

Producing Credible Science to Drive Environmental Advocacy

John A. Lopez, PhD

**Restore America's Estuaries
Conference
Galveston
November, 2010**

See SaveOurLake.org

LAKE PONTCHARTRAIN BASIN FOUNDATION
SAVE OUR COAST **SAVE OUR LAKE**

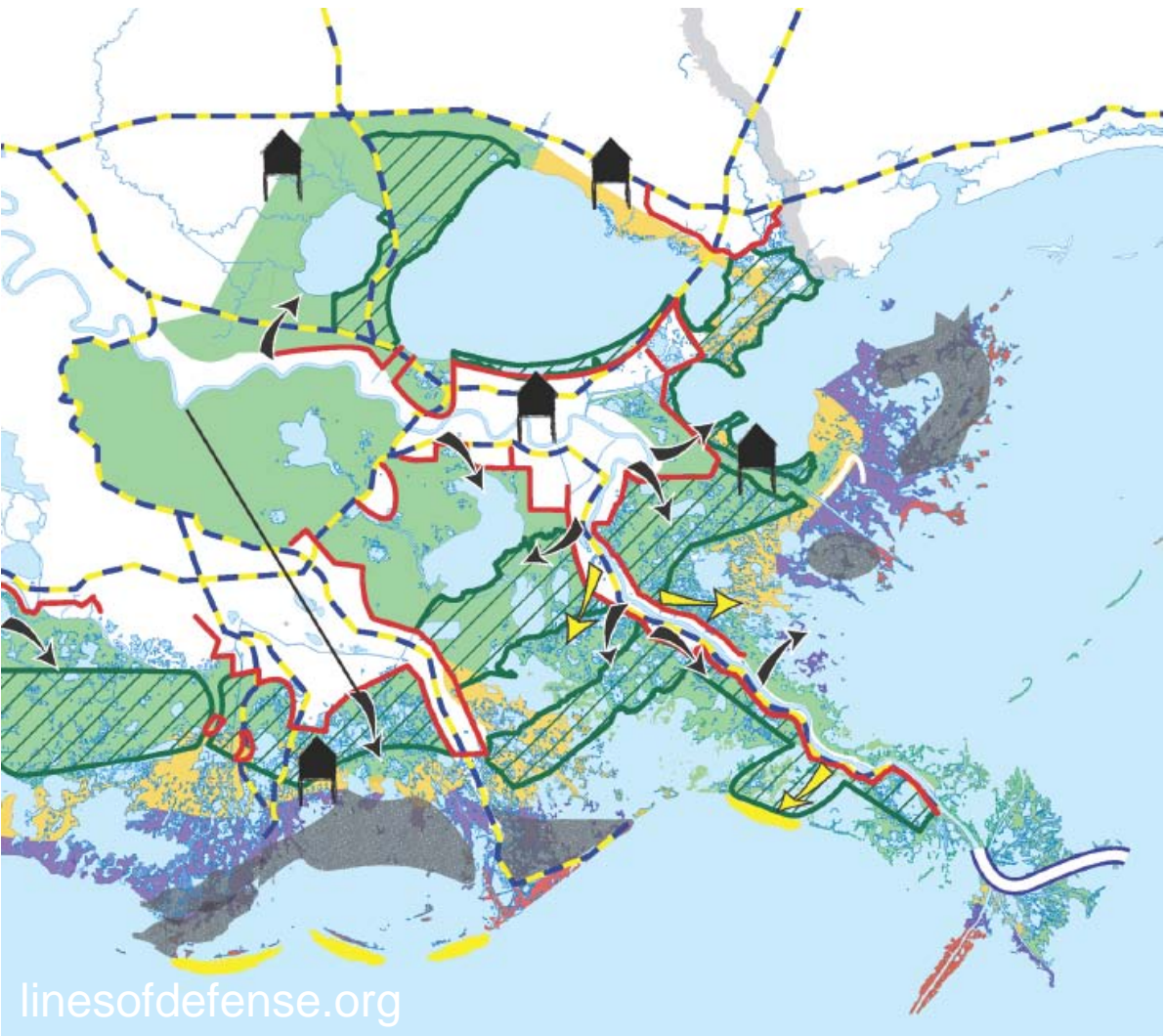
Producing Science to Drive Advocacy

Examples:

- Violet Diversion
- White Ditch Diversion
- Mississippi River modeling

Louisiana Coastal Lines of Defense

Integrating Diversions and Other Flood Mitigation Measures



- Barrier Island Restoration
- Land Building Diversion or Crevasse
- Diversion
- Marsh Creation
- Ridge Restoration
- Reef Restoration
- Re-route Navigation
- Major Evacuation Routes
- Elevated Housing
- Levee
- Salinity Control

We have a plan....



US Army Corps
of Engineers
New Orleans District

Mississippi and Louisiana Estuarine Areas

Freshwater Diversion to
Lake Pontchartrain Basin
and Mississippi Sound

Feasibility Study

TD
194.5
.N46
P67
1984
v.1

Volume 1
Main Report
Environmental Impact Statement
April 1984

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Corps' Old Proposal



LPBF's New Proposal

Violet Diversion Timeline

1984 Corps Recommends Bonnet Carre Diversion location to support fisheries in both Louisiana and Mississippi

1990's Classic Corps vs. Environmentalists Dispute –everyone left bitter

1996 Cost conscious Louisiana Governor Foster refuses cost share & Mississippi feels betrayed

2004-2005 LPBF proposes the Violet location and request hydrodynamic models by the State and Corps

2005 Hurricane Katrina

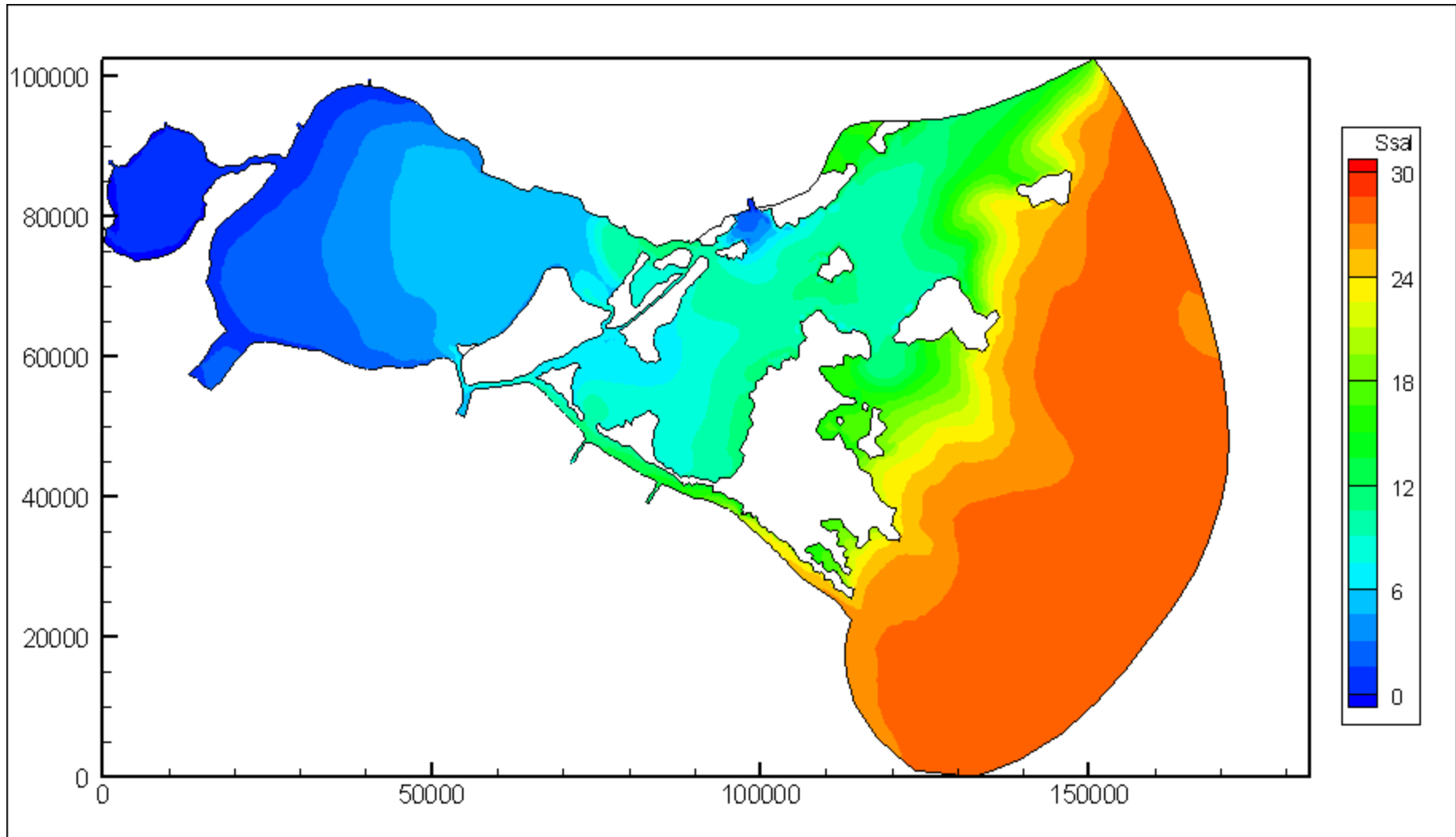
2005 Louisiana Katrina recovery and WRDA legislation held hostage by State of Mississippi

2006 University of New Orleans Modeling complete for the Violet location to replace the Bonnet Carre location & LPBF releases white paper

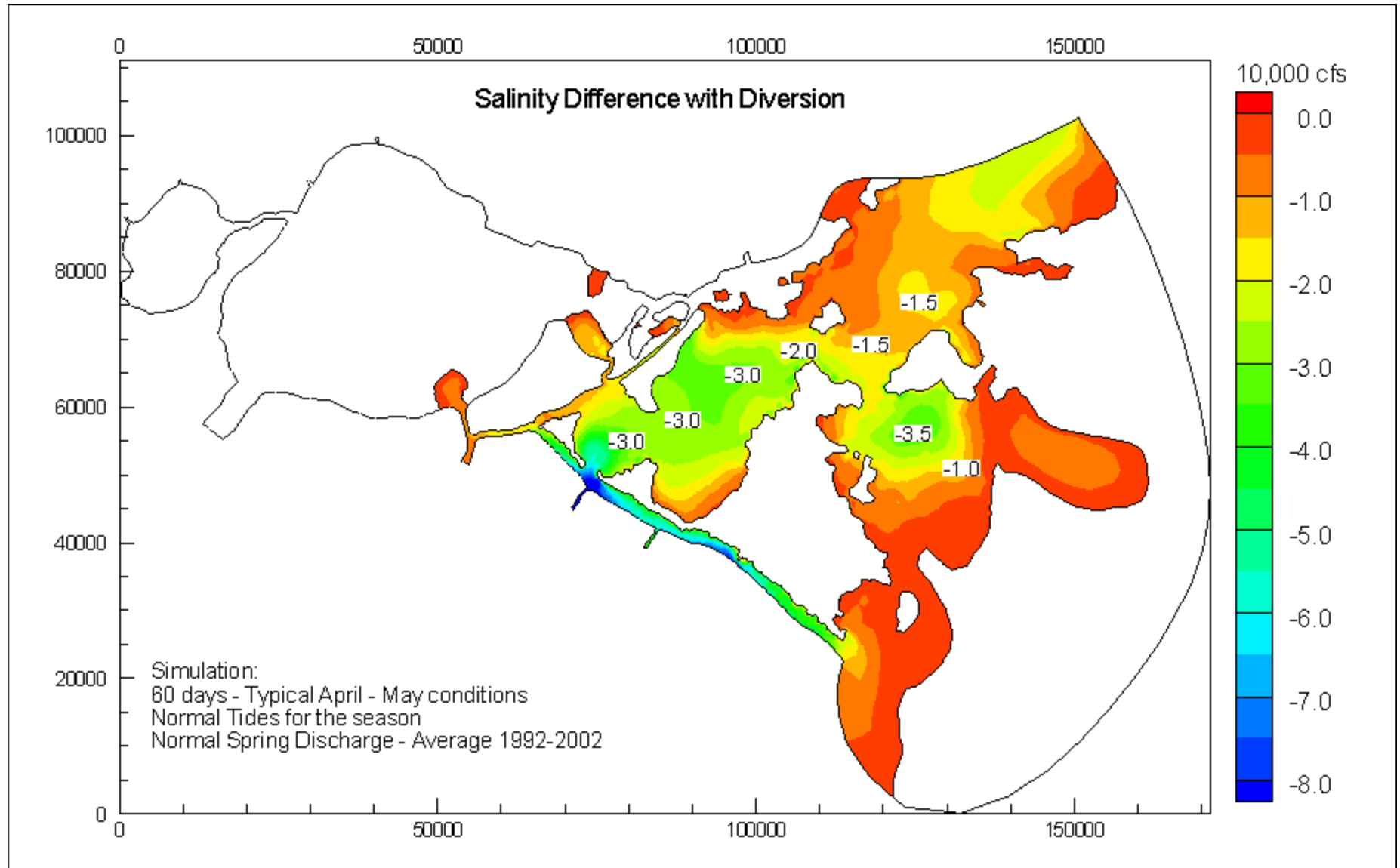
USACE completes models of the Violet location

2007 WRDA passes with Violet location and other Katrina recovery legislation

Initial Condition for Salinity



Salinity Deviation from a 10000 cfs



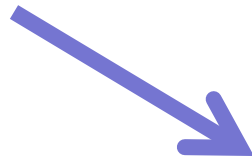


P.O. Box 6965 Metairie, LA. 70009-6965 - SaveOurLake.org

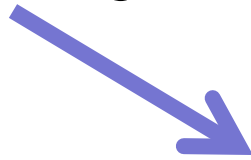
A Post-Katrina Assessment of the “Freshwater Diversion to Lake Pontchartrain Basin and Mississippi Sound”

Introduction

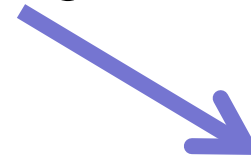
In 1965, a federally authorized deep-draft navigation canal was completed in Louisiana’s marshes south of Mississippi and immediately began to have damaging effects to both Louisiana and Mississippi. Salt water intrusion by the Mississippi River Gulf Outlet (MRGO) and wetland loss were causing catastrophic impact to oysters. Perret estimated oyster production declined by



Louisiana Delegation



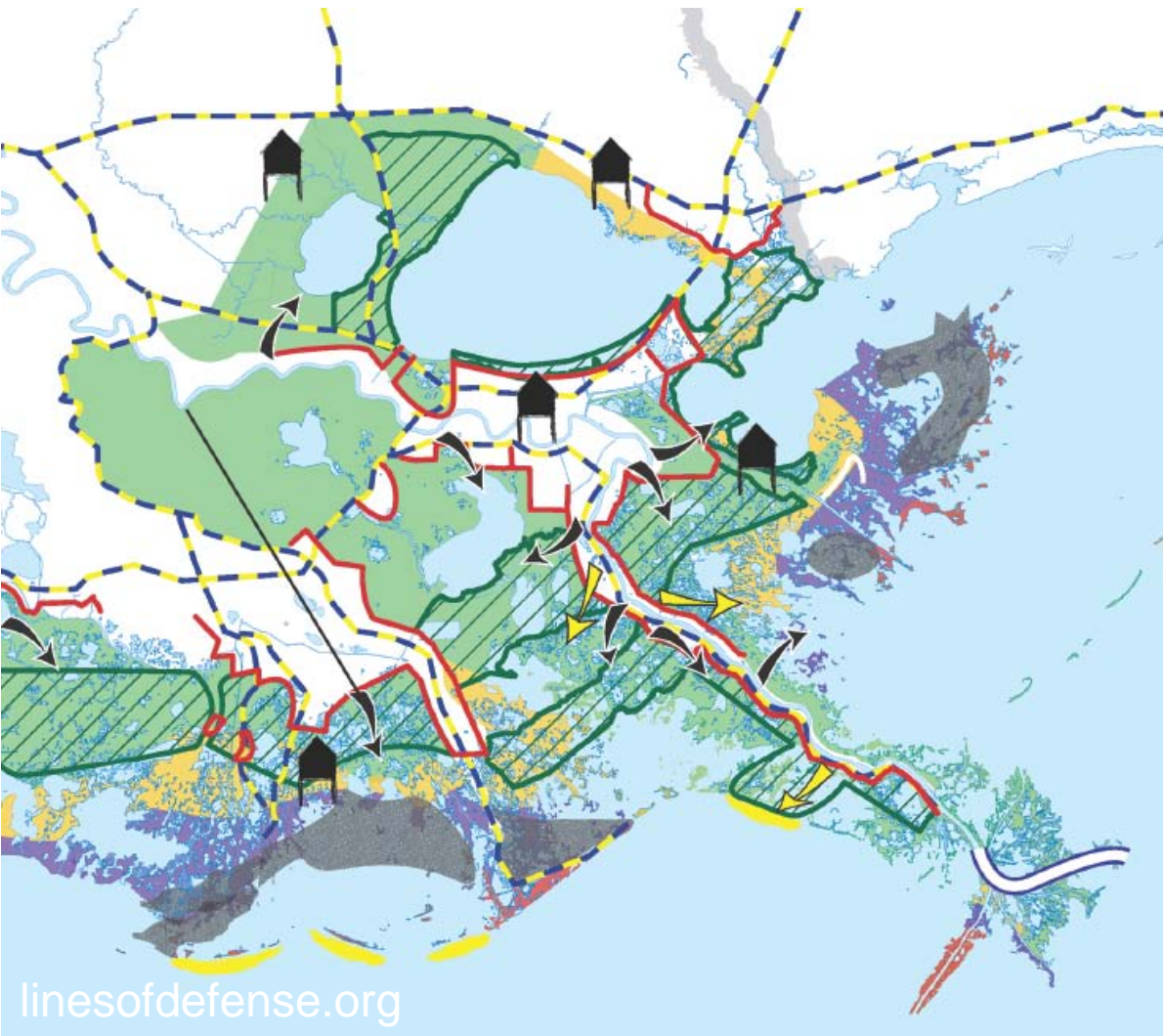
Mississippi Delegation



Violet in WRDA 2007

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Restoration Structures for Diverting River Discharge



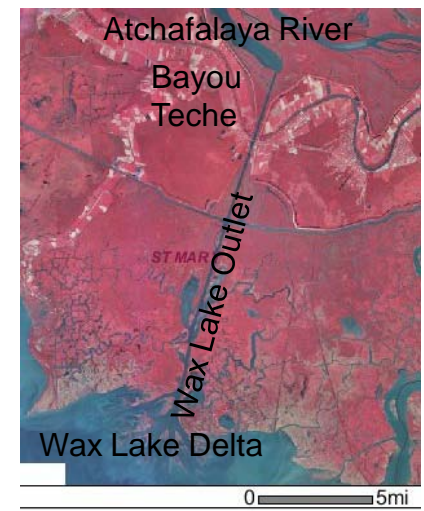
Artificial Crevasse – best example Bonnet Carre Spillway - discharge 250,000 cfs with fixed weir 7,700 feet long, This spillway was designed for flood control.



Artificial Overbank or Bayou for salinity management Ex. Caernarvon Diversion 8000 cfs with box culverts approximately 200 feet wide & White Ditch at 250 cfs



“Artificial Distributary Channel” style diversion is Wax Lake Delta, which discharges 75,000 cfs with open water channel and adjacent levees. Locks are where the Outlet crosses Bayou Teche. Outlet is that is 60-80 feet And deep and 500 to 900 foot wide.



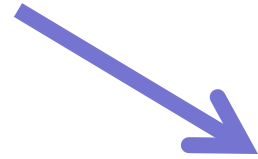
Design Considerations for Artificial River Reintroductions into Coastal Louisiana Considering Legacy Diversion Structures, Natural Delta Hydrology, and the Urgency of the Coastal Land Loss Crisis - Overview

John Lopez, Lake Pontchartrain Basin Foundation

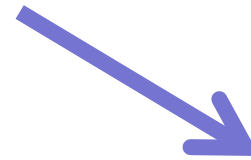
Draft – 11-30-08

Introduction

The concept of reintroducing Mississippi River water into the wetlands in coastal Louisiana dates back at least a century to when the problem with a lack of water to the wetlands was first created by river levees. Influence on the river hydrology began in the 19th century. The Lower Mississippi River had an artificial levee system established in 1890. At least as early as 1920, there were discussions or proposals to divert river water to benefit oyster fisheries (Louisiana.



White Ditch USACE scoping meeting 2009



**Feasibility Report TSP
includes larger pulsing
Diversion - 2010**

Implied 5,000 to 10,000 cfs “freshwater diversion”

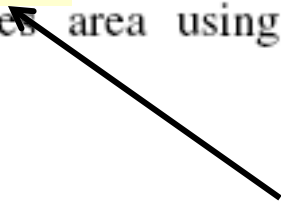


Medium Diversion at White Ditch Feasibility Study Louisiana Coastal Area (LCA) Project Fact Sheet

May 2010

- Maintain the current area of marsh habitat, of all types (41,206 acres), that provide life requisite habitat conditions for native coastal marsh fish and wildlife.
- Restore adequate freshwater and nutrient inputs into the project area such that sustainable areas of fresh, intermediate, brackish and saline marsh are present and existing areas of marsh acres are maintained.
- Restore sediment inputs into the into the project area equivalent to an average of approximately 1,328,580 cubic yards of sediment per year.

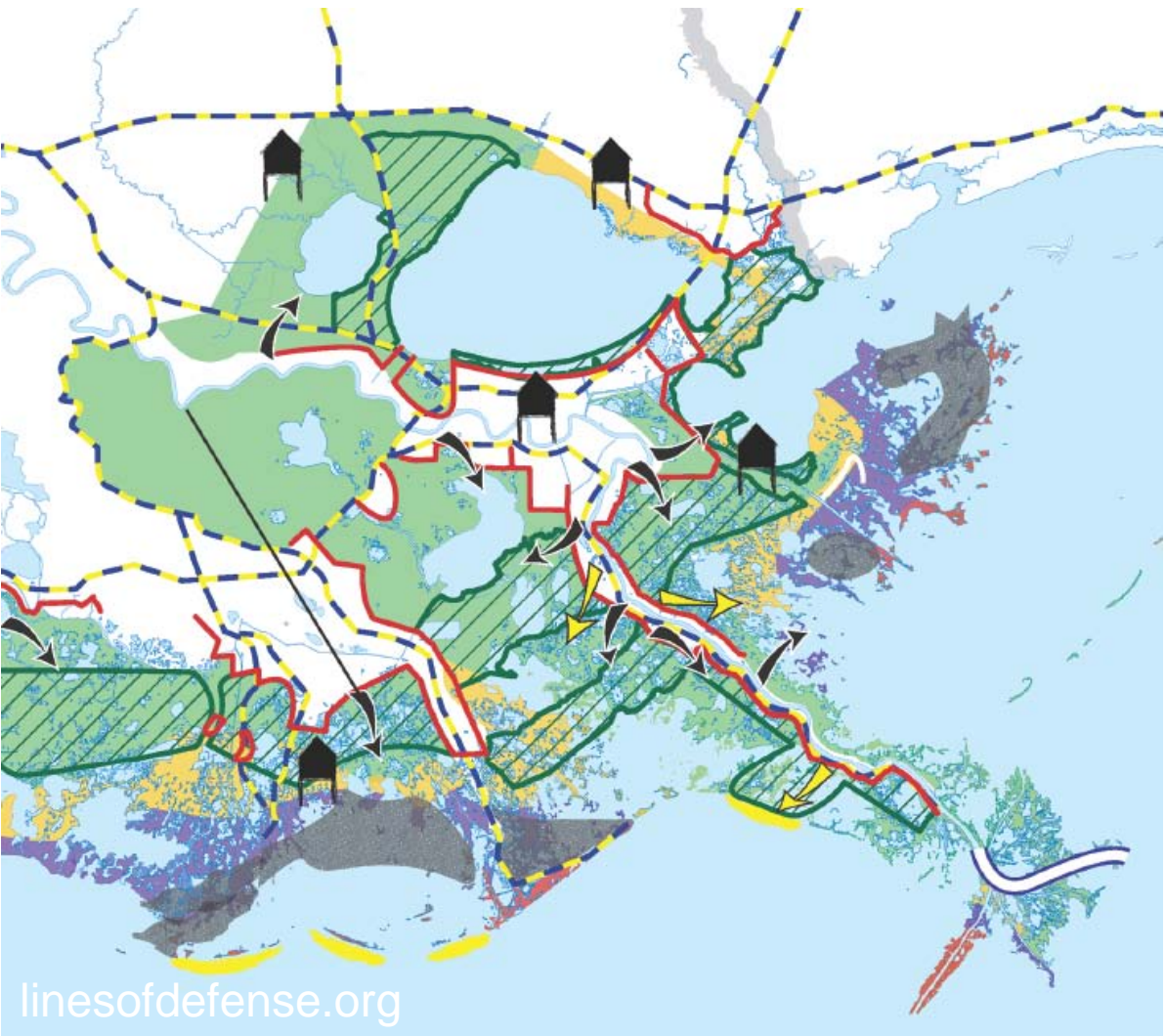
Project Features/Activities: This restoration feature recommends construction of a 35,000 cfs diversion near the Phoenix area, from the Mississippi River into the central River aux Chenes area using a control structure. The introduction of additional



35,000 cfs “pulsing” diversion as Tentatively
Selected Plan

Louisiana Coastal Lines of Defense

Integrating Diversions and Other Flood Mitigation Measures

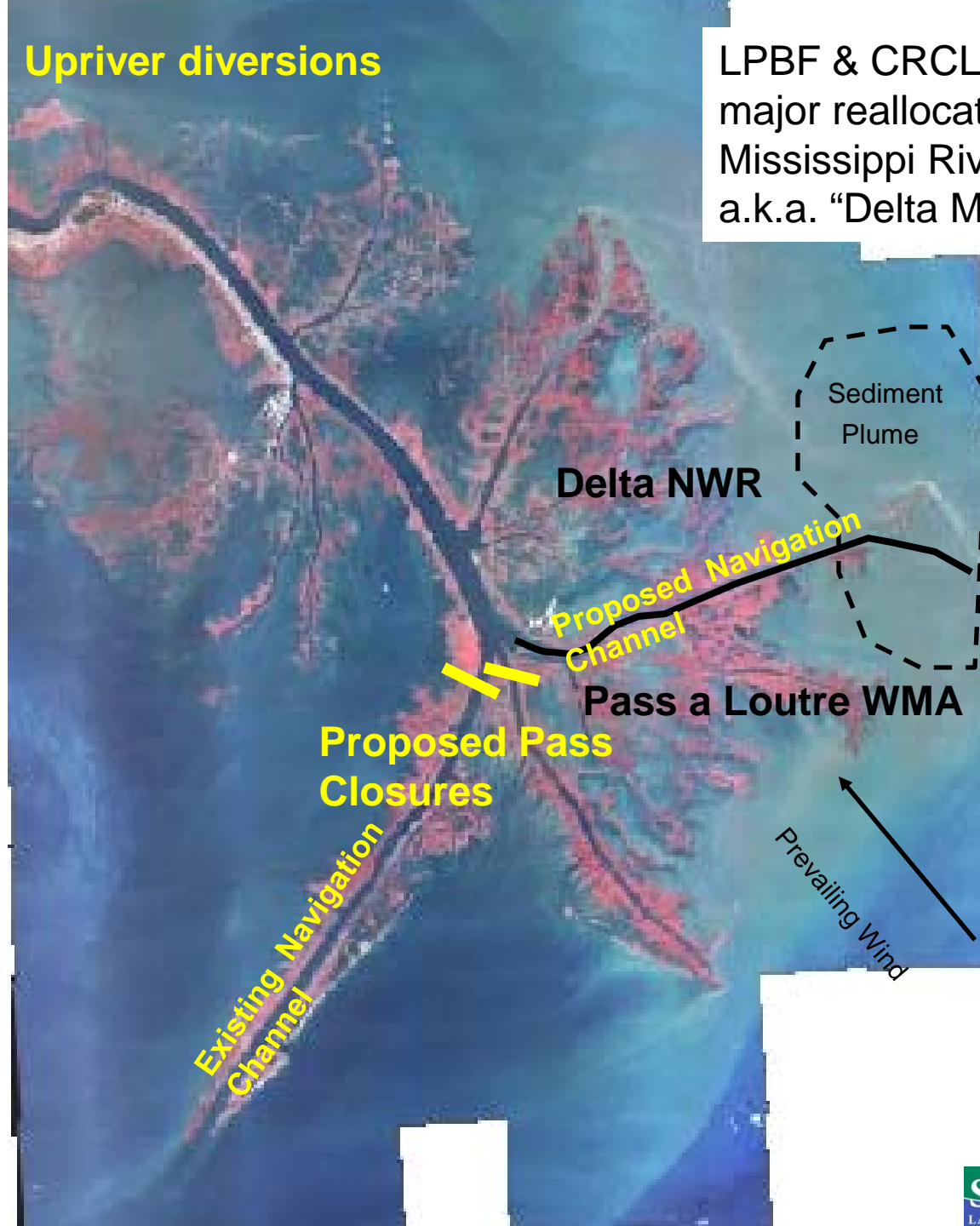


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Upriver diversions

LPBF & CRCL's proposal for major reallocation of Mississippi River discharge a.k.a. "Delta Management"



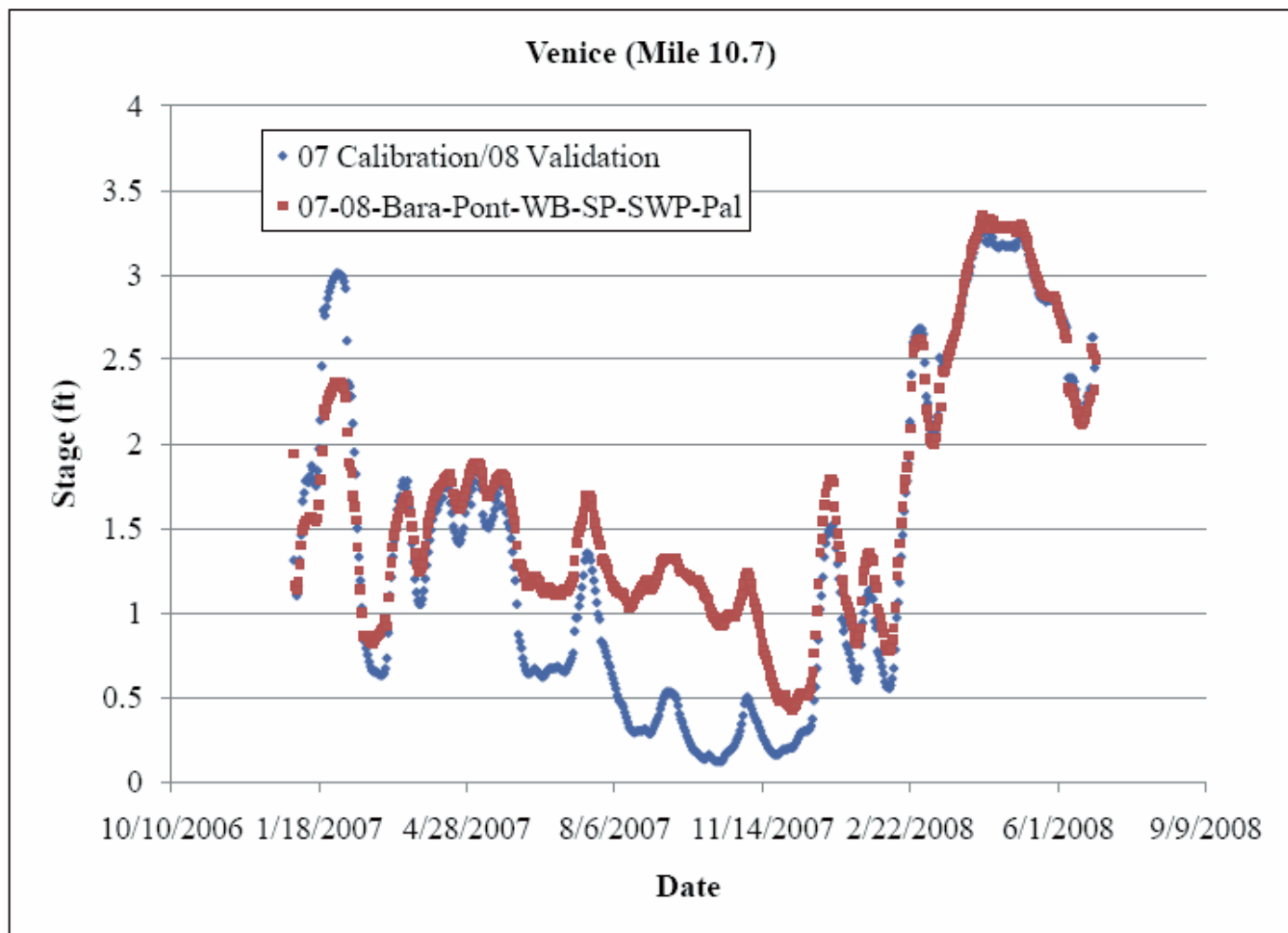


Figure 6-126: 2007-2008 Stage Comparison at Venice due to the Addition of the Barataria and Pontchartrain Basin Diversions; the Closure of South Pass, Southwest Pass, and West Bay; and the Dredging of Pass a Loutré to the 'oil spill' Dimensions for the Proposed Diversions Combined with the Changes to the Delta Distributaries Study.

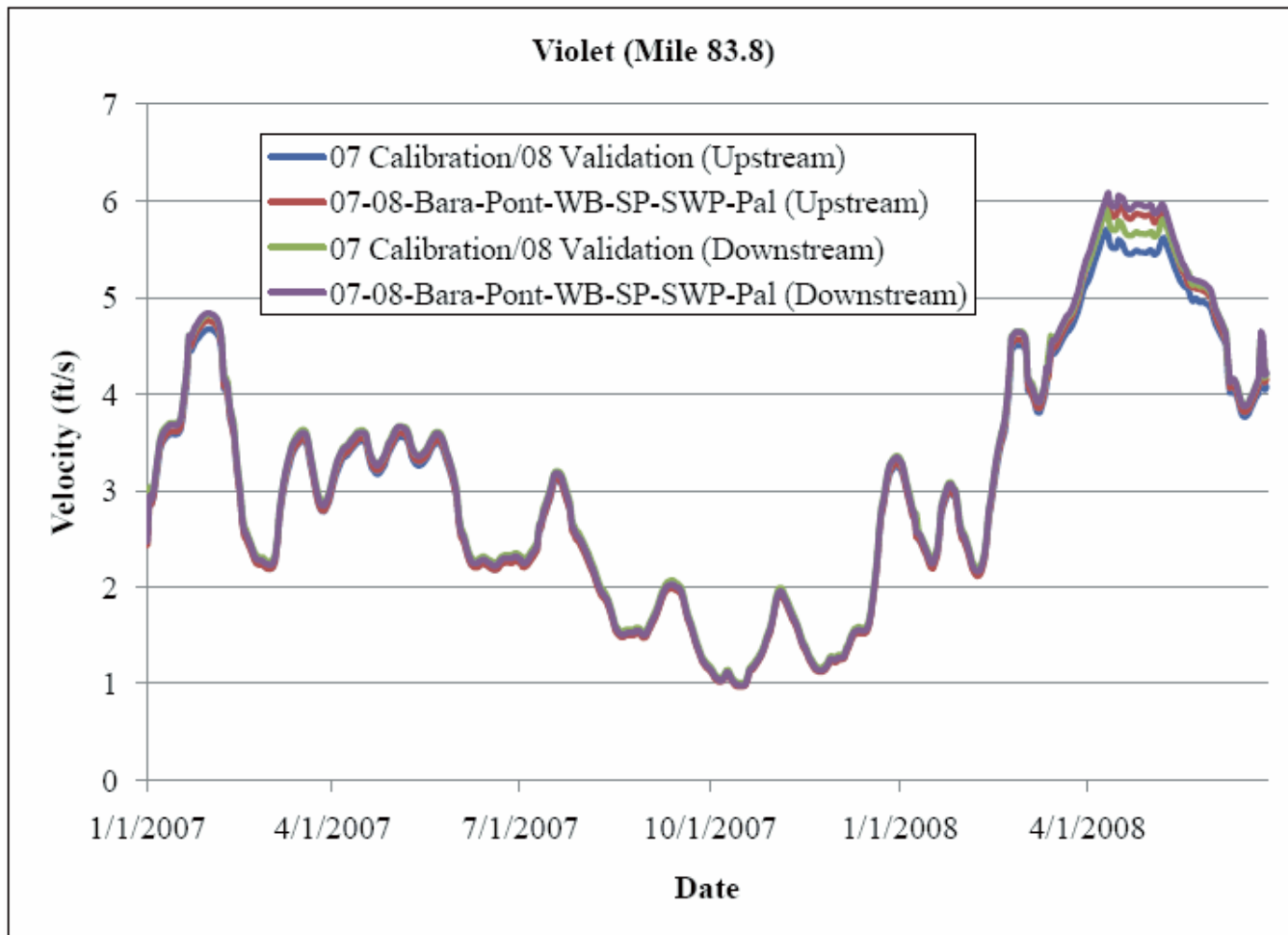


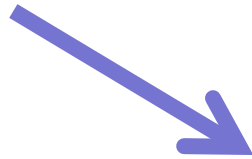
Figure 6-129: 2007-2008 Velocity Comparison at the Violet Diversion due to the Addition of the Barataria and Pontchartrain Basin Diversions; the Closure of South Pass, Southwest Pass, and West Bay; and the Dredging of Pass a Loutr  to the 'oil spill' Dimensions for the Proposed Diversions Combined with the Changes to the Delta Distributaries Study.

In the past 18 months, the first hydrodynamic study of “delta management” of the Mississippi River was completed by University of New Orleans and funded through LPBF and CRCL.

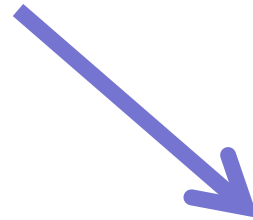
In the same time the State and Corps continued to debate a project agreement to proceed with their first delta management study.

A delta management study has been recommended by the state and Corps for at least 15 years.

**HYDROLOGY AND HYDRODYNAMIC MODELING OF THE
MISSISSIPPI RIVER IN SOUTHEAST LOUISIANA, – PART I ,**
A report
*Submitted to the Lake Pontchartrain Basin Foundation
by Alex McCorquodale, Ioannis Georgiou, Mallory Davis,
Joao Pereira
Pontchartrain Institute for Environmental Studies*



Propose for Louisiana's new State Master Plan
due in 2012



Federal action to re-manage the Mississippi
River for Navigation and Coastal Restoration
post- 2012

Producing Science to Drive Advocacy

Examples:

- Violet Diversion
- White Ditch Diversion
- Mississippi River modeling

Approximately 16 Research projects completed or underway in past two years

Status of the Lower Mississippi River Hydrology and Hydrodynamic Modeling of the Mississippi River in Southeast Louisiana

Hydrodynamic Modeling in Barataria Basin

Turbidity monitoring of Caernarvon Discharge

Assessment of the nutria impact on vegetation under the influence of the Caernarvon Diversion & Bucktown Marsh

Historical Impact of the Bohemia Diversion to coastal habitats (un-leveed, east-bank reach of the Mississippi River)

Inventory and analysis of historical diversions in southeast Louisiana

Review of status of nutria herbivory in coastal Louisiana in light of control programs and response to restoration. Two-part report

Review of plans for hydrokinetic power generation on the Mississippi River

Hydrodynamic and Salinity Modeling in the Pontchartrain basin: Assessment of Freshwater Diversion at Violet with MRGO Modifications

Optimization of the Violet Freshwater Diversion in Conjunction with Other Upper and Middle Basin Freshwater Diversions

Investigating Nutria Mitigation and Marsh Restoration Strategies in the Hammond Assimilation Wetlands

Hurricane Surge Modeling Terrebonne Basin

Lake Pontchartrain Artificial reefs

Chandeleur Sound Water Quality

Lake Pontchartrain Food Web

Potential Impacts to tidal passes due to storm barriers

Louisiana Coastal Lines of Defense

Wetland Habitat Goals

Saline (8-29 ppt)	Brackish (4-18 ppt)
Intermediate (2-8 ppt)	Fresh/Marsh Swamp (0-3 ppt)

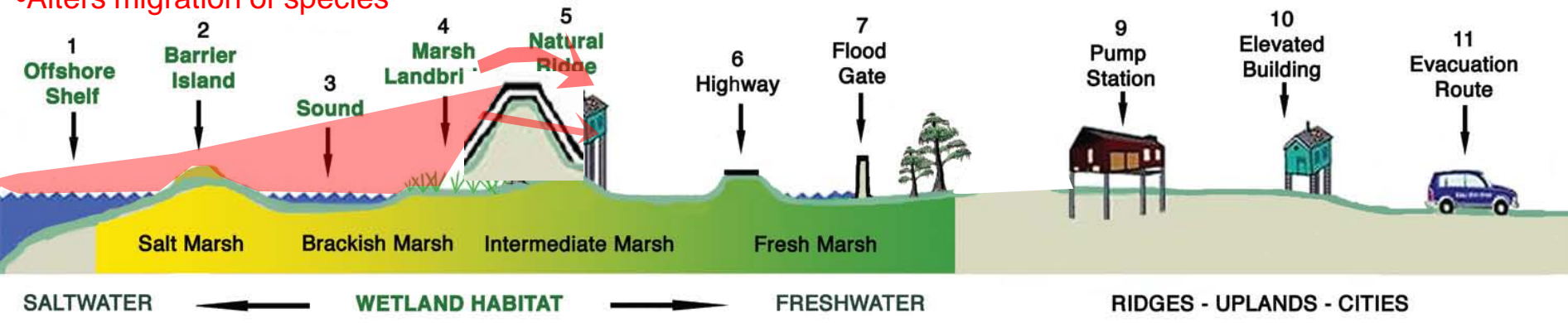
Coastal Lines of Defense

Barrier Island Restoration	Re-route Navigation
Land Building Diversion or Crevasse	Major Evacuation Routes
Diversion	Elevated Housing
Marsh Creation	Levee
Ridge Restoration	Salinity Control
Reef Restoration	

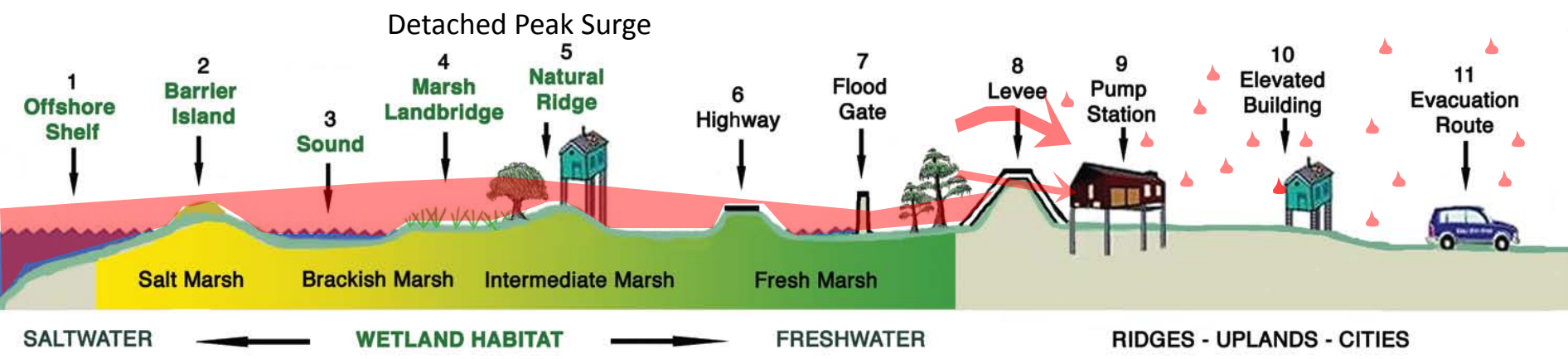


Cross-Basin Levee With surge

- Reduces coastal buffer effectiveness
- Amplification of surge
- Alters estuarine gradient
- Alters migration of species
- Larger and more expensive levee
- Or sub-standard levee
- Higher O&M
- Induces development
- Impounds wetlands
- Challenges the use of river diversions



Ridge Levee With surge



Benefits of Producing Credible Science to Drive Advocacy

- 1) Advance projects caught in technical limbo
- 2) Re-directs a bad project for a better project
- 3) Build up an extended, collaborative network of expertise
- 4) Funding is a competitive advantage to your extended team of experts
- 5) Policy development is easier with home-grown science
- 6) Produces new and alternative funding for important research
- 7) Advances Science

NGO Science Myths:

Science is too expensive

NGO's can't do cutting-edge research

NGO's can't produce credible science

Monitoring is not science

Science must start with a hypothesis

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BUT ONLY IF

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Monitoring is not science

You walk the talk!

Science must start with a hypothesis

Not walking the talk:

Use of hyperbole to emotionalize decisions and override science

Ignoring credible data because it conflicts with policy

Defining the issue narrowly to exclude valid data or issues

Walking the talk:

Honoring all credible data

All policy, advocacy, messaging are founded on valid science and engineering