Greater New Orleans Hurricane and Storm Damage Risk Reduction System

Robert Rowlette

Senior Program Manager

Task Force Hope

U.S. Army Corps of Engineers

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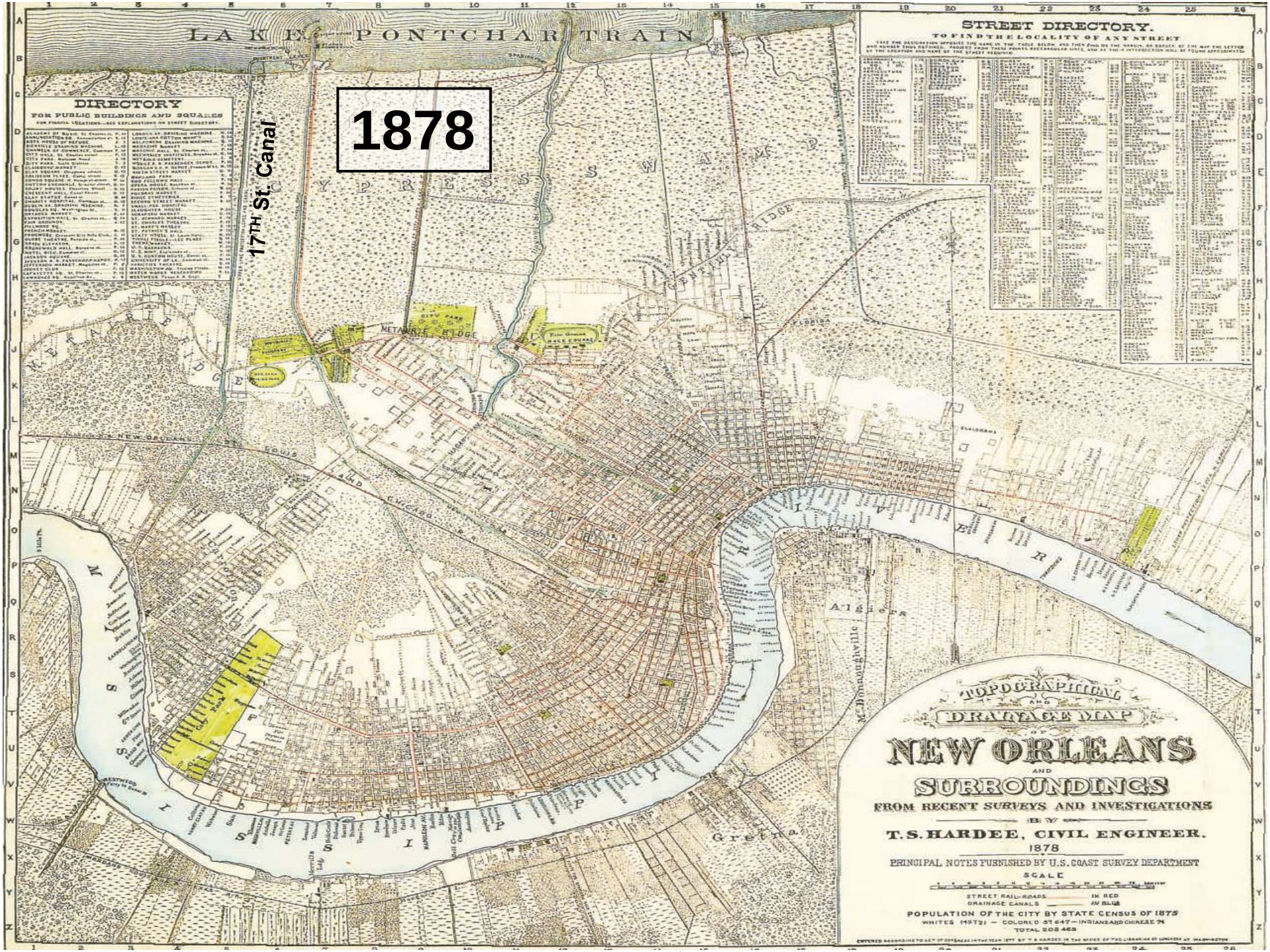
US Army Corps of Engineers

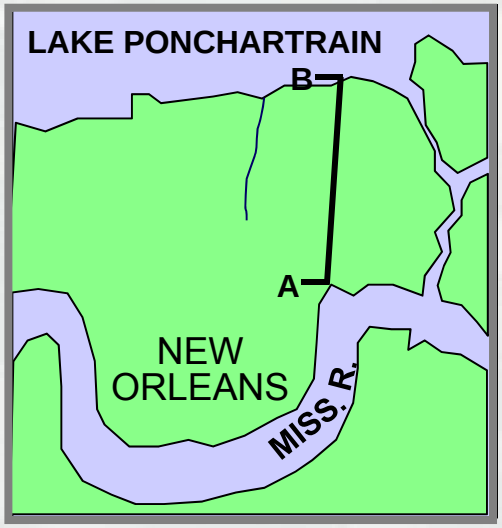
BUILDING STRONG®

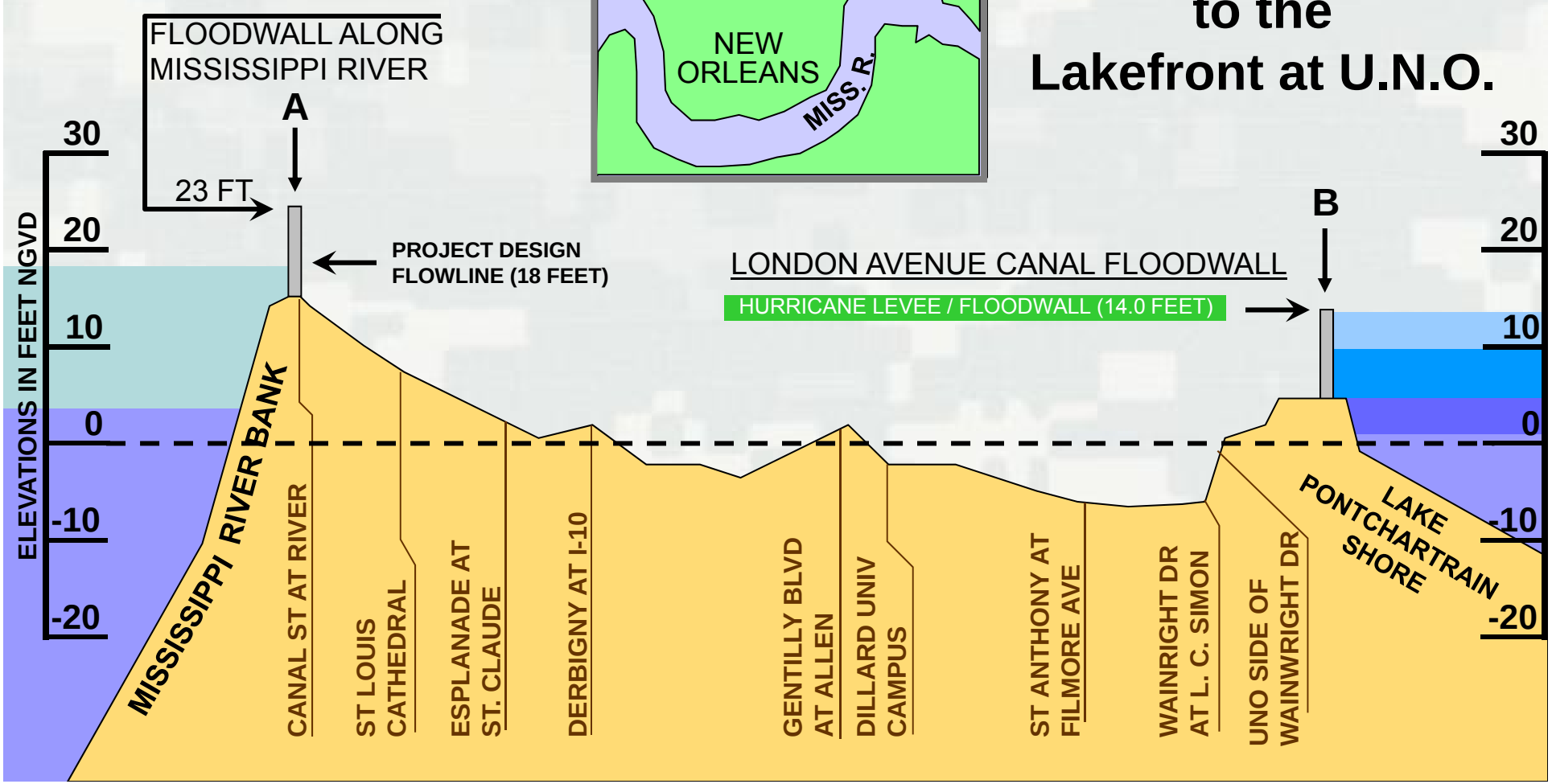

1878
LAKE PONTCHARTRAIN
17TH St. Canal
DIRECTORY
FOR PUBLIC BUILDINGS AND SQUARES
STREET DIRECTORY.
TO FIND THE LOCALITY OF ANY STREET
METAIRIE RIDGE
CYPRESS SWAMP
TOPOGRAPHICAL AND DRAINAGE MAP OF
NEW ORLEANS AND SURROUNDINGS
FROM RECENT SURVEYS AND INVESTIGATIONS
BY
T. S. HARDEE, CIVIL ENGINEER.
1878
PRINCIPAL NOTES FURNISHED BY U.S. COAST SURVEY DEPARTMENT
SCALE
STREET RAIL-ROADS ——— IN RED
DRAINAGE CANALS ——— IN BLUE
POPULATION OF THE CITY BY STATE CENSUS OF 1875
WHITES 149721 — COLORED 57 647 — INDIANS AND CHINESE 74
TOTAL 208 469
Gretna

New Orleans Topography

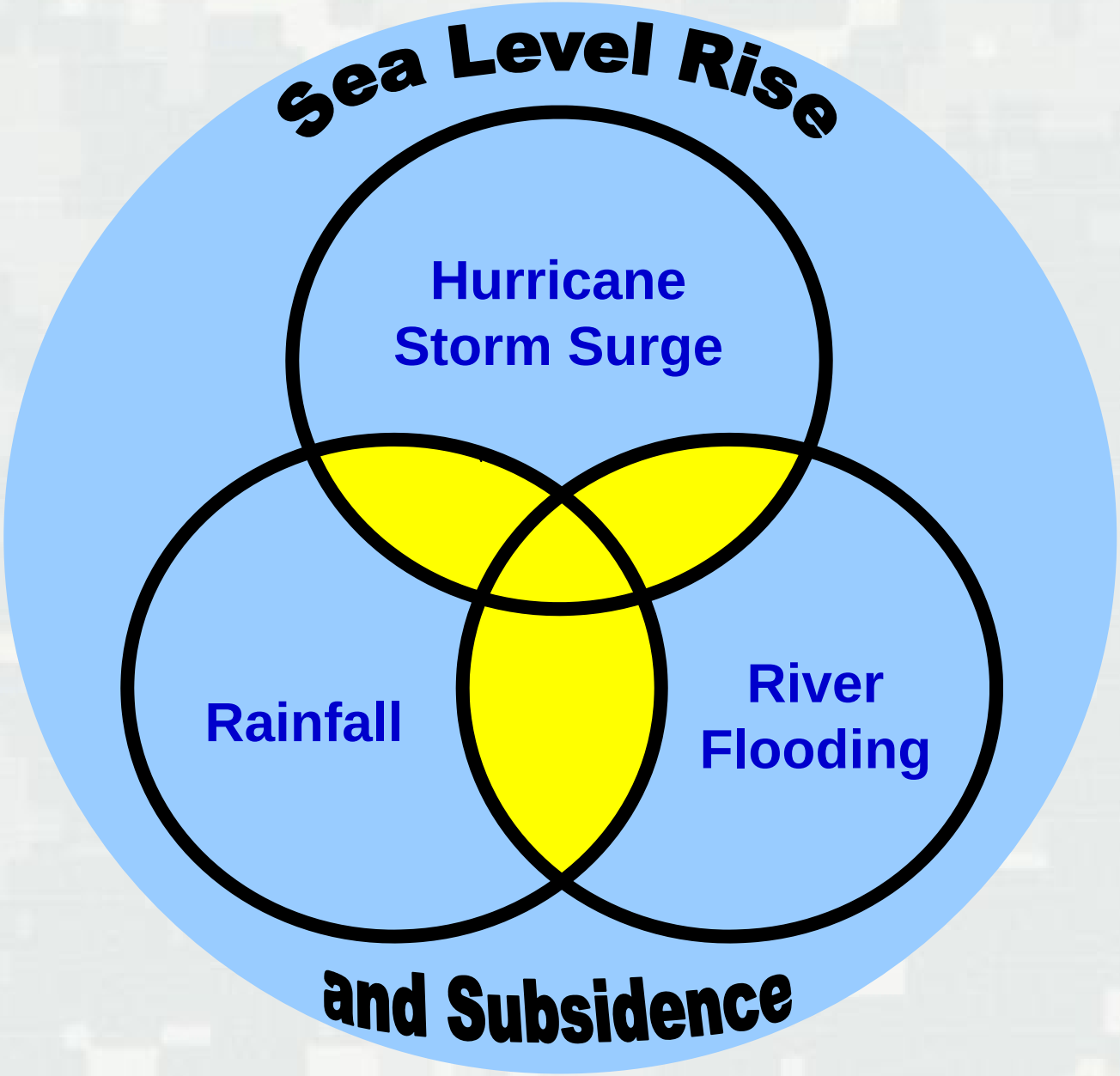
City of New Orleans Ground Elevations

From Canal St. at Mississippi River to the Lakefront at U.N.O.



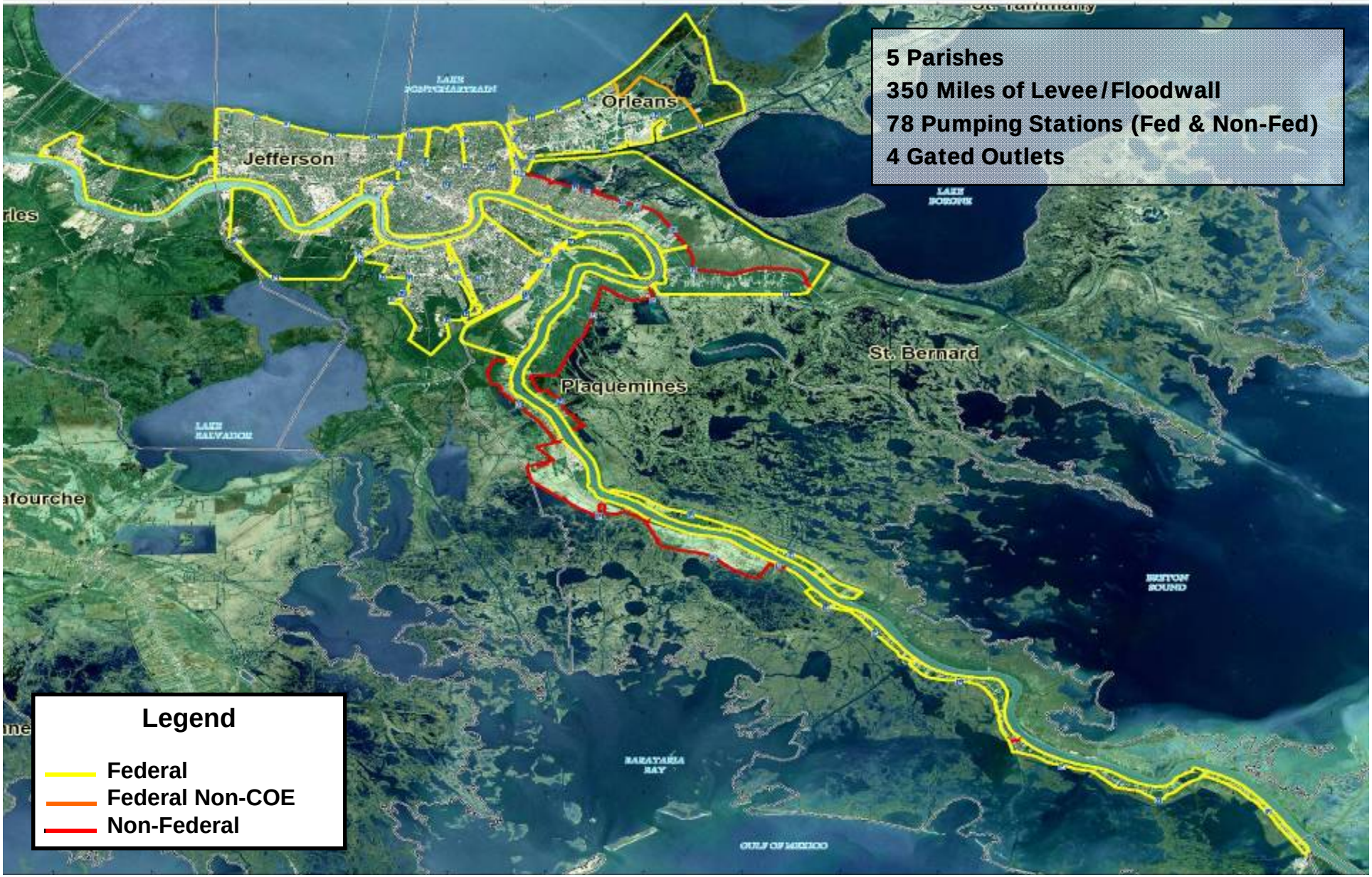


The Three Major Flood Risks in Coastal LA



New Orleans Area

Hurricane and Storm Damage Risk Reduction System



Hurricane Katrina

Aug 29, 2005

- One of America's largest natural disasters
- Cat 5 less than 12 hrs before landfall
- 127 MPH wind at Louisiana landfall
- Maximum surge of 28 to 30 feet along Mississippi coast
- 80 percent of the city of New Orleans flooded

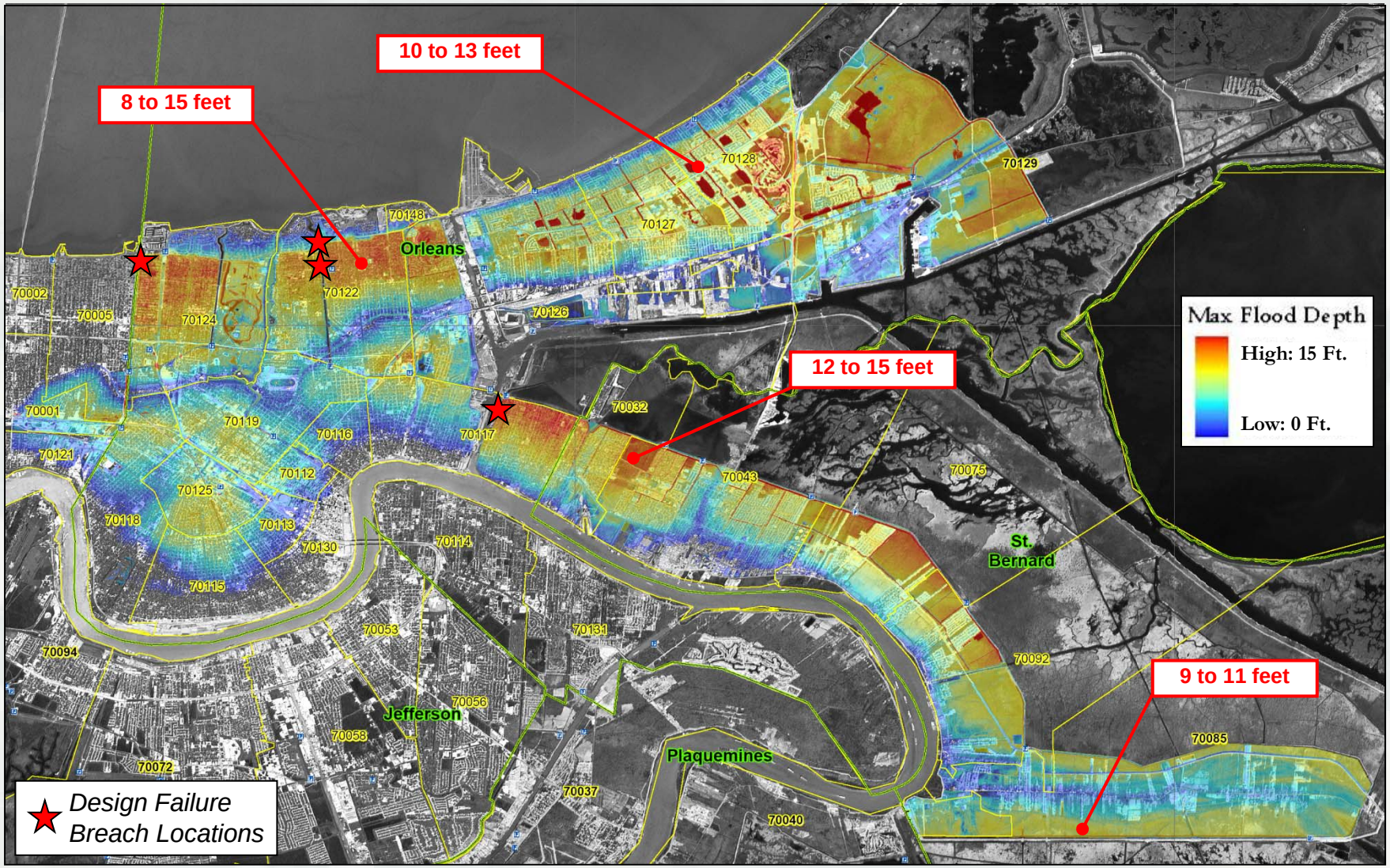
Hurricane Rita

Sep 24, 2005

- Cat 4 less than 12 hrs before landfall
- 175 MPH max sustained winds in Gulf of Mexico
- 120 MPH max sustained winds at landfall
- Cat 3 strength at landfall

New Orleans

Maximum Flooding Depth



HSDRRS:
Our Mission and Commitment

- *Repair the damages, making what was there before whole again.*
- *By 1 June 2011, strengthen and improve the system and provide 100-year level of risk reduction capable of withstanding the effects of a storm having a 1% chance of occurring each year.*
- *Current funding level $14.48 B (fully funded).*

Deliver the Greater New Orleans HSDRRS Mission

Challenges

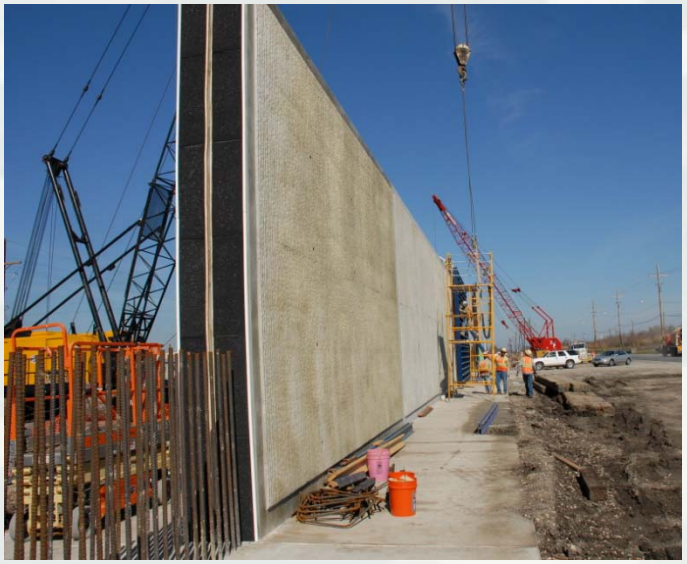
- Mandate to deliver $14.6B construction program within budget and on schedule
- Form design criteria, program cost estimate, acquire funding
- Intense scrutiny / oversight
- New governances
- NEPA compliance
- Deliver a comprehensive system

Enablers

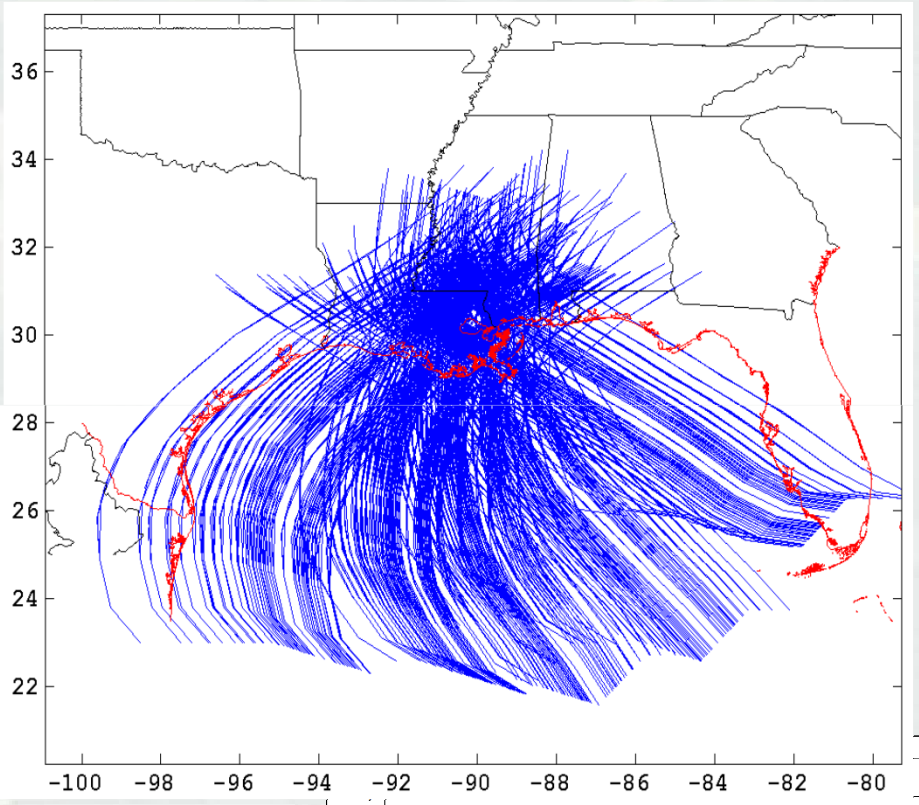
- Administration / Congressional commitment
- Fully funded program
- National/Regional Corps capabilities
- Local partners and stakeholders capabilities
- NEPA Alternate Arrangements
- Full host of acquisition strategies
- Favorable bidding climate

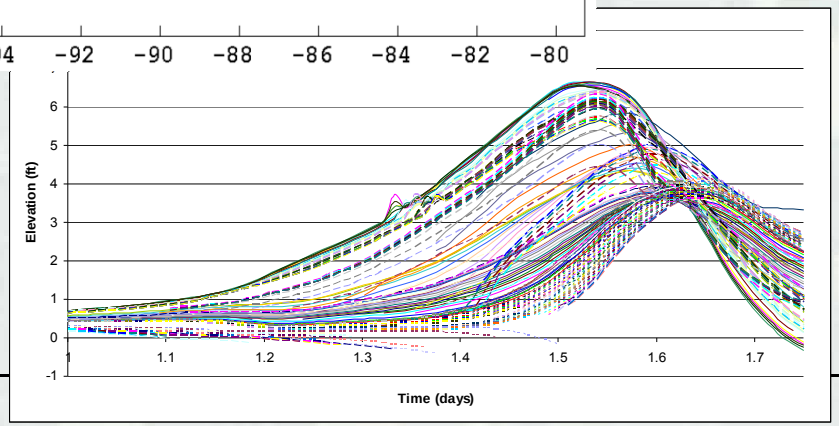
Best Practices:
System Program Management

- Acquisition Strategy
  - Design Build / Cost Plus Contracts
  - Best Value Source Selection
  - Early Contractor Involvement (ECI)
  - Program Management Support Contract
- Construction Materials
  - Government Furnished Borrow
  - Supply Contracts for Sheet Piles and Borrow
- Improved Techniques
  - Value Engineering – systems study complete
  - Pile Load Tests – in advance of contract award
  - Press Pile, Spiral welded piles
  - Deep soil mixing, sand blanket and wick drains
- Leverage National & Regional Resources



Hurricane Paths Considered in the Risk Analysis





- *3 HSDRRS Geometries*
  - *Pre-Katrina*
  - *Current (1 June 07)*
  - *100-year LOP (~2011)*
- *152 storms*
  - *25 yr to 5,000+ yr*
- *350+ features*
  - *Floodwalls*
  - *Levees*
  - *Pumps Stations*

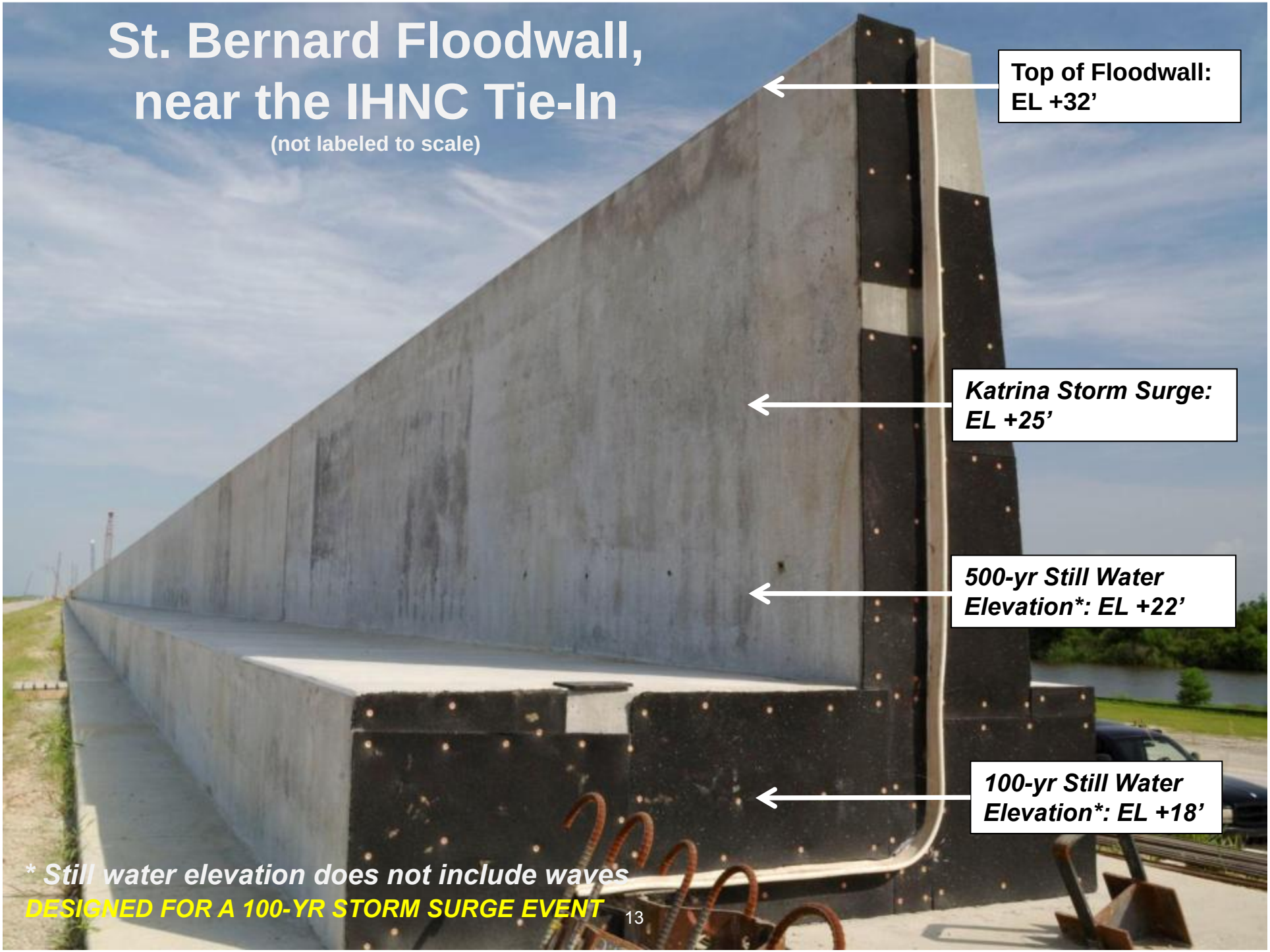
→ **62,928 Hurricane Hydrographs**

New Orleans East

Surge Barrier Tie-In

St. Bernard Floodwall, near the IHNC Tie-In

(not labeled to scale)



** Still water elevation does not include waves*

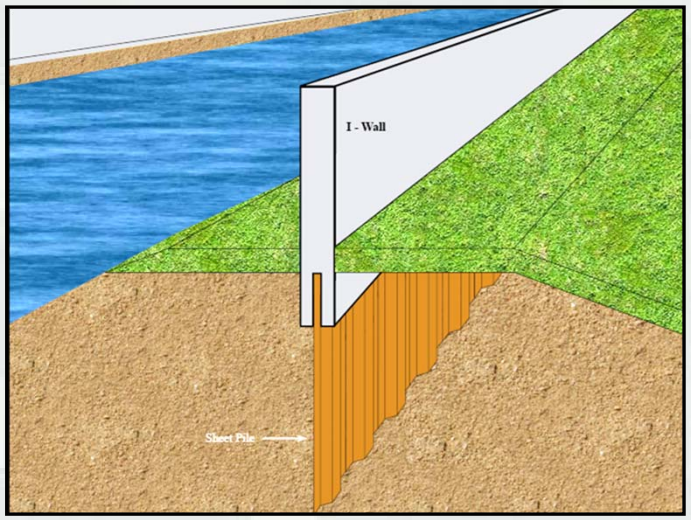
DESIGNED FOR A 100-YR STORM SURGE EVENT

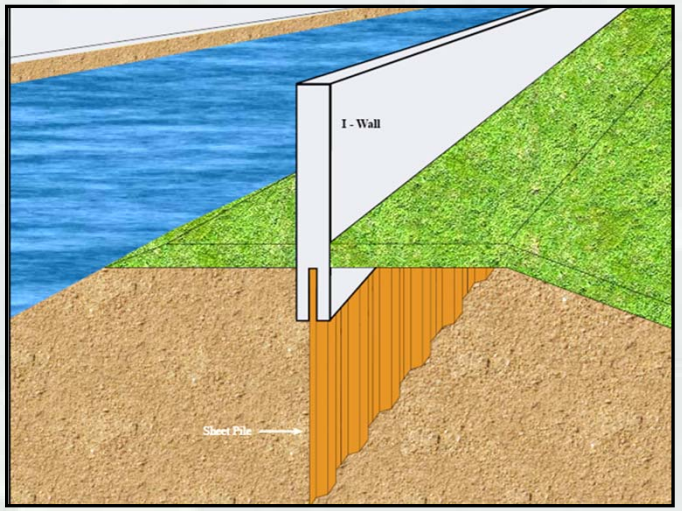
Design Improvements

T/I wall design

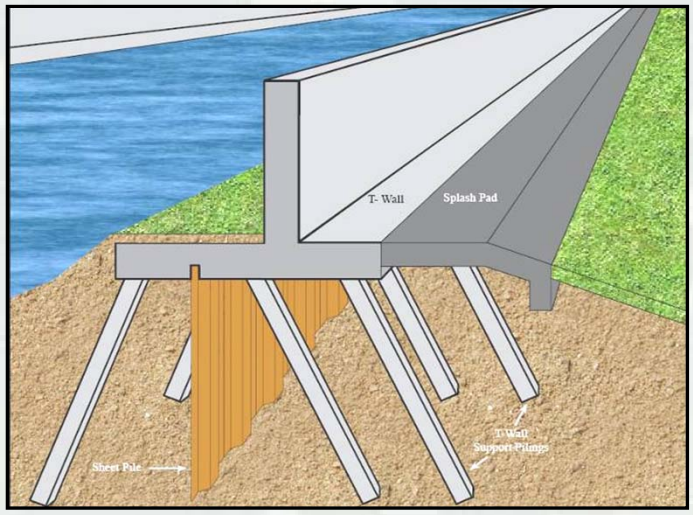
Scour protection

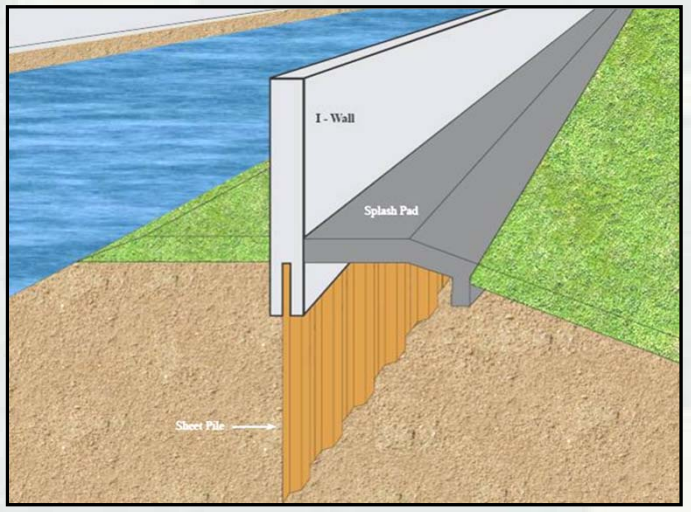
Before





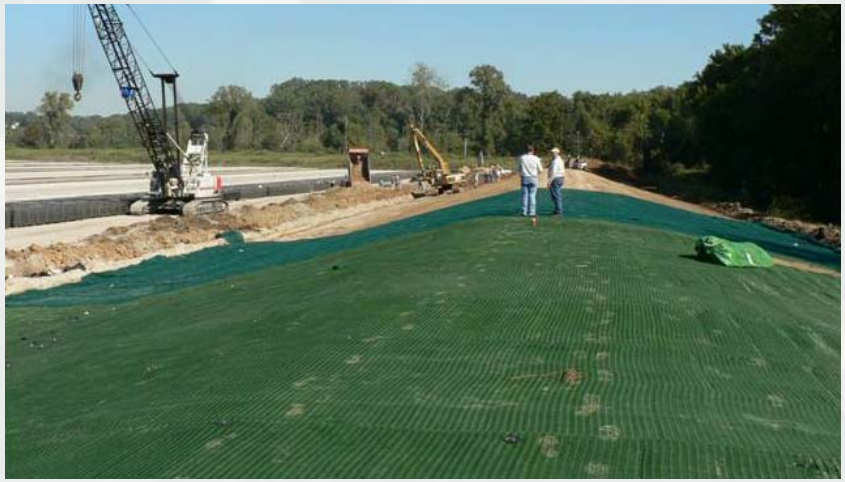
After





Armoring

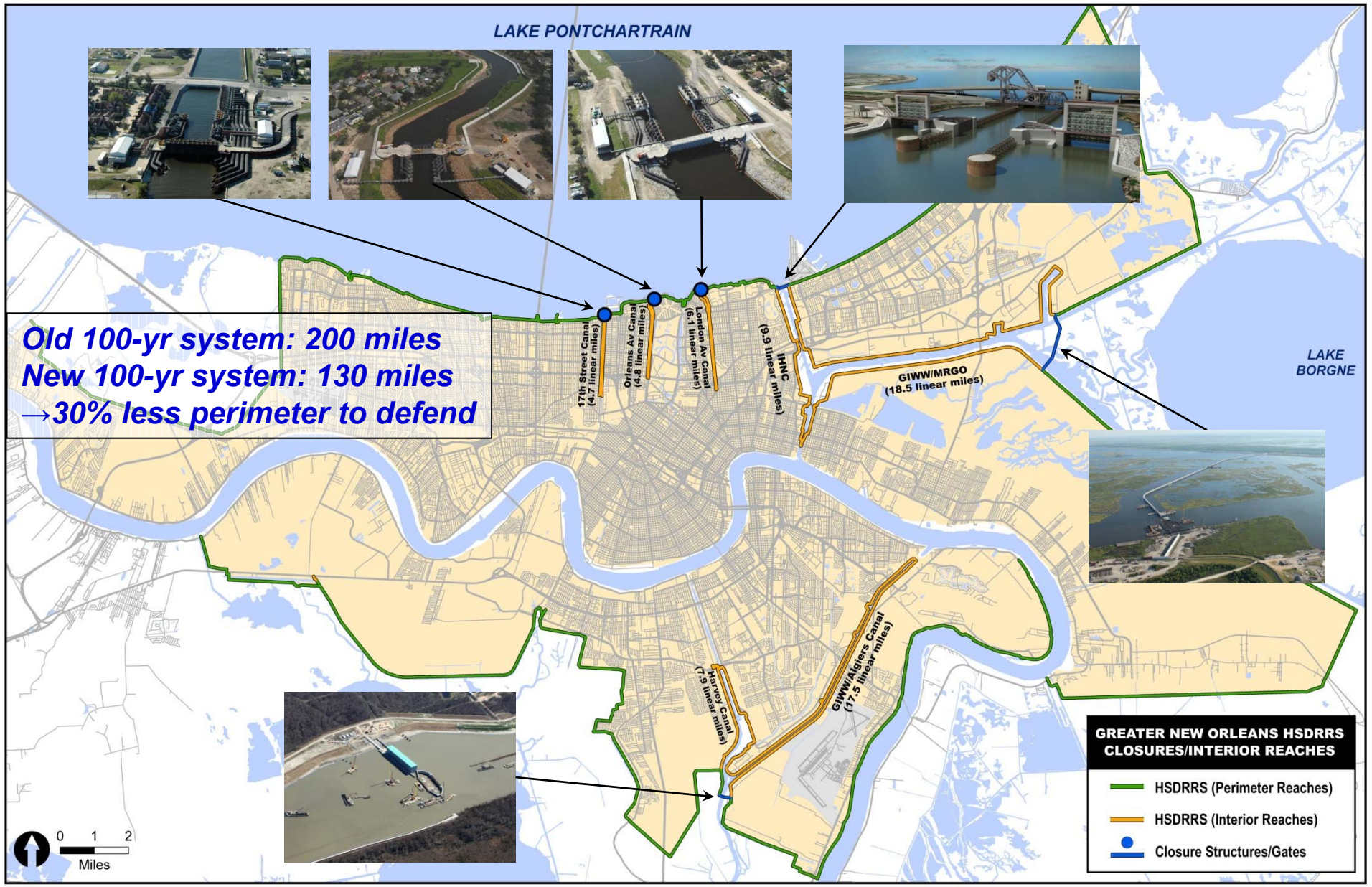
Wave Overtopping Testing



Turf Reinforced Mat

Sod / Enhanced Grass

Perimeter Risk Reduction



Lake Borgne Surge Barrier

Lake Borgne Surge Barrier

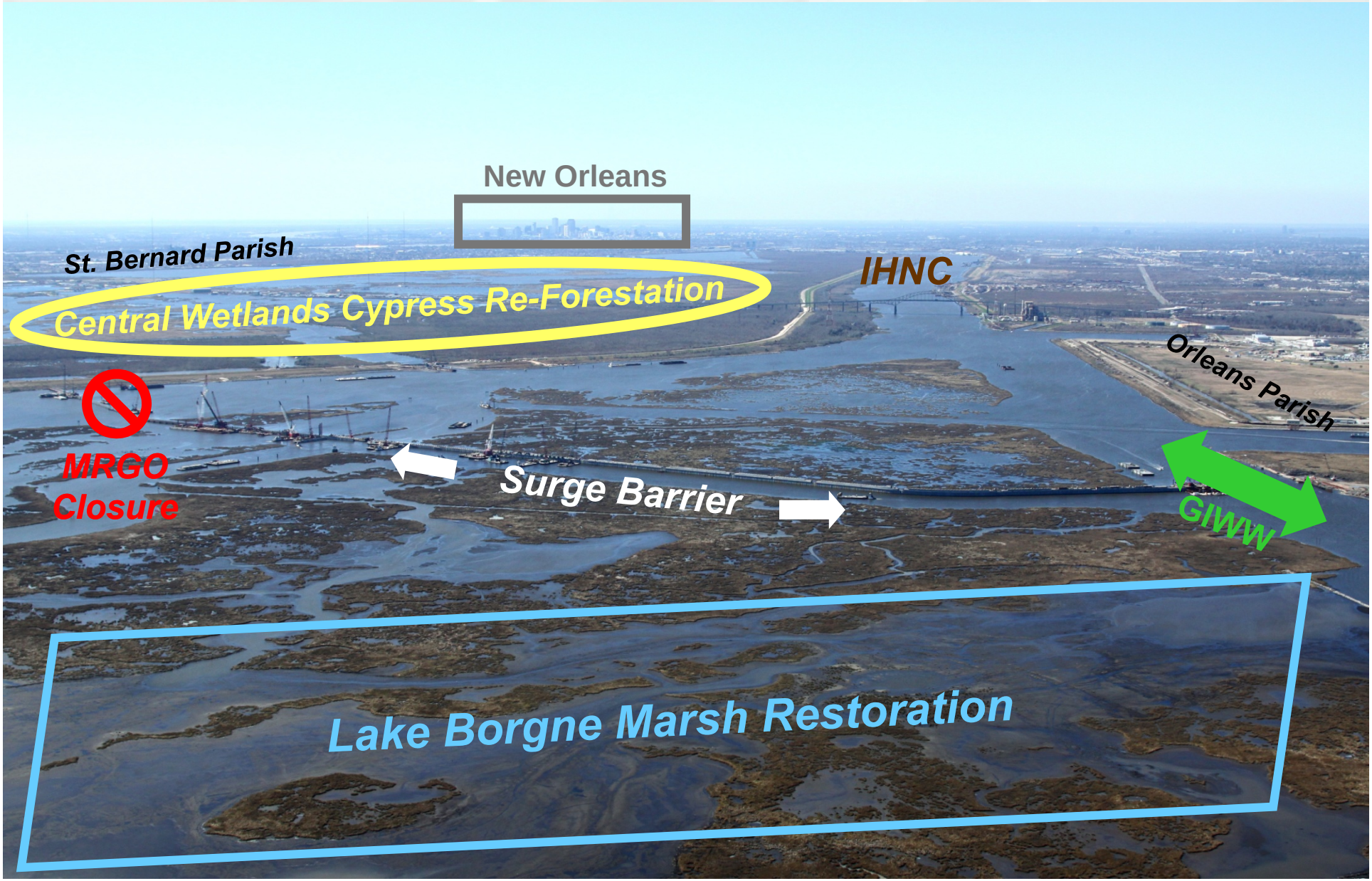
Lake Borgne Surge Barrier
"Great Wall of Louisiana"

(not labeled to scale)

** Still water elevation does not include waves*

DESIGNED FOR A 100-YR STORM SURGE EVENT

The Big Picture



Seabrook Gate Complex

Orleans Parish
2011 Interim Closure Structures

Seabrook (IHNC)

London Ave. Canal

17th St. Canal

Orleans Ave. Canal

Provides interim 100-year level of risk reduction

Causeway

West Closure Complex

West Closure Complex

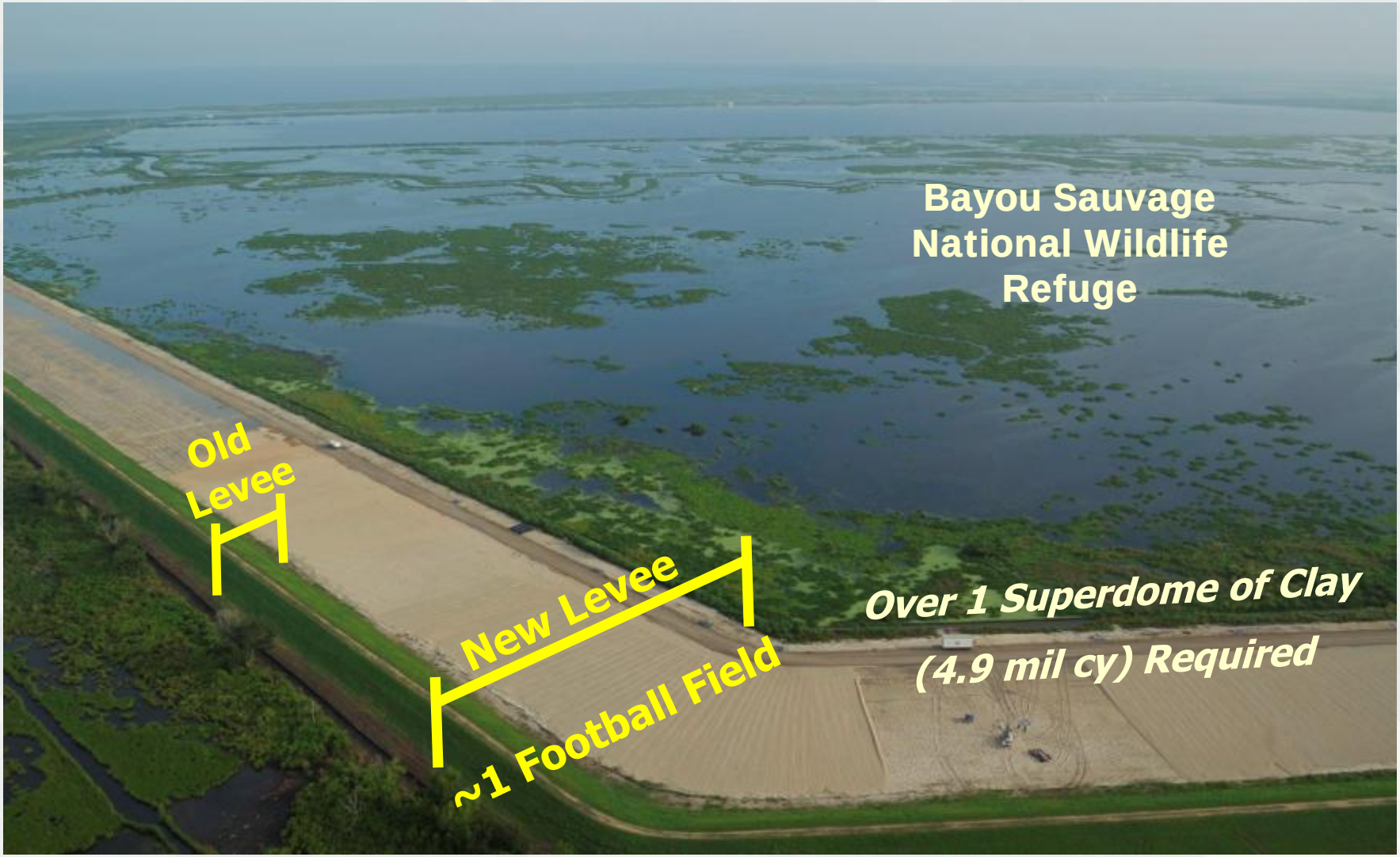
West Closure Complex

Pump Station

St. Bernard Floodwall


St. Bernard Floodwall Construction – Southern Reach

New Orleans East Levee

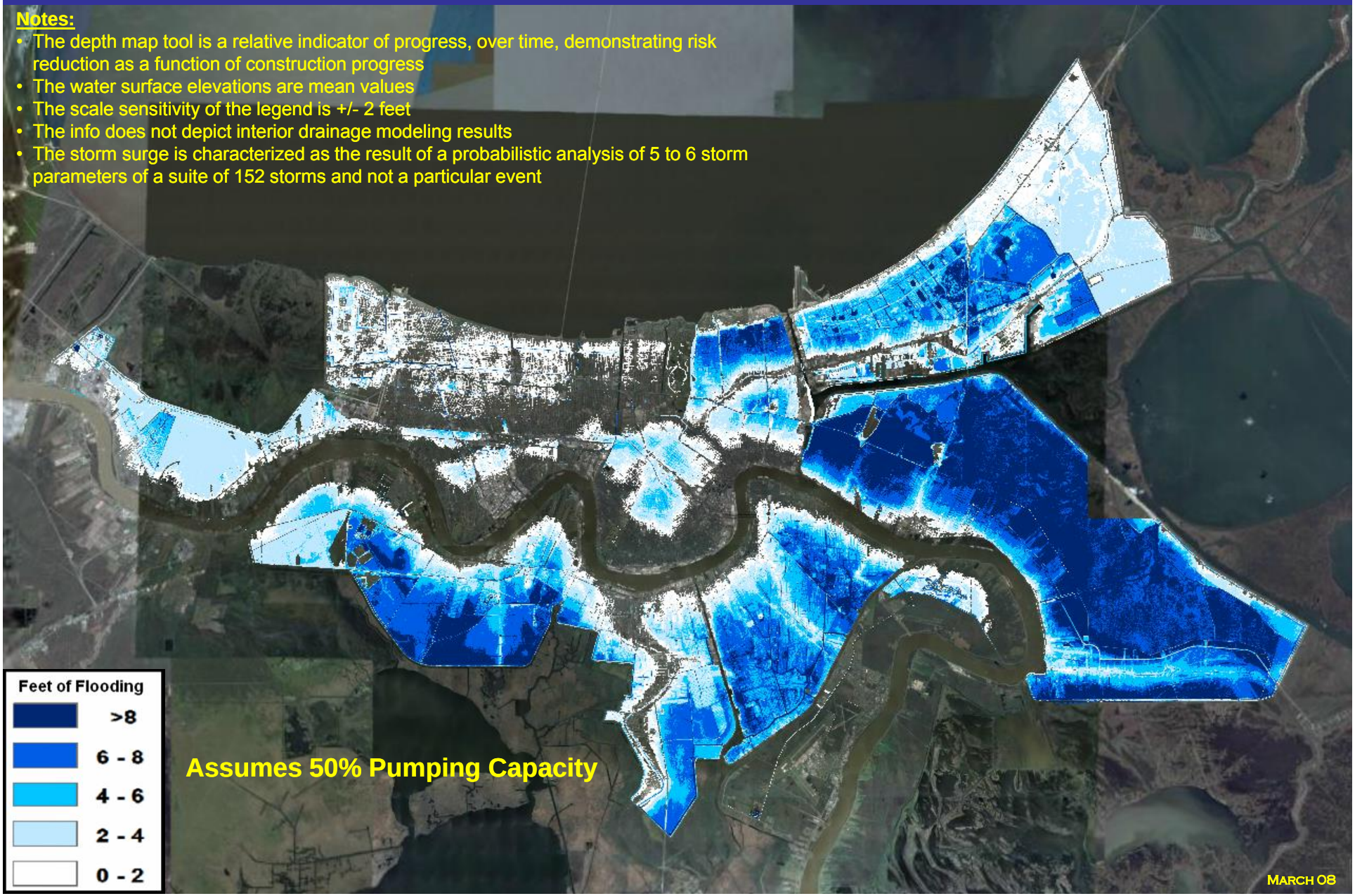


Wick Drains

Bayou Segnette Pump Station

Completed Safe House

In 2007, you had a 1% chance every year of flooding this deep from Hurricanes

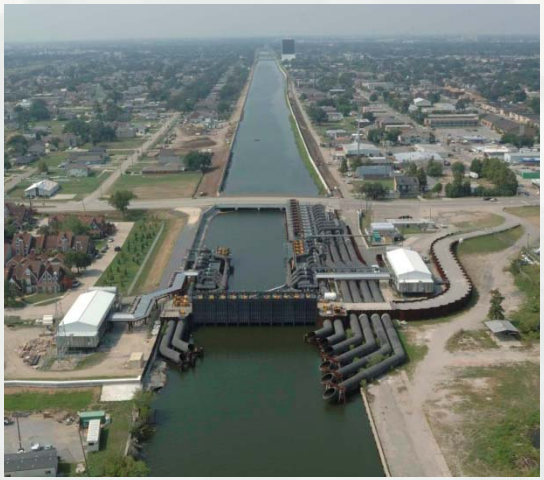


With the 100-year level of protection, you have a 1% chance every year of flooding this deep from Hurricanes

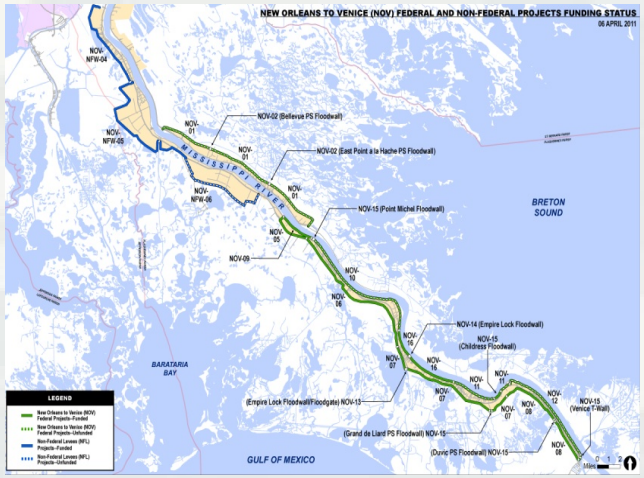
With the 100-year level of protection, you have a 0.2% chance every year of flooding this deep from Hurricanes

HSDRRS Remaining Work

Armoring



Permanent Pump Stations



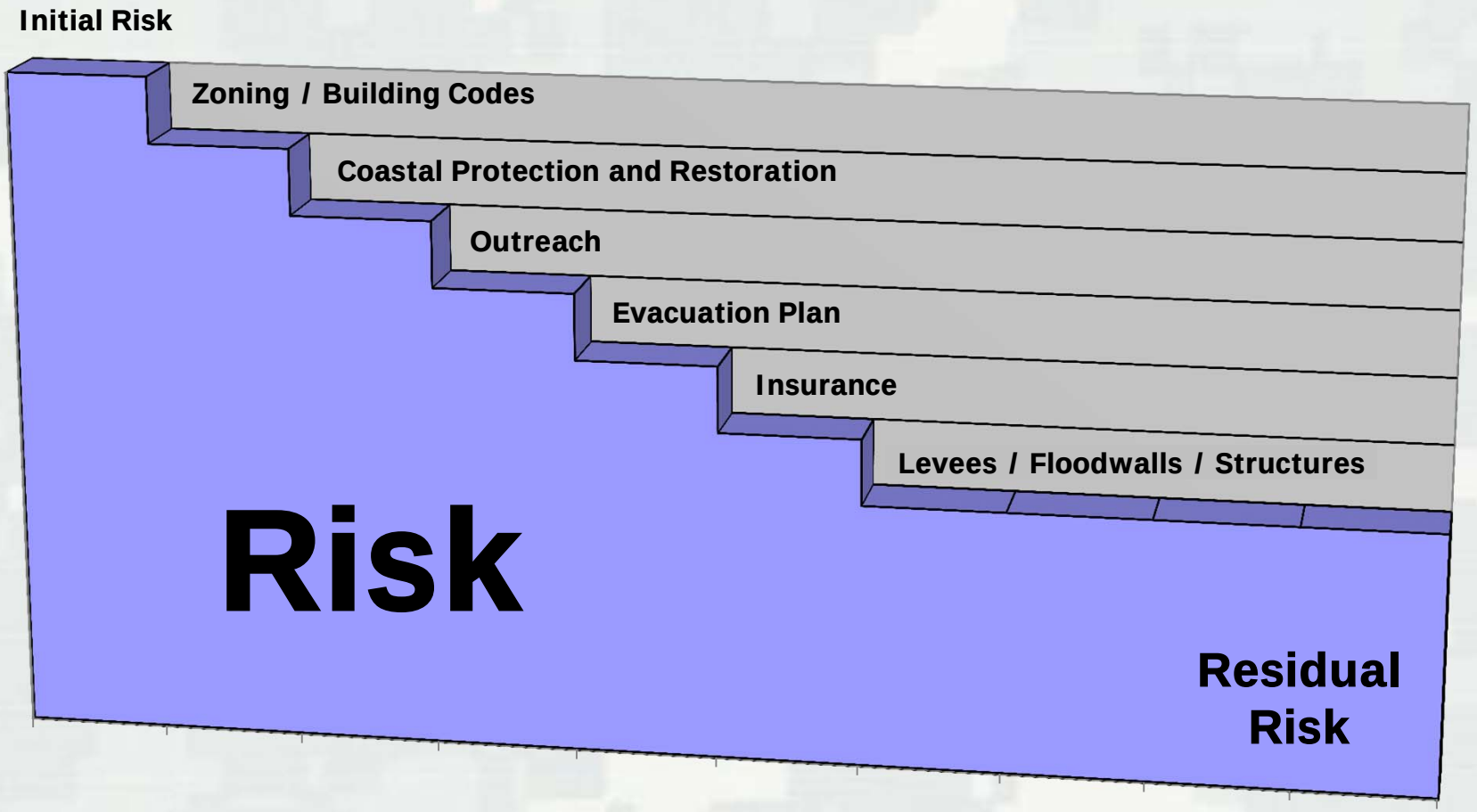
New Orleans to Venice / Non-Federal Levees

SELA Interior Drainage

Environmental Mitigation

Mississippi River / HSDRRS Co-located Levees

Buying Down Risk



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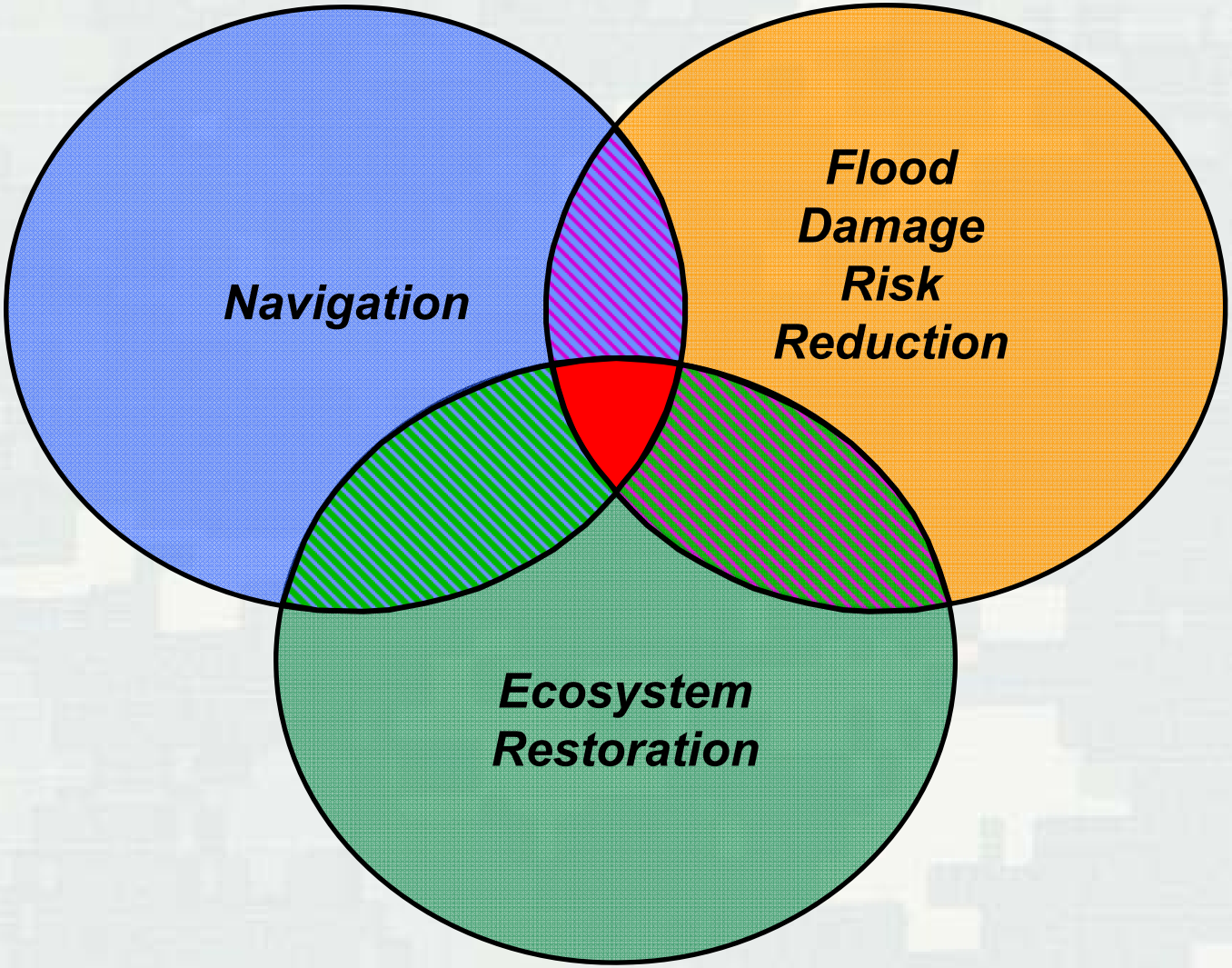
BUILDING STRONG®

Paradigm Shift

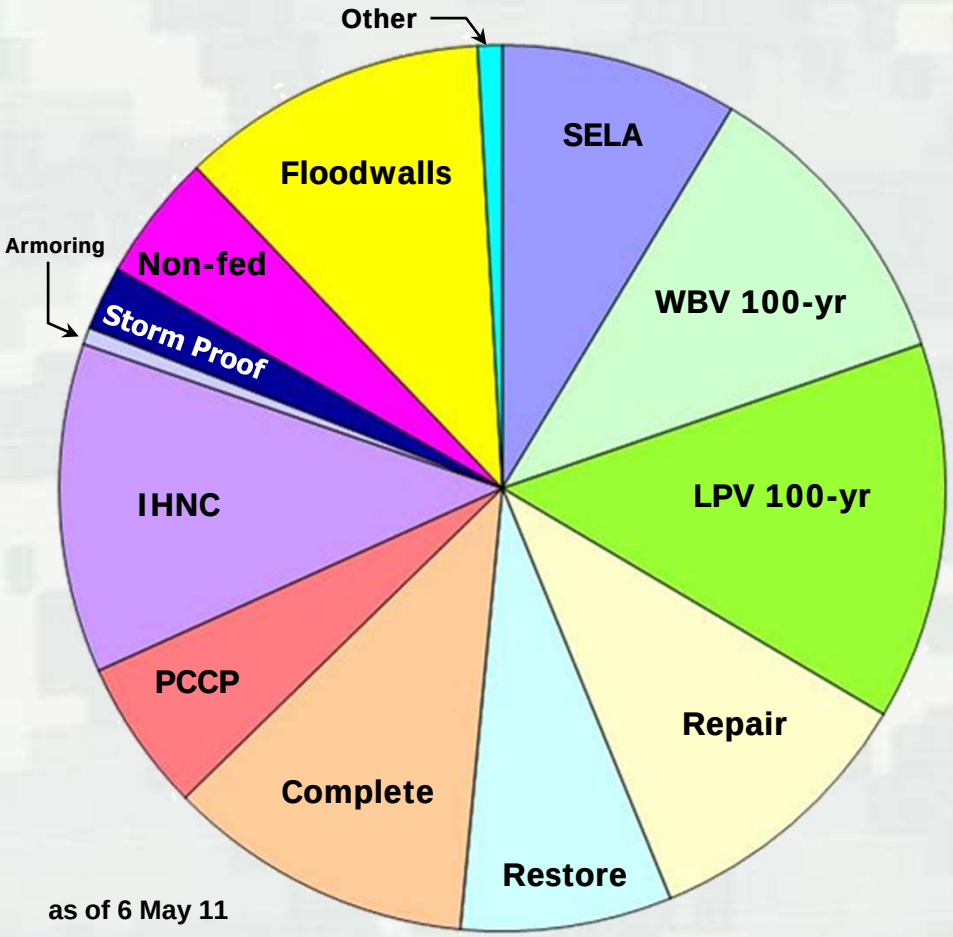
Required: Integrated Systems Approach



Lake Borgne Surge Barrier Tie-In

HSDRRS Funding Breakdown

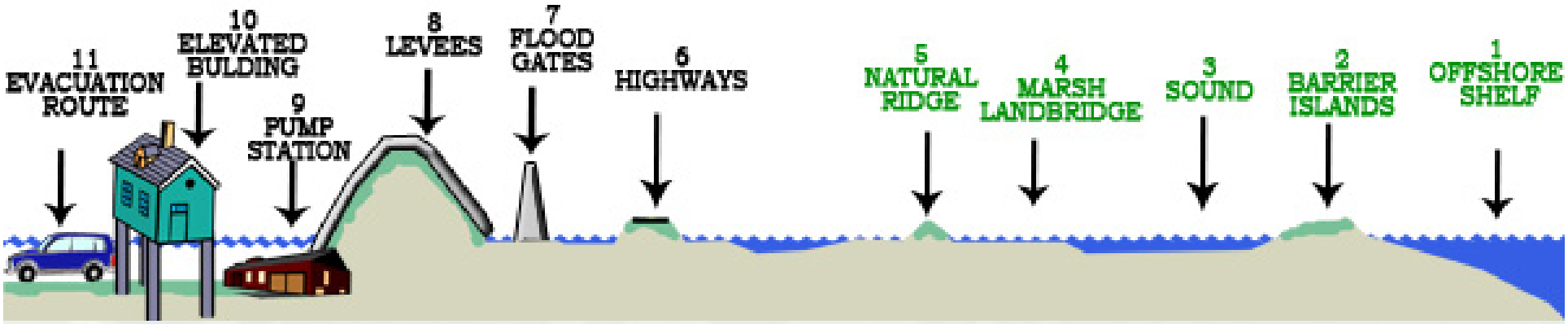
TOTAL APPROPRIATED FUNDS: $14.48 B



as of 6 May 11

COMPONENT	$ (M)
SELA (Interior Drainage)	*$1,253*
WBV 100-year Level of Protection	*$1,610*
LPV 100-year Level of Protection	*$1,997*
Repair Existing System	*$1,475*
Restore to Design Height	*$1,132*
Complete Authorized System	*$1,619*
Permanent Pump Stations	*$804*
IHNC	*$1,743*
Selective Armoring	*$89*
Storm-proof Existing Pump Stations	*$340*
Incorporate non-Fed Levees in Plaquemines Parish	*$671*
Reinforce or Replace Floodwalls	*$1,626*
Other	*$130*

Multiple Lines of Defense



(Graphic from www.mlods.org)

Elements include:

- Coastal restoration/protection
- Structural measures
- Non-structural features