

Interagency Performance Evaluation Task Force (IPET)

Summary & Status

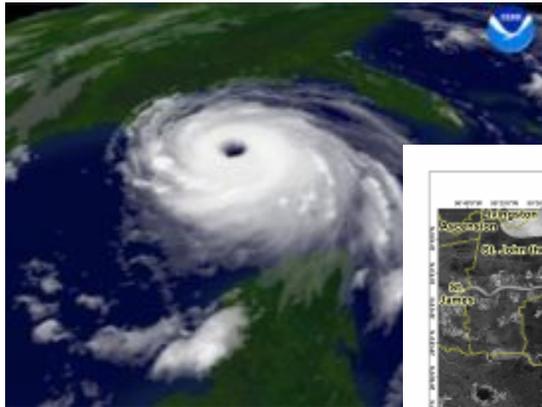
Dr. Ed Link, Director



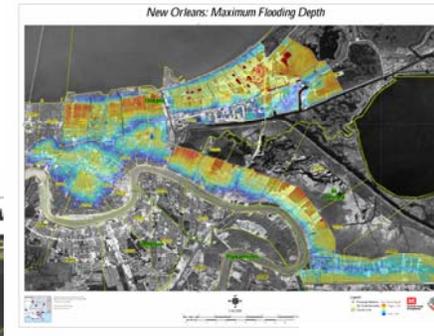
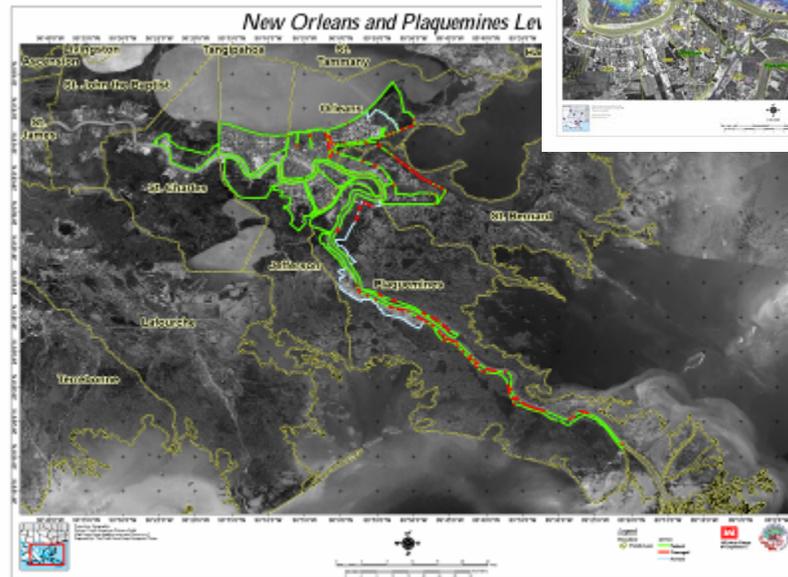
IPET Mission

Forensic Analysis and Risk Based System Wide Assessment

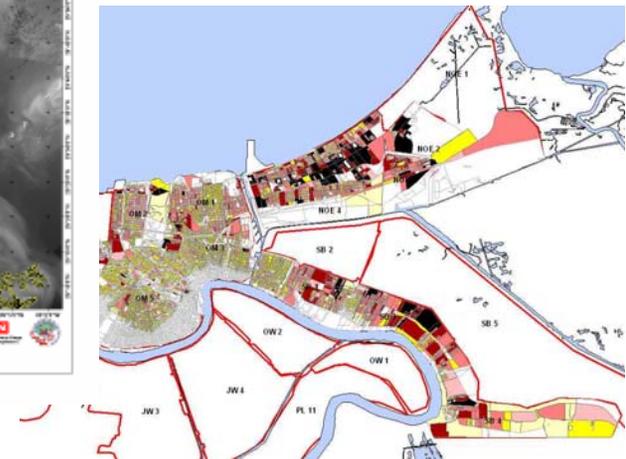
HAZARD



SYSTEM



CONSEQUENCES



Results are
“in the Ground”

<https://ipet.wes.army.mil>

<http://www.mhclibrary.com>

IPET Final Report

Volume	Status
VOL I Executive Summary And Overview	DOJ for Release of Interim Final 31 Jan
VOL II Geodetic Vertical and Water Level Datums	DOJ for Release of Final 31 Jan
VOL III The Hurricane Protection System	Draft Final in edit, Release expected by 15 Feb
VOL IV The Storm	Draft Final in edit, Release expected by 15 Feb
VOL V The Performance - Levees and Floodwalls	Draft Final in edit, Release expected by end Feb
VOL VI The Performance – Drainage and Pumping	Draft Final being completed, Release expected by end of Feb
VOL VII – The Consequences	DoJ for release of Final by 31 Jan
VOL VIII – The Risk and Reliability Analysis	Draft Final being prepared, initial release by early Mar, final by Jun
VOL IX - Appendices	DOJ for Release by 31 Jan

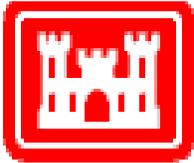


**US Army Corps
of Engineers.**

Performance Evaluation of the New Orleans and Southeast Louisiana Hurricane Protection System

Final Report of the Interagency Performance Evaluation Task Force

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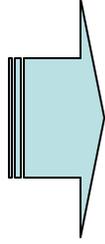
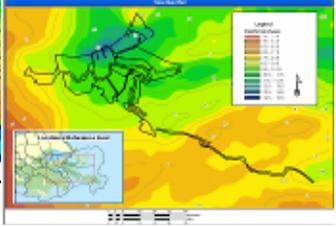
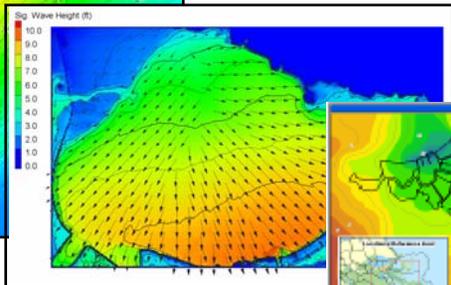
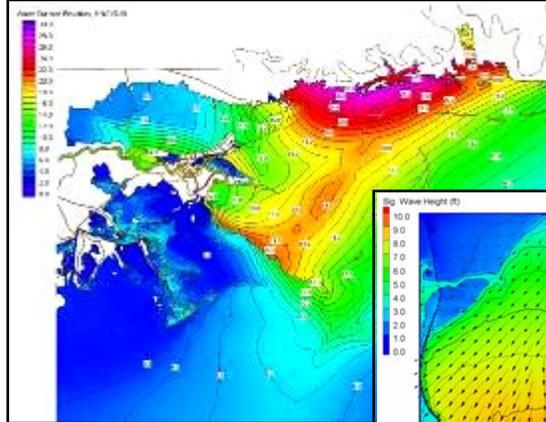
The Hazard



Surge

Waves

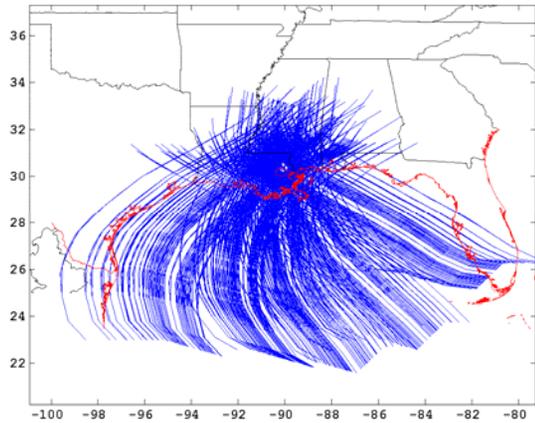
Rain



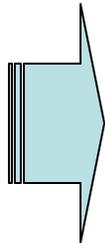
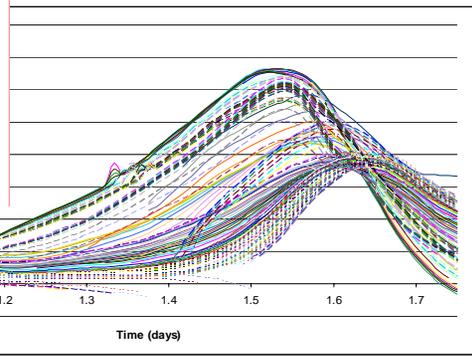
Katrina Time History of Forces by Locale

Forensic Analysis

System Wide Assessment



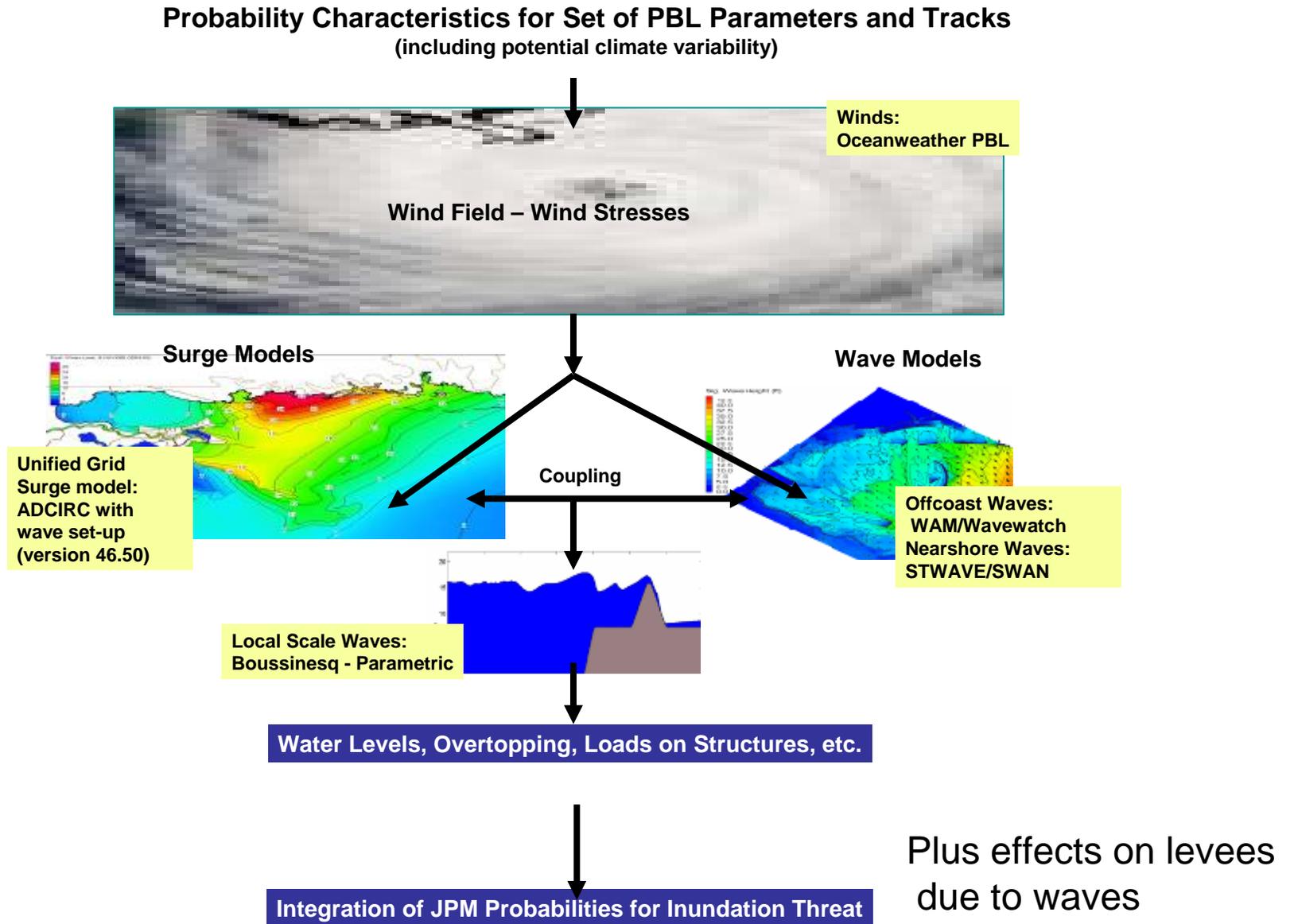
**Central Pressure
Max Winds
Radius to max winds
Speed
Track**



Probability of Surge and Wave Levels by Locale

**Issues:
Climate Dynamics
Coastal Dynamics**

Joint Probability Method – Optimum Sampling



NOAA chart with storms versus intensity only

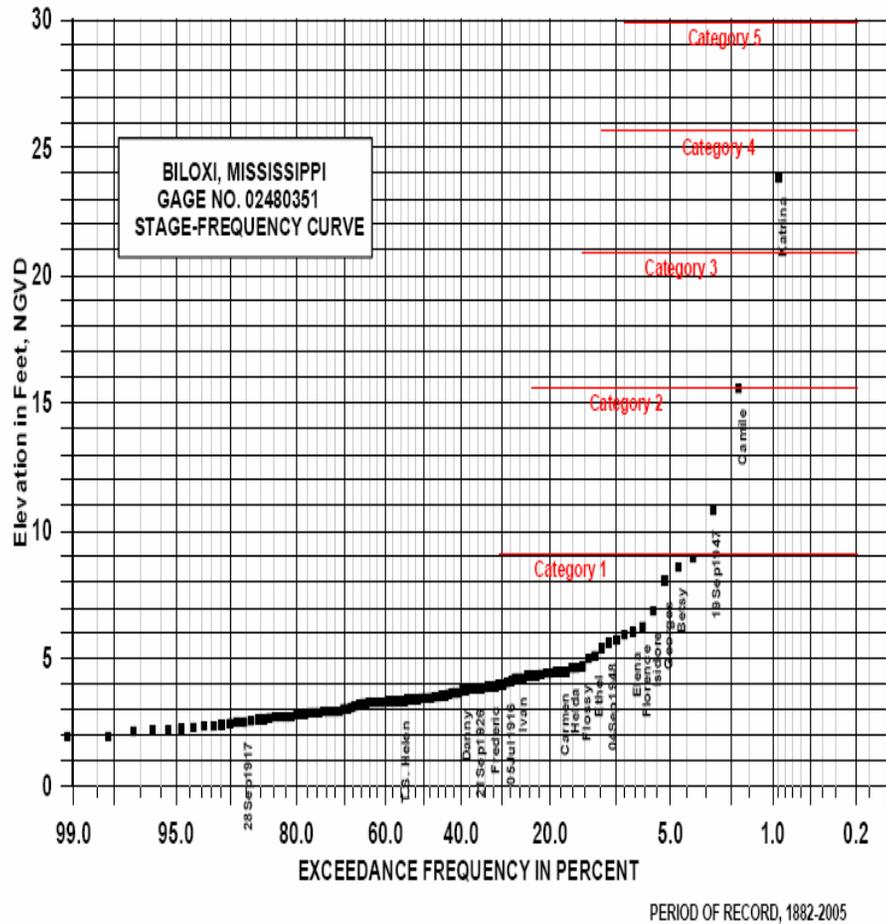
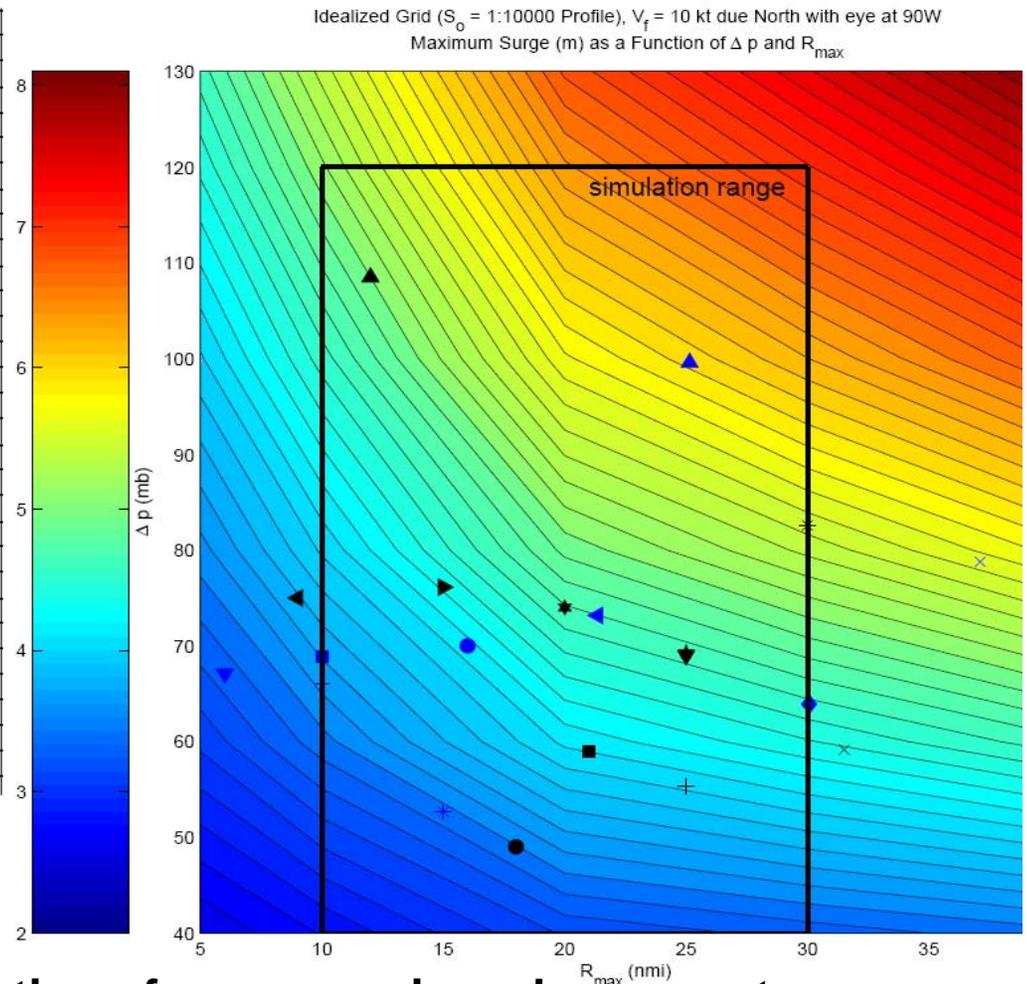
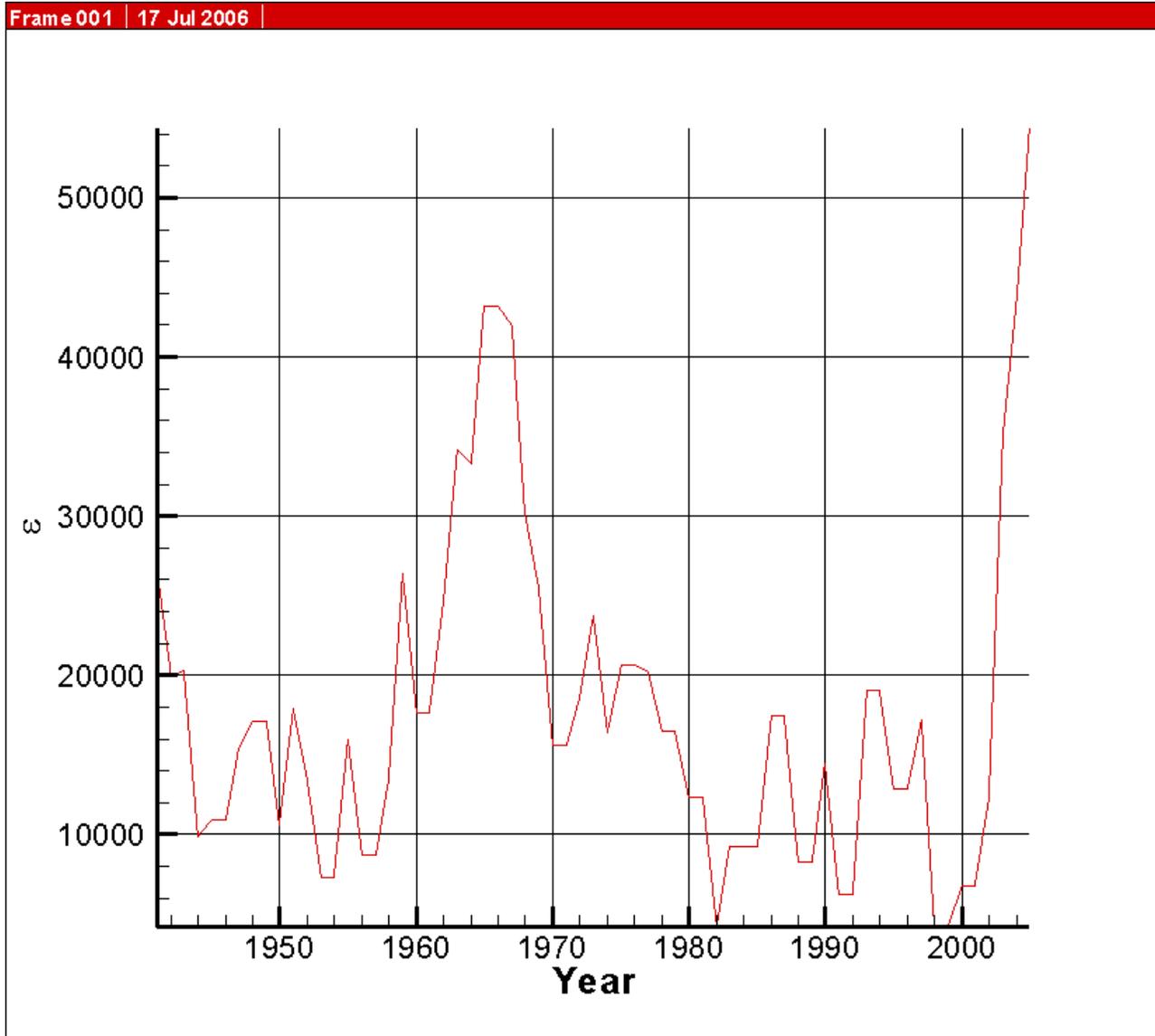


Chart from ADCIRC simulations showing that both intensity and size affect surges at the coast



The 2 primary dimensions for estimation of surge maxima along coast: Storm Intensity and Storm Size. Katrina is about a 400-year storm and Rita is About a 90-year storm in their areas of maximum effect

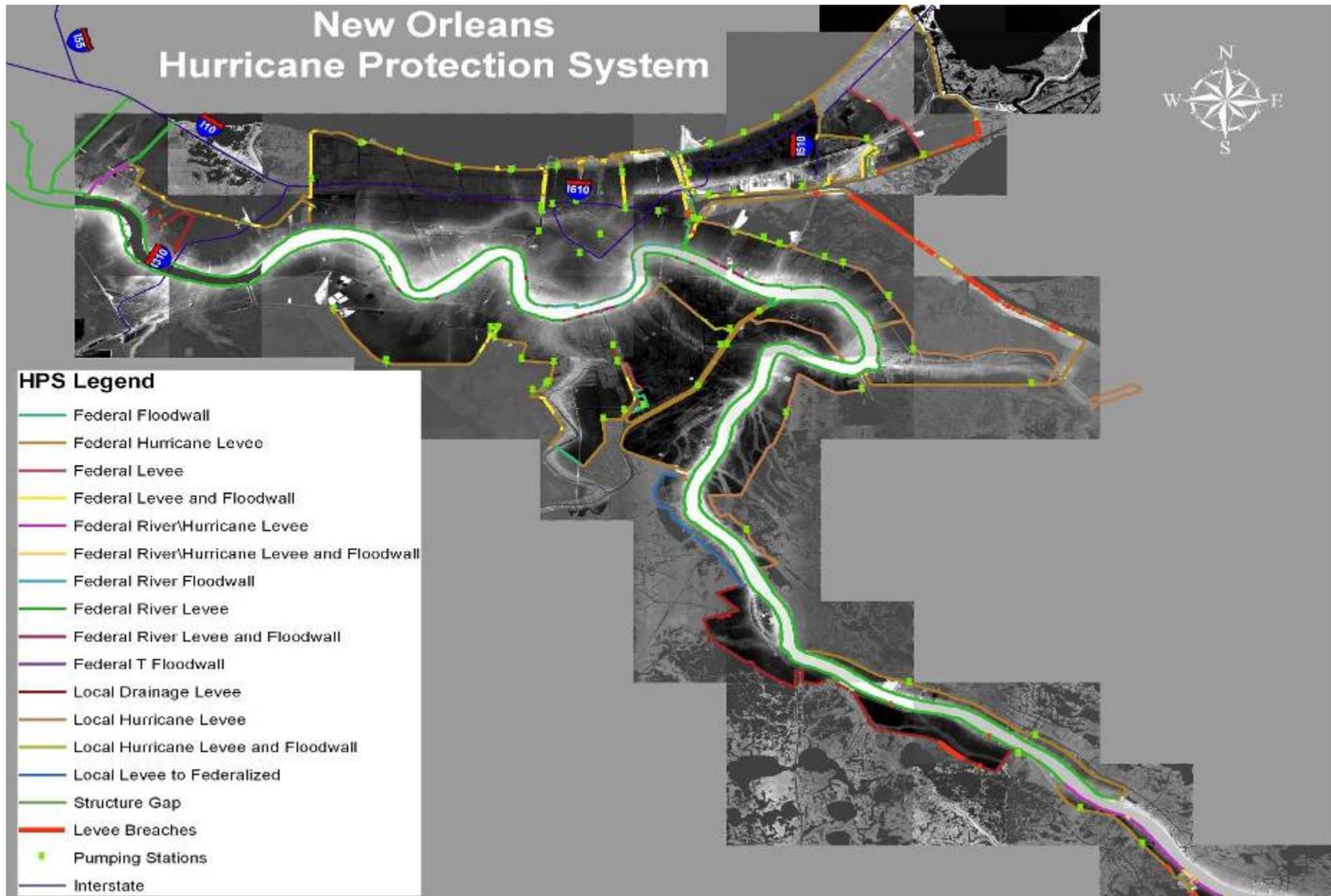
The Hazard is Dynamic



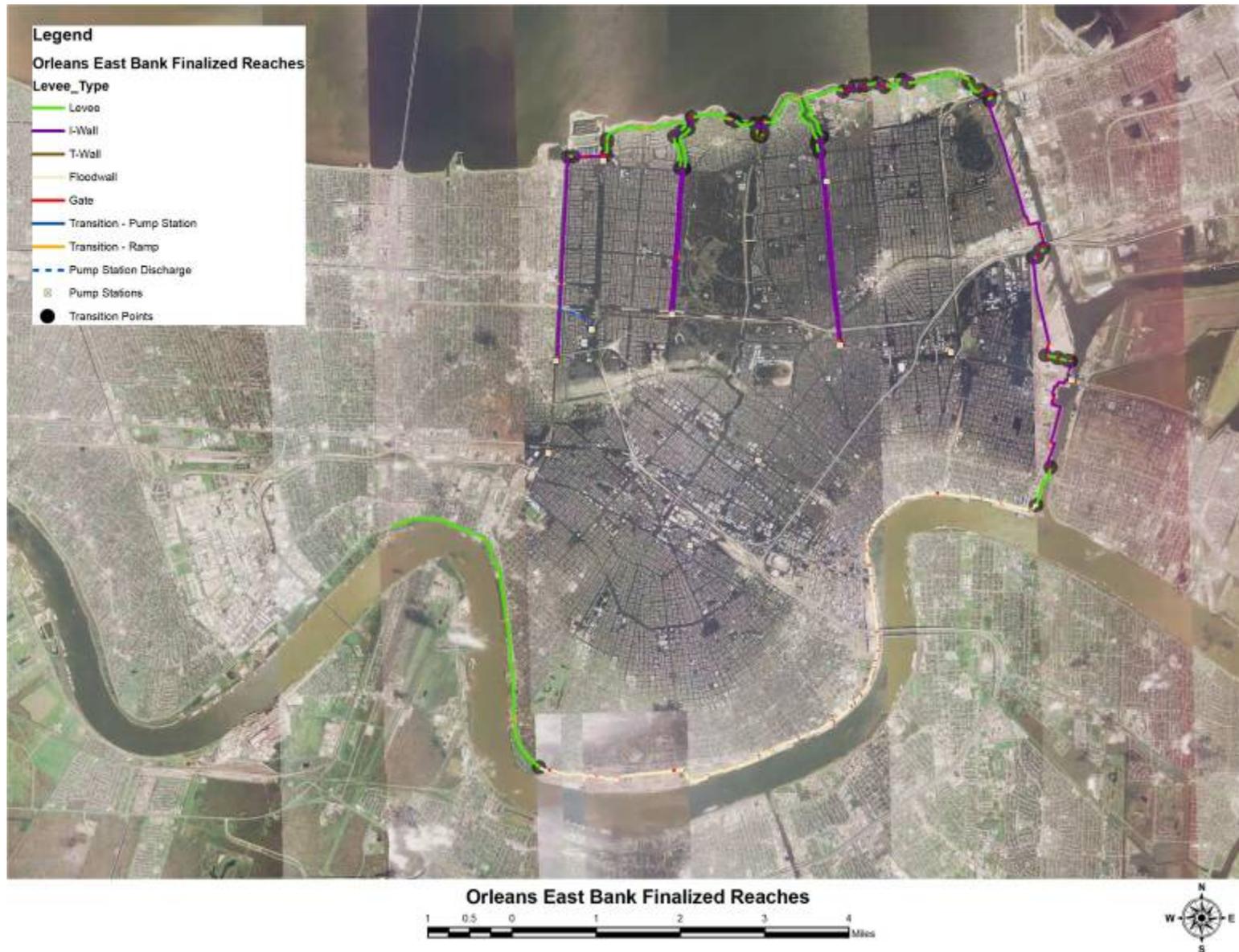
Plot of estimated cumulative kinetic energy for all storms: 1941-2005.



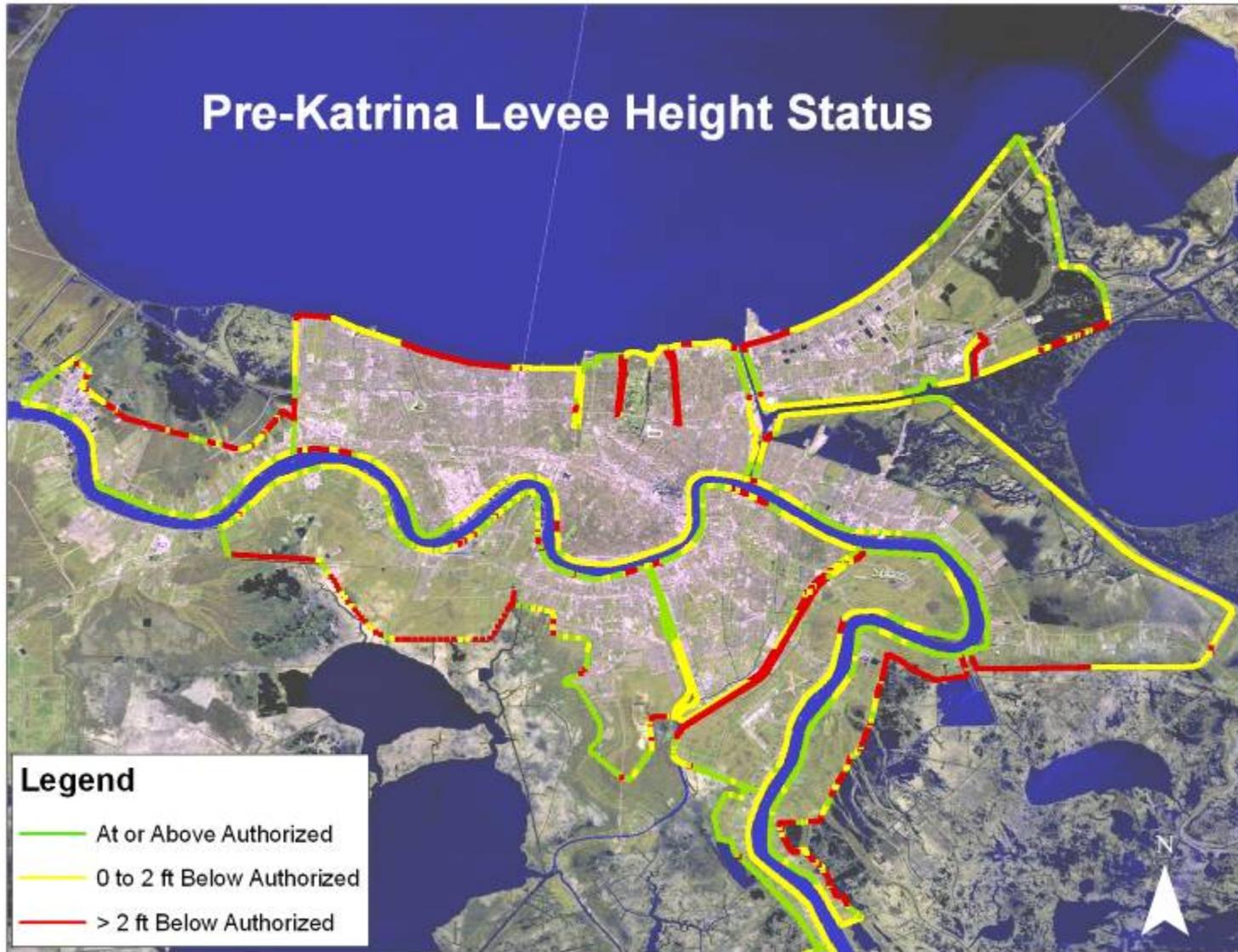
The System



Distribution of Types of Structures



Pre-Katrina vs Authorized Elevations

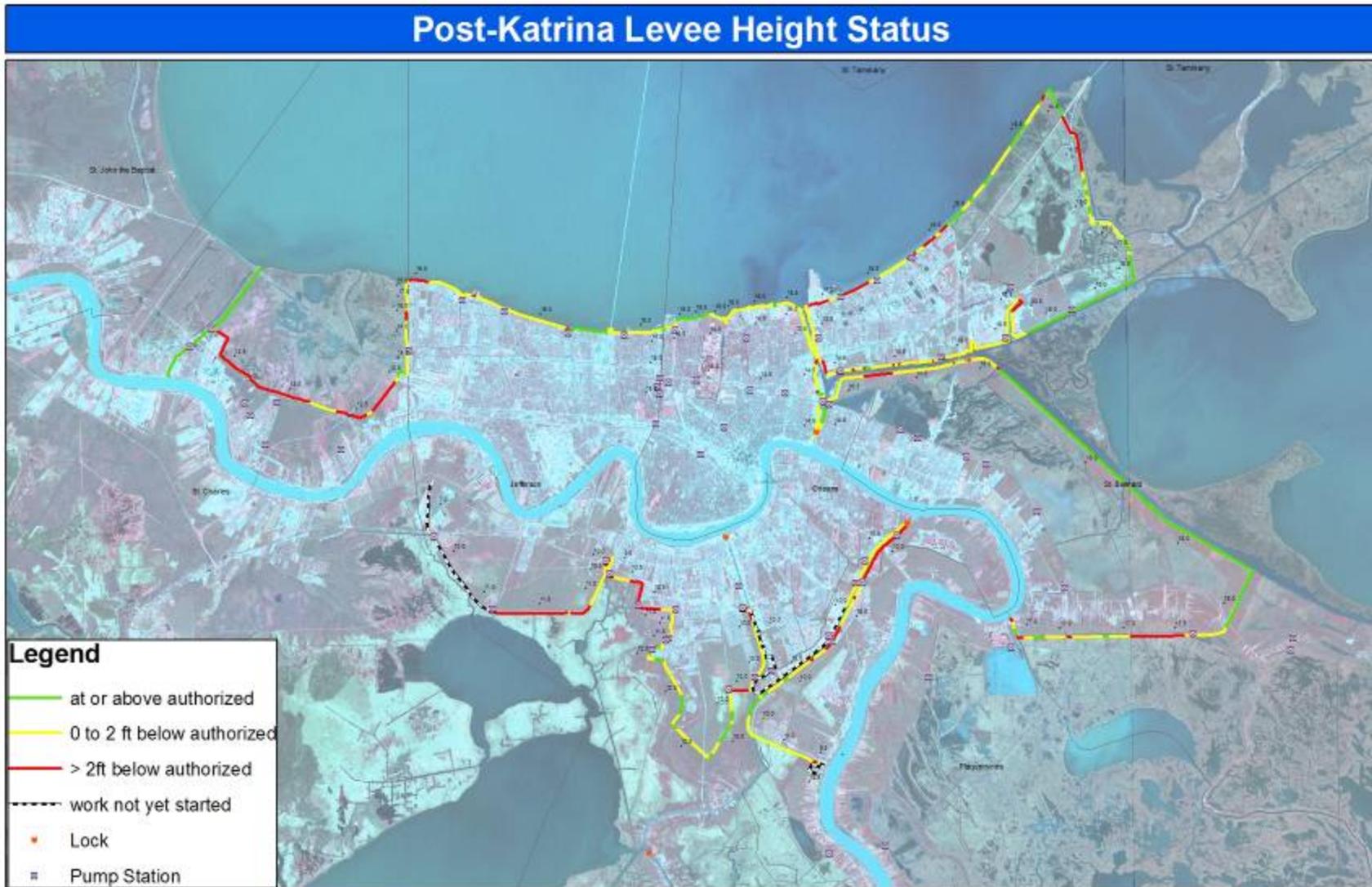


Breach Sites and Characterization



Breach sites in Orleans East Bank & IHNC

Post Katrina vs Authorized Elevations



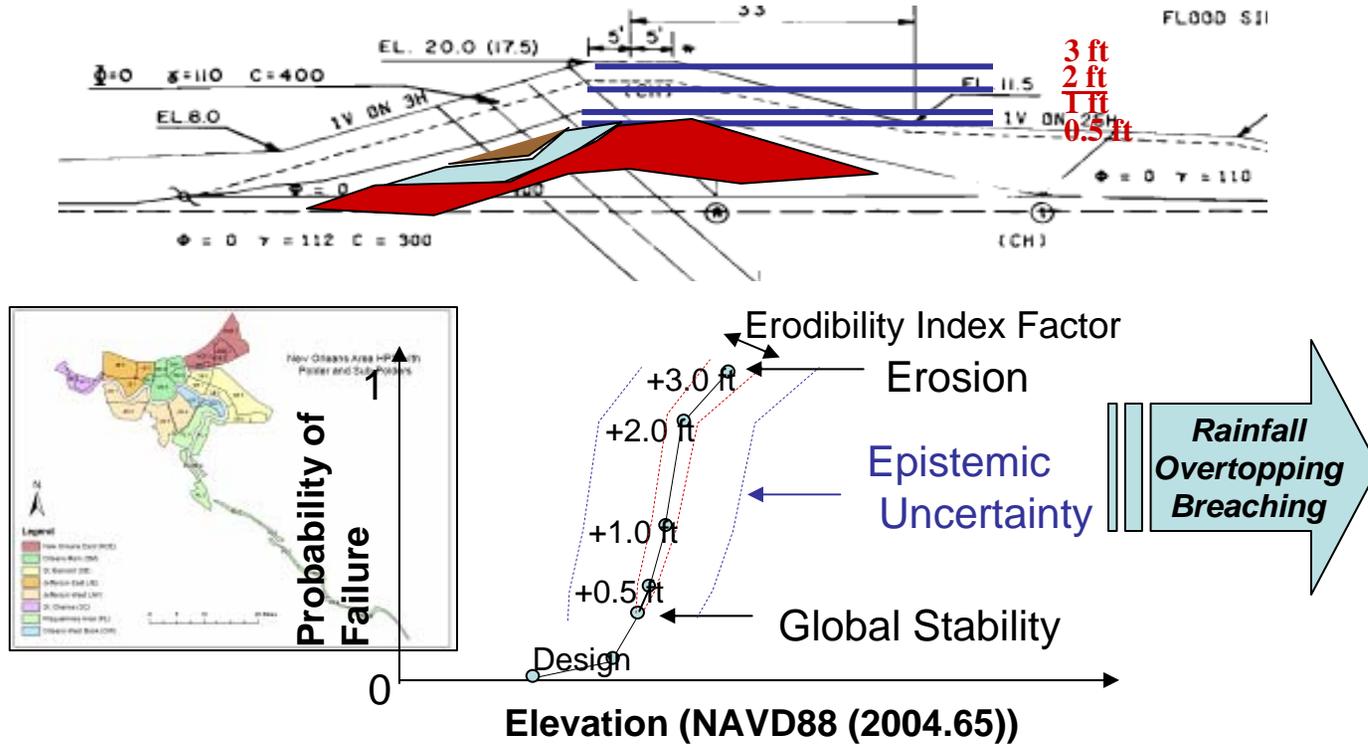
System Performance

Forensic Analysis



Katrina Performance by Component

System Wide Assessment

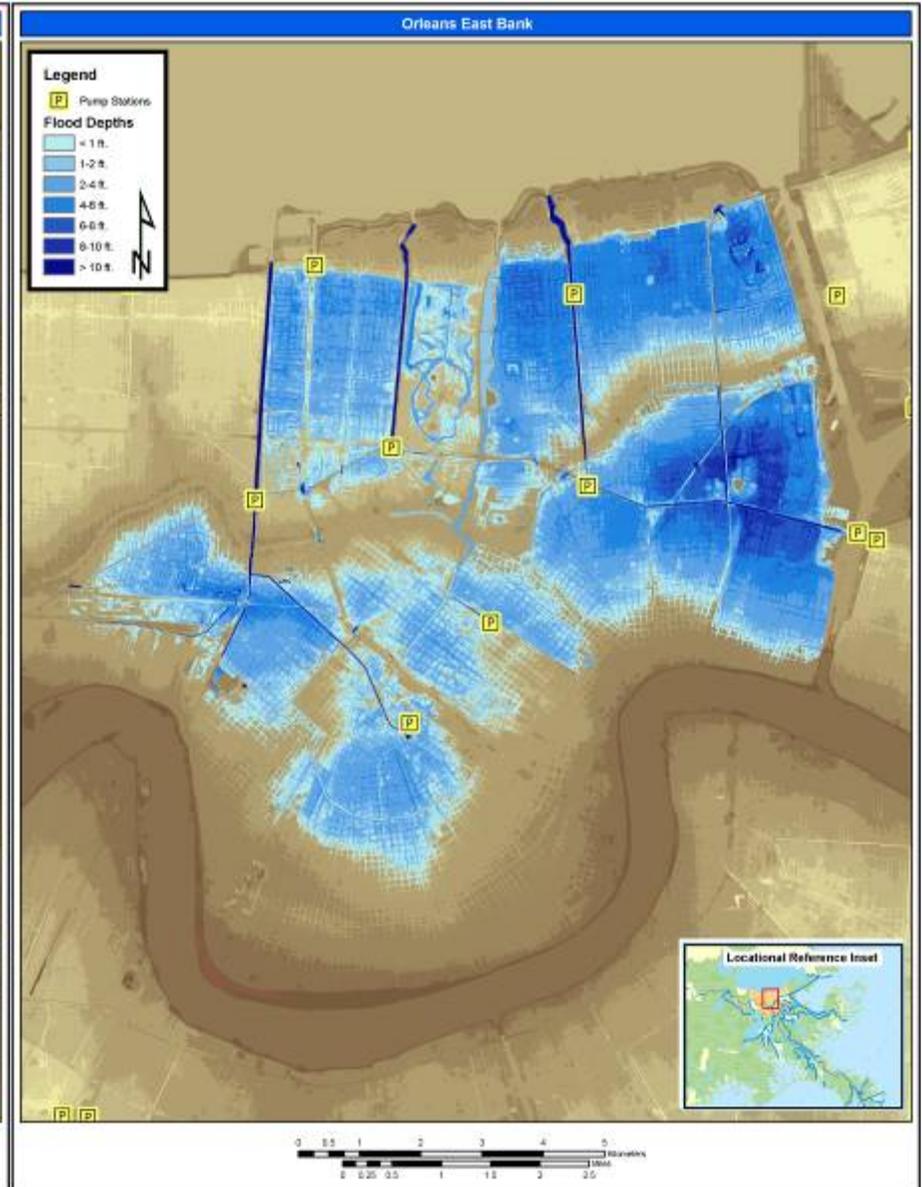
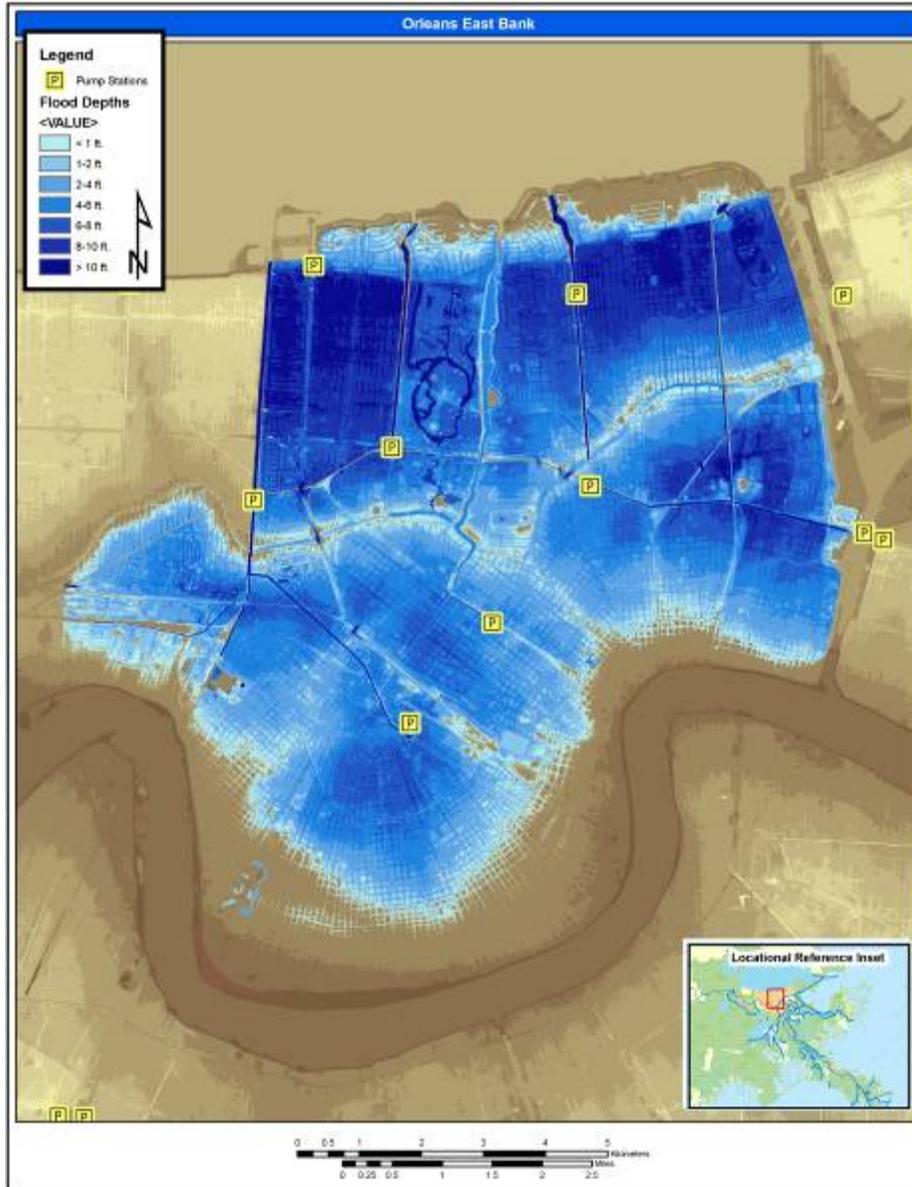


Expected Performance by Event and Area

Correlation of Levee Performance and Quality of Materials

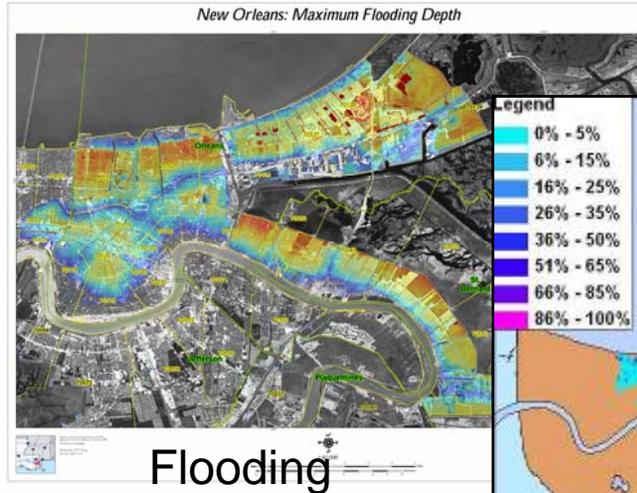


Drainage and Pumping

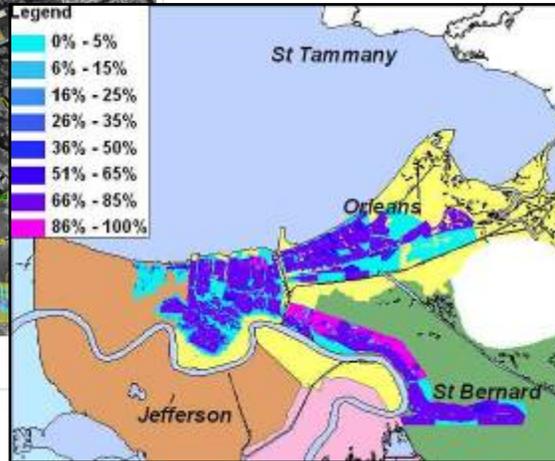


Consequences

Forensic Analysis

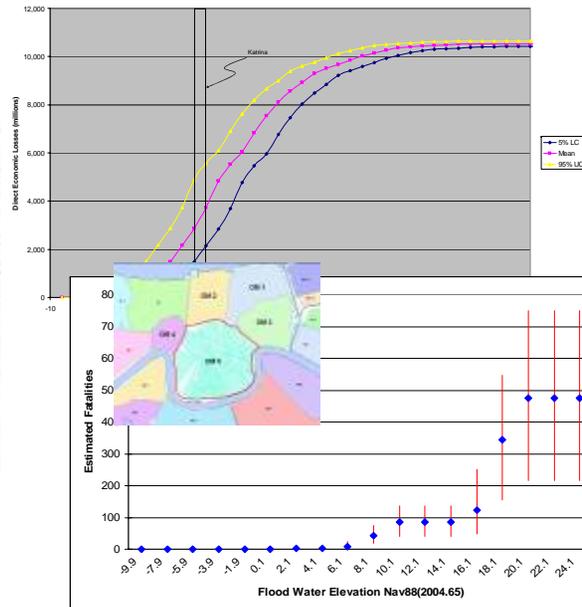
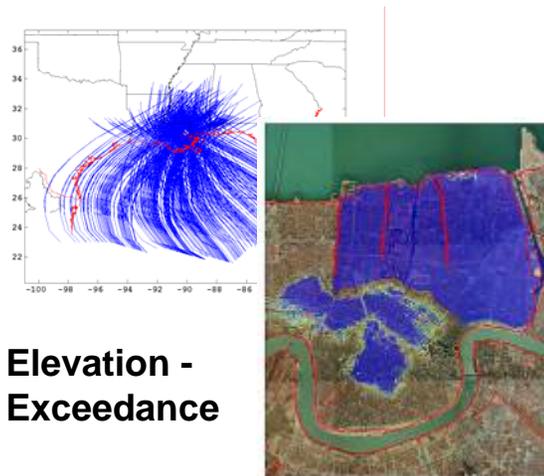


Losses



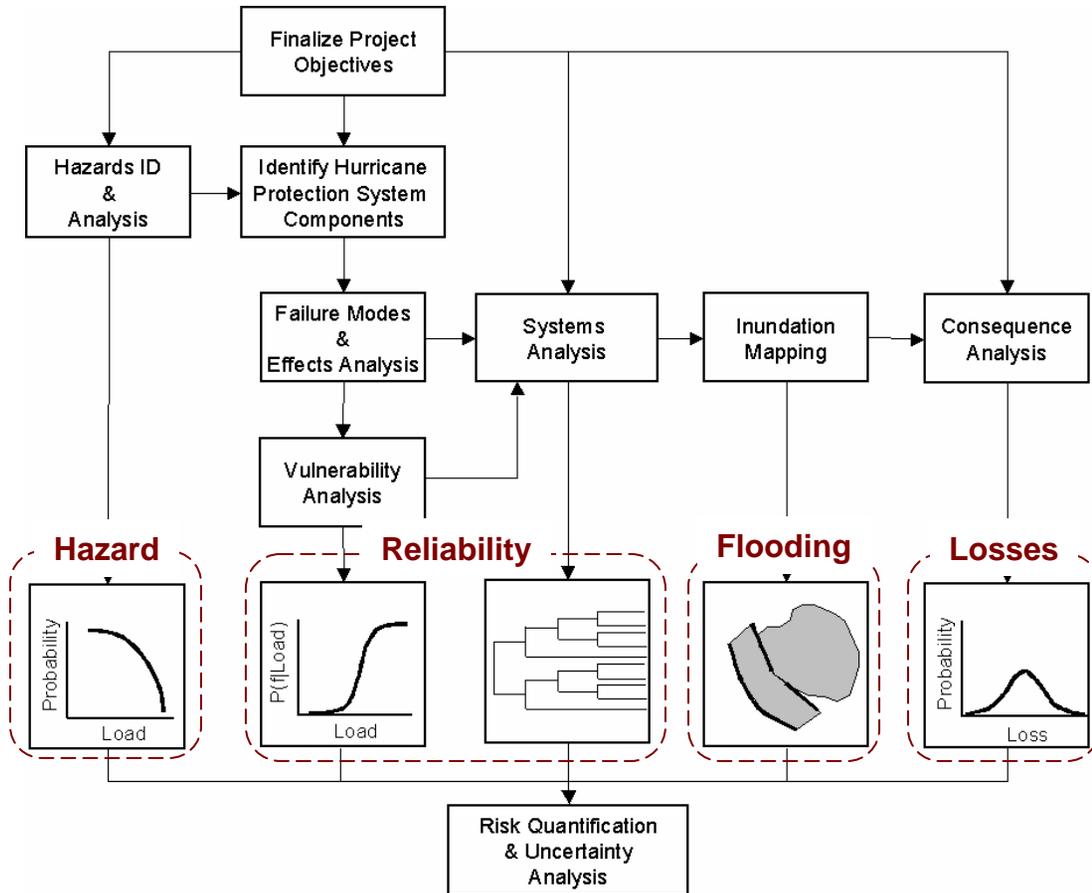
Katrina
Distributed
Life, Cultural,
Economic &
Environmental
Losses

System Wide Assessment

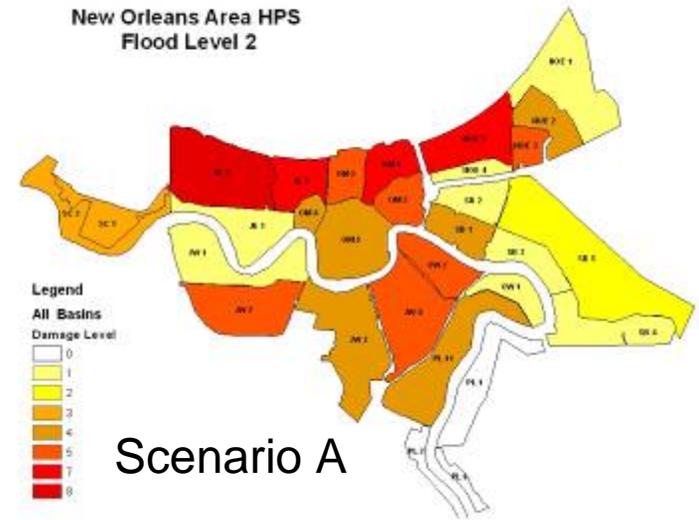


Distributed
Life and
Economic
Losses
by Event &
Scenario

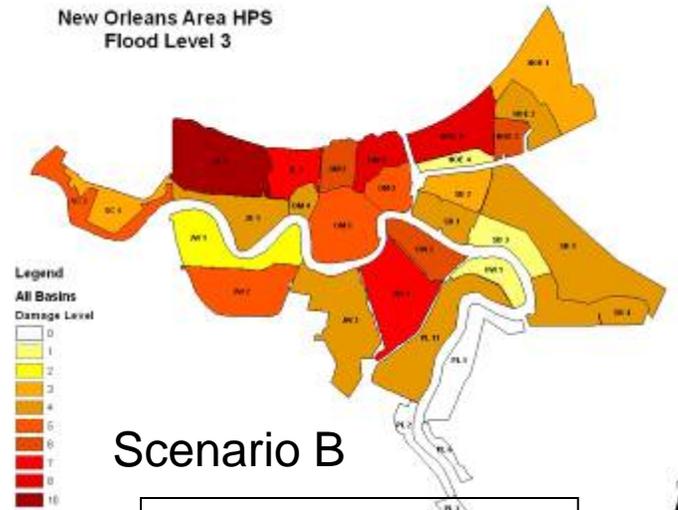
IPET Risk Model



Risk = P(bad) x Loss



Scenario A



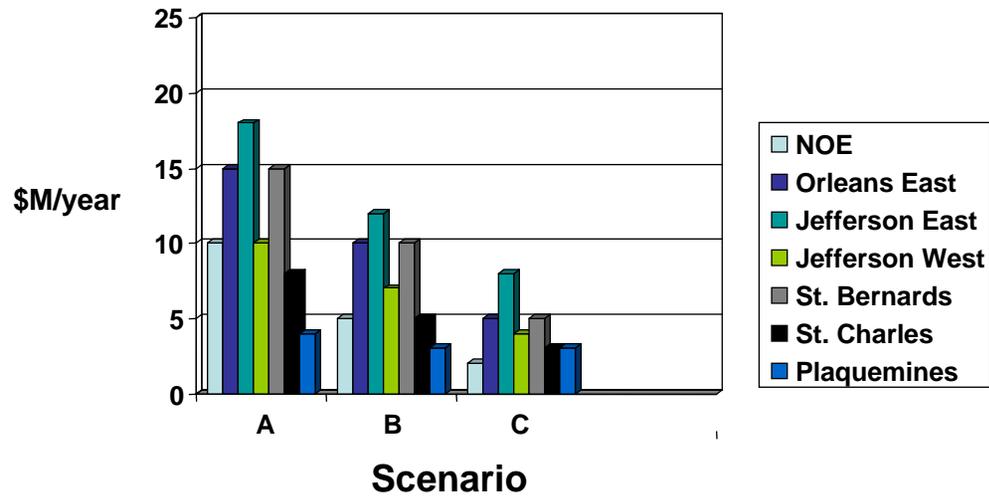
Scenario B

Illustrative Only

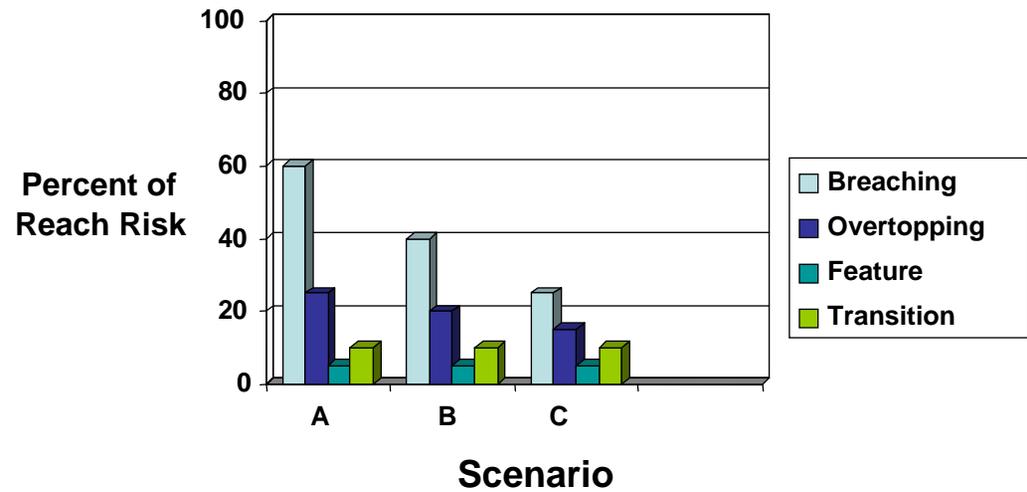


Sources of Risk

Relative Risk

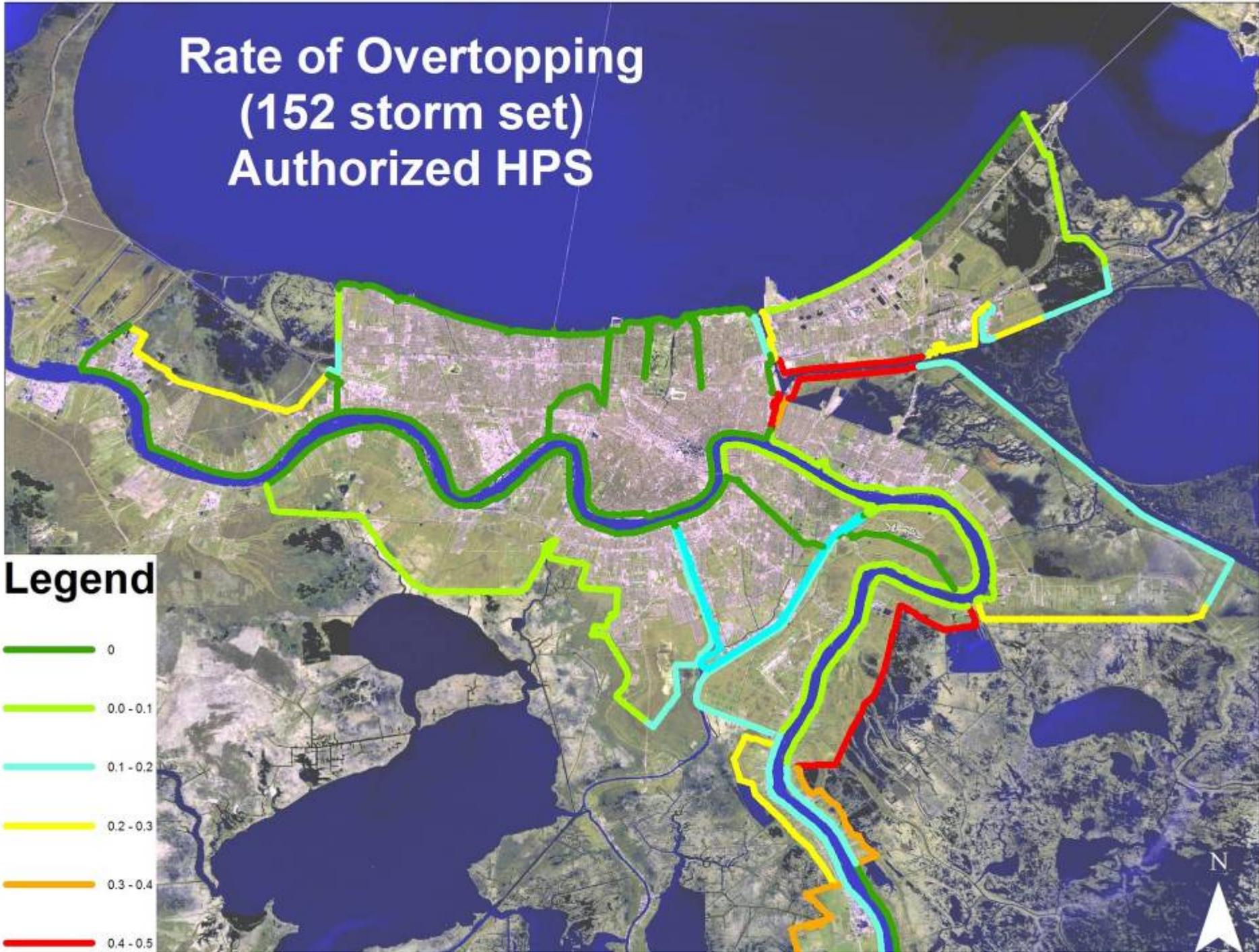
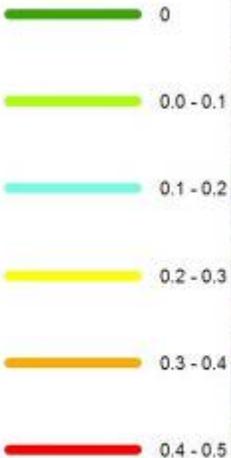


Sources of Risk



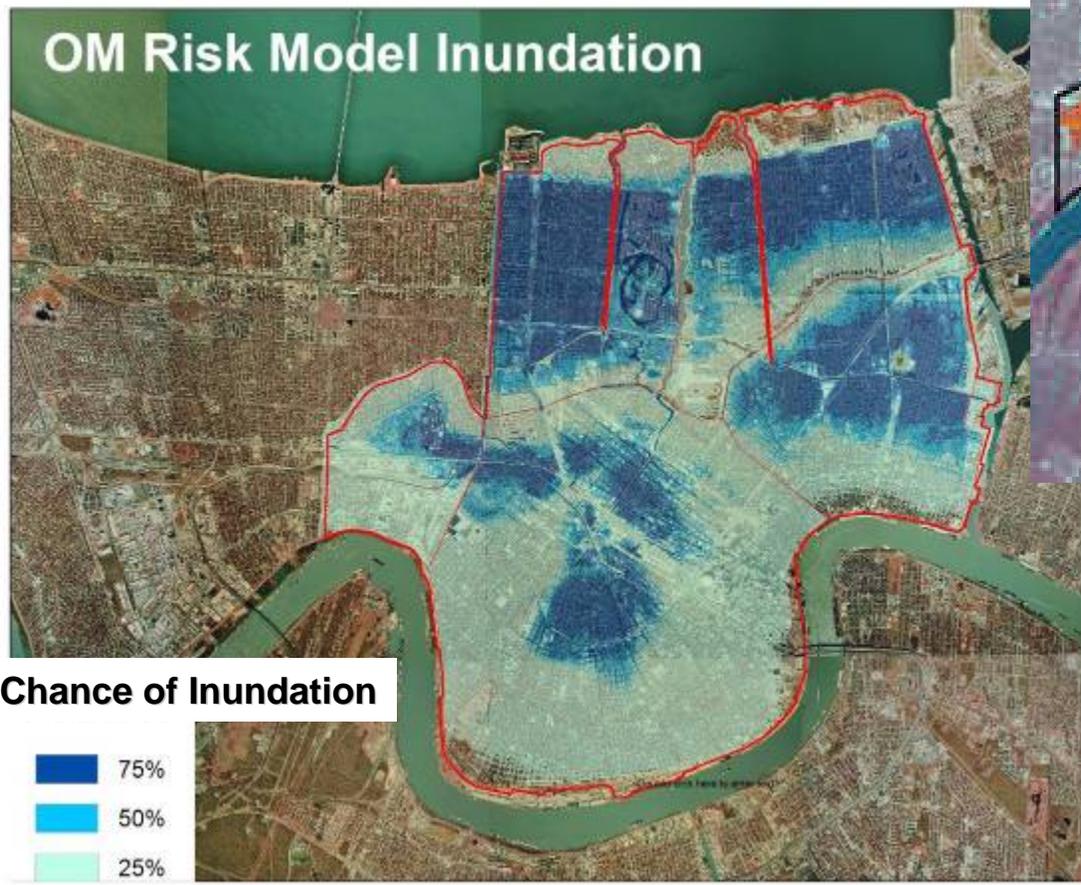
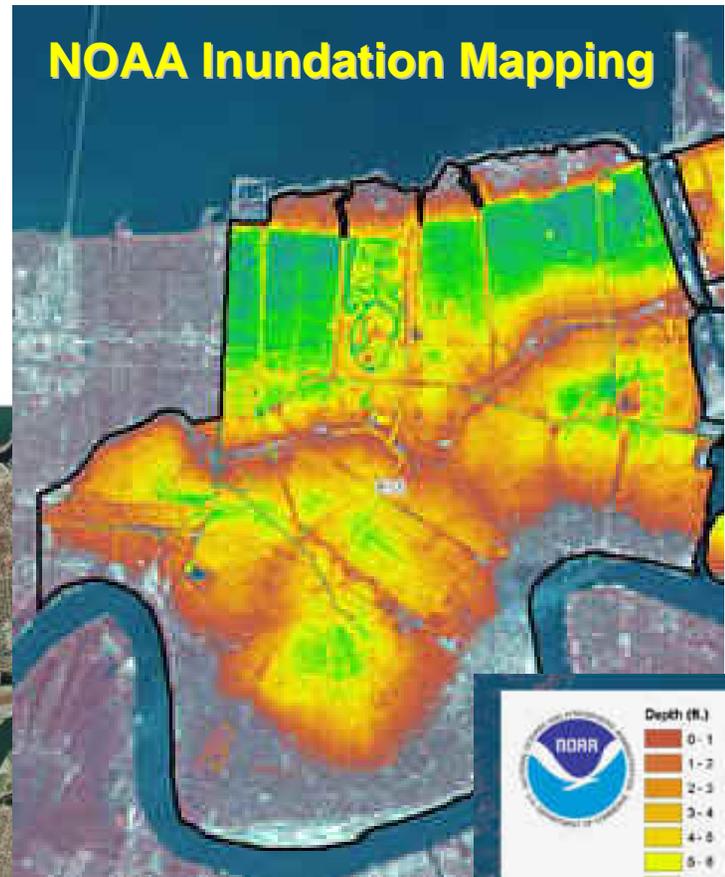
Rate of Overtopping (152 storm set) Authorized HPS

Legend



Risk Model Testing

Katrina – Pre-Katrina System



Depth (ft.)

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 15
- 15 - 20
- > 20

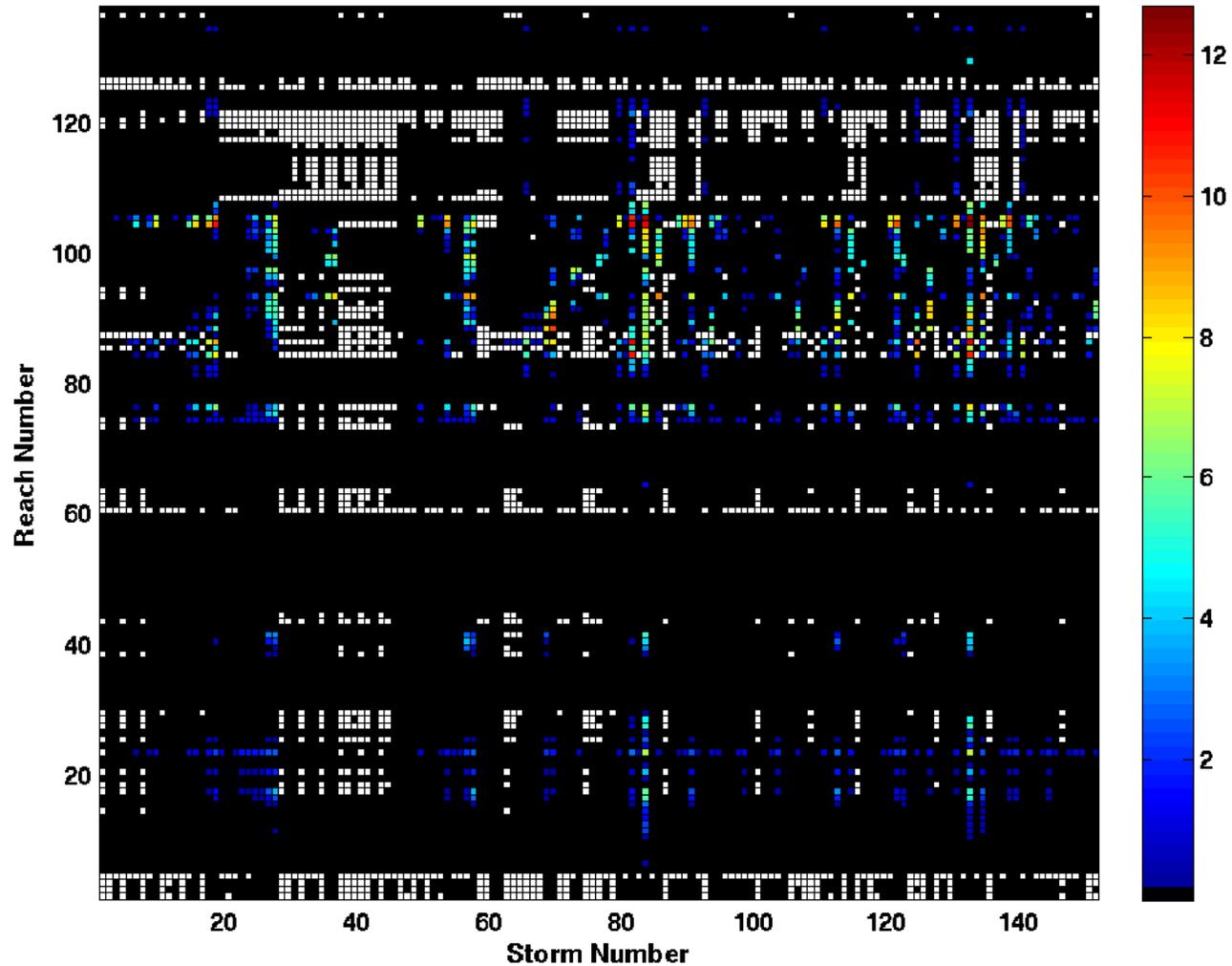
USACE Flood Status Zones

Zone ID

Hurricane Katrina Flooding
Estimated Depth and Extent
31 August 2005

Vulnerability Analysis

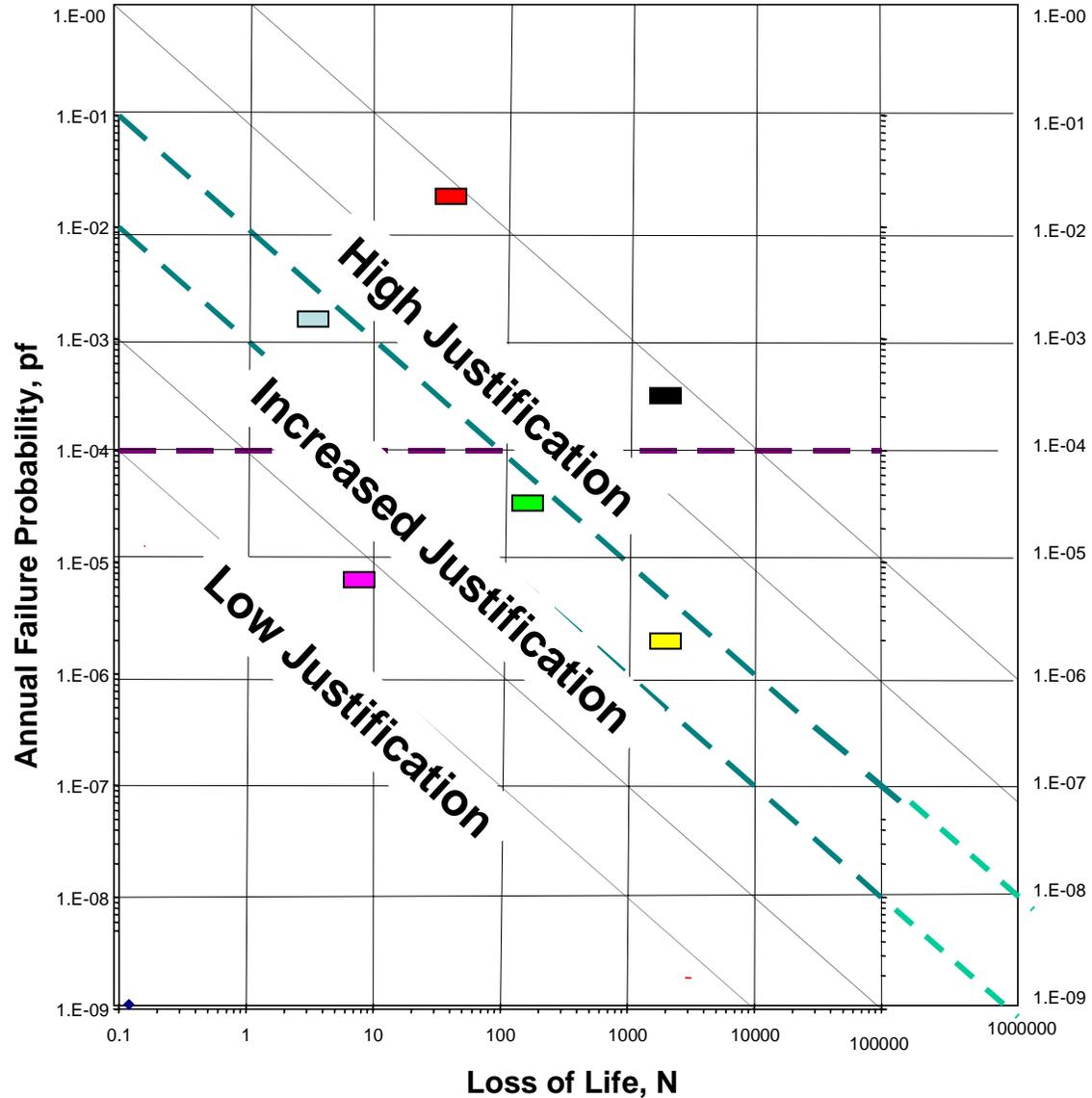
Vulnerability 2007 [Exceedence*Fragility]



Risk Informed Decisions

POLICY !!

- NOE5 – Reach 2
- NOE4 – Reach 3
- SB2 – Feature 1
- OM4 – Feature 3
- JE3 – Reach 4
- OM5 – Reach 7



Illustrative Only