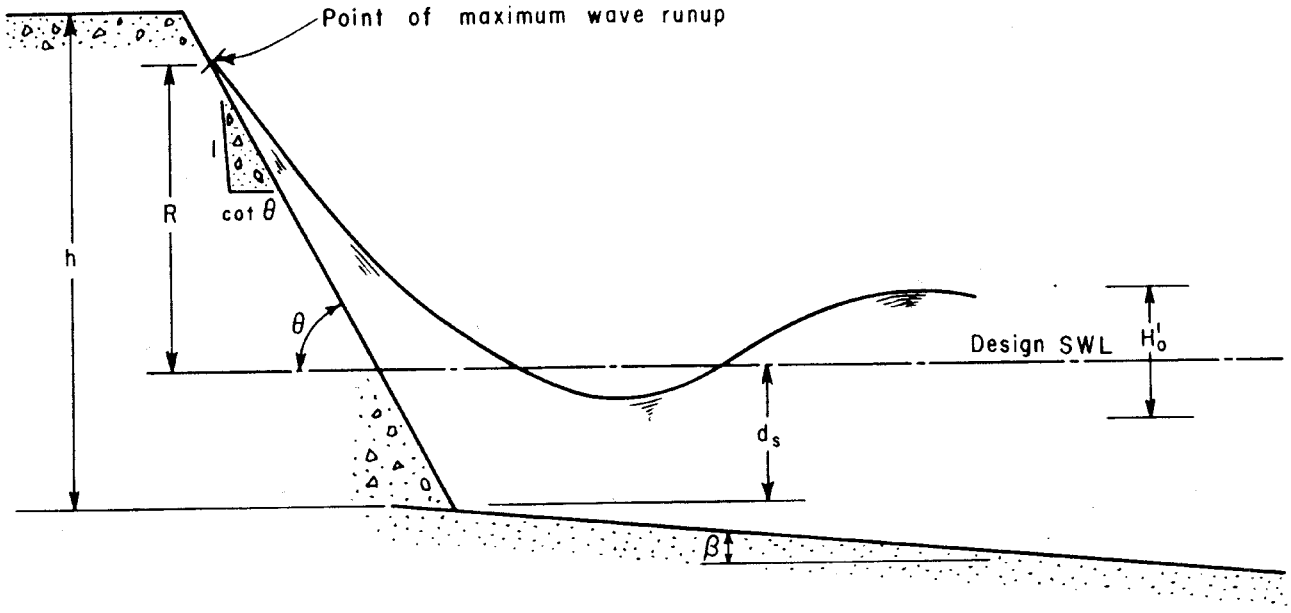


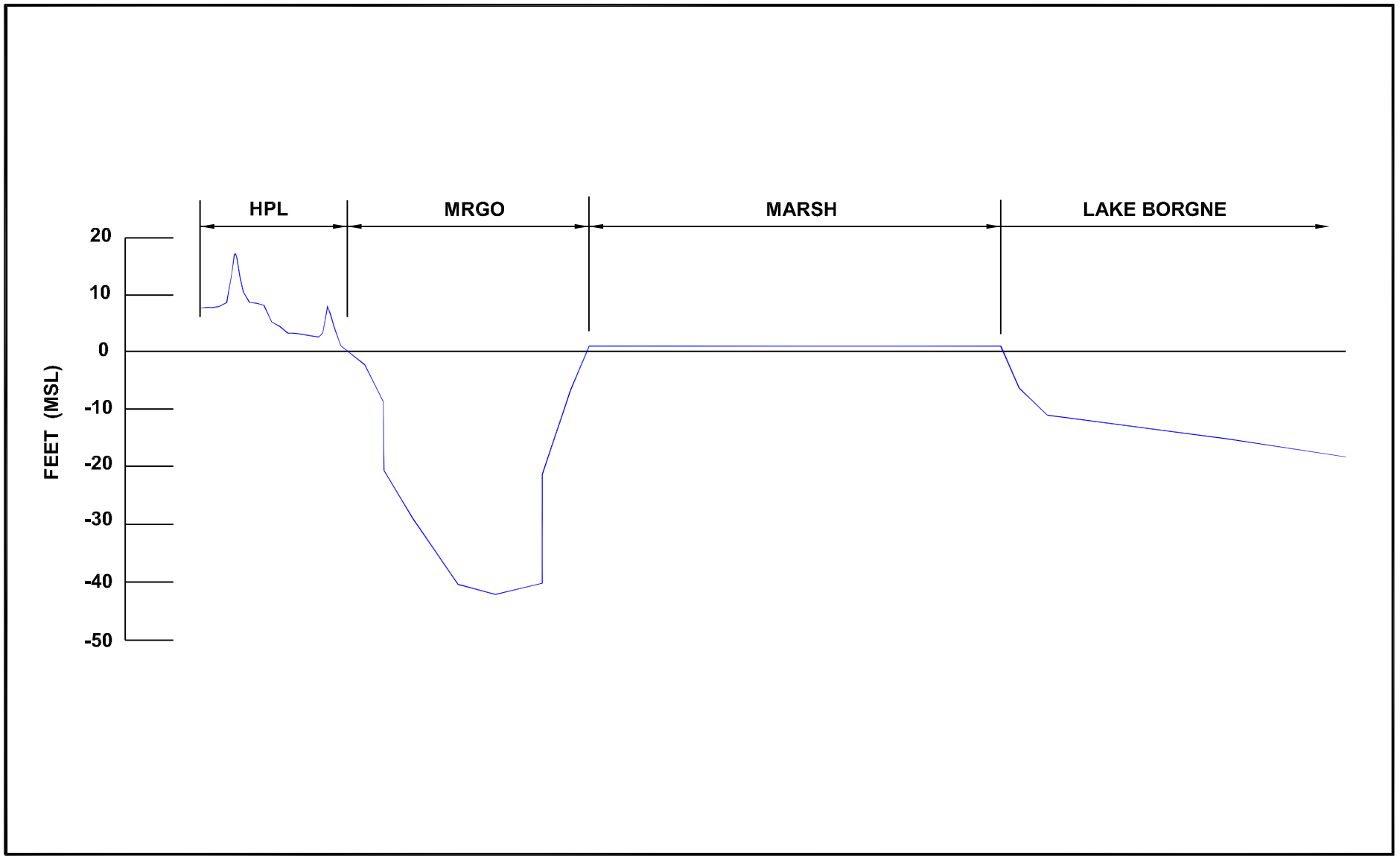
Figure 30
Storm Surge Hydrographs, Hurricane Katrina, Baseline versus Modified Levees



G:\LDNR\MRGO\DWG\MRGO_F20.dwg

Figure 31

Schematic of Wave Set-up and Run-up



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0 500 1000

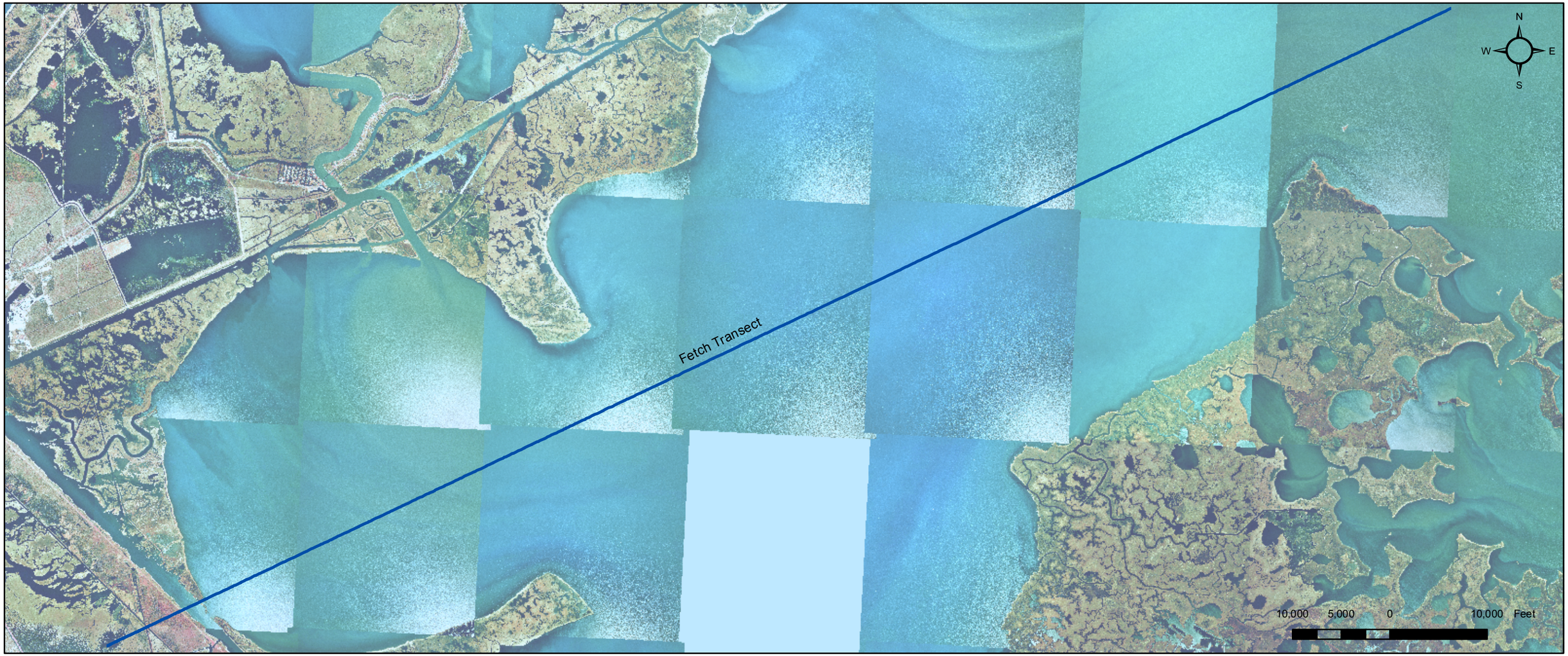
HORIZONTAL SCALE IN FEET

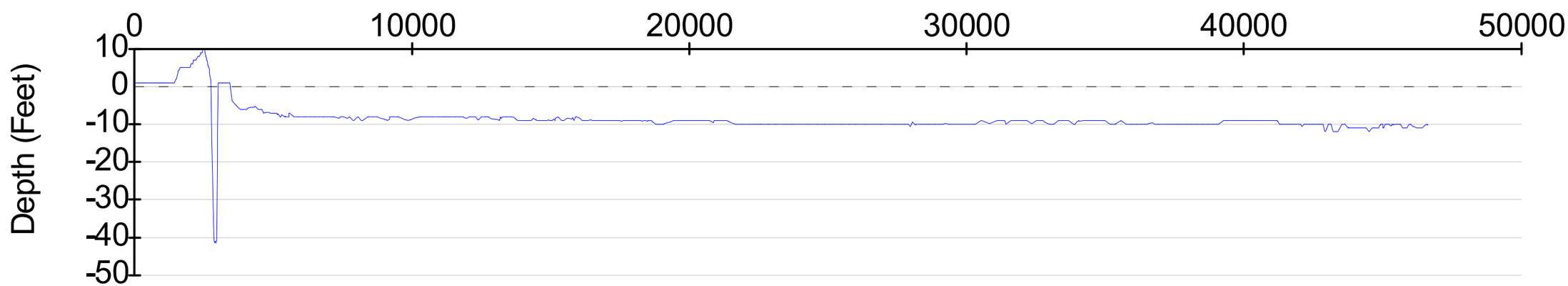
VERTICAL EXAGGERATION 20X

URS

Figure 32

Hurrican Protection Levee Cross-Section Near Bayou Dupre, Station 673+00





Horizontal Scale in Meters

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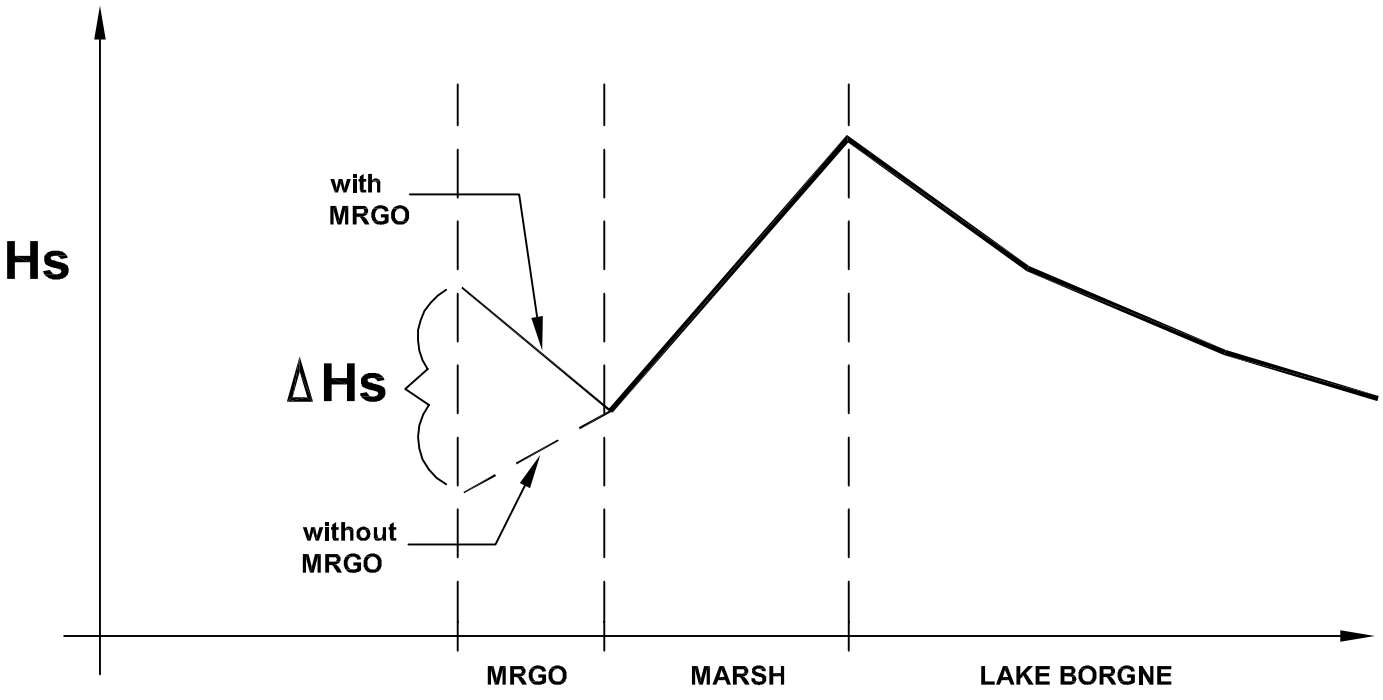
Figure 33
Lake Borgne to HPL Levee at Bayou Dupre
Transect for Wave Run-up Analysis



Hs = Significant Wave Height

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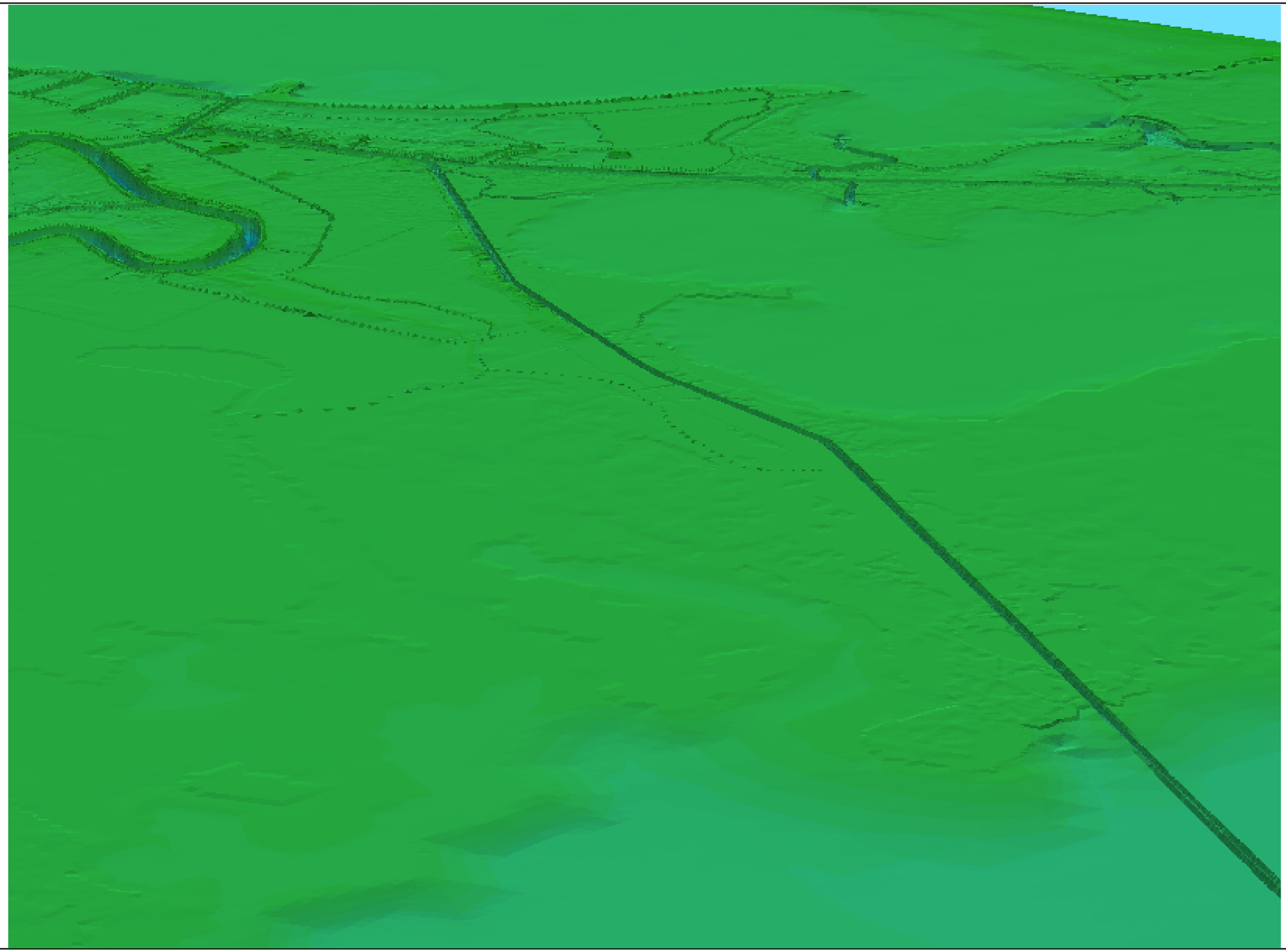
Figure 34

Schematic of Wave Generation and Attenuation for Lake Borgne to HPL Levee at Bayou Dupree



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Note: Image created in ArcScene. Vertical Exaggeration 25x.
G:\LDNR\MRGO\ArcScene\MRGO_F24.sxd
NOT TO SCALE

Figure 35
3D Depiction of High Resolution ADCIRC Terrain for MRGO and Surrounding Area