KEEPING HISTORY
ABOVE WATER 2016

GALVESTON:

A HISTORY OF INCREDIBLY VIOLENT STORMS, SAVVY RESPONSES, AND UNINTENDED CONSEQUENCES

MATTHEW PELZ

GALVESTON HISTORICAL FOUNDATION

GALVESTON

48,000 people

Founded 1839

Tourism, Port, Health Services

5 NR Districts

Photos from Galveston Historical Foundation
Preservation Resource Center

GALVESTON HISTORICAL FOUNDATION

1871 ** 15 properties **Over 70 covenants

LOCATION

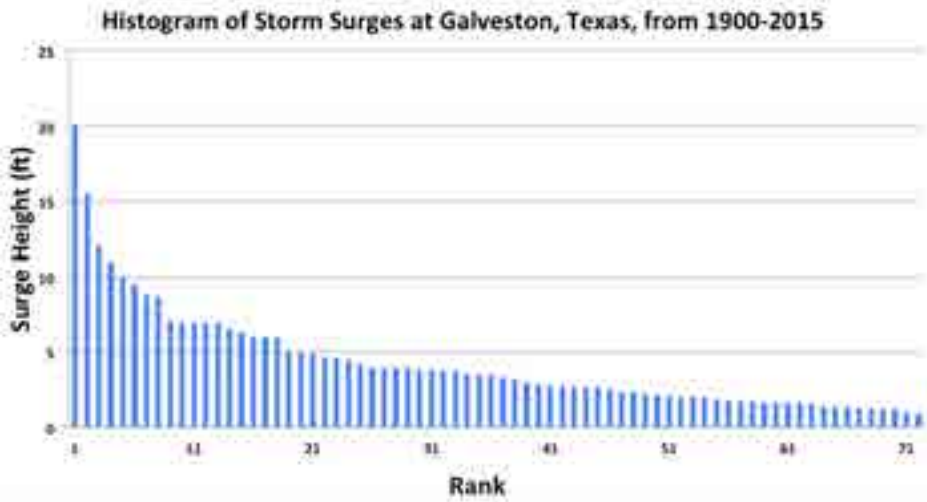


Figure from Hal Needham, “A Data-Driven Storm Surge Analysis for the U.S. Gulf Coast,” 2015.

CHANGING ENVIRONMENT

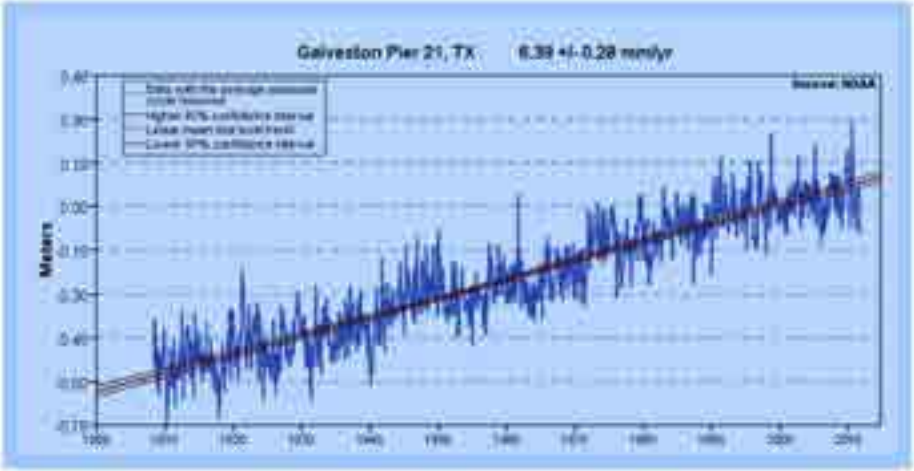


Figure 5.7. Local relative sea level rise since 1908 based on tide gauge records at Pier 21 in Galveston shows an average rate of 6.39 mm per year from 1908-2006. Data source: (NOAA 2011).

Figure from John Anderson, “Accelerated Sea Level Rise and the Future of the Texas Coast,” 2014.

Photo from Galveston Daily News, September 2, 2015

Figure from City of Galveston Planning Department

What can we learn from historical resilience strategies?

TIMELINE

1838-1900 – Growth of the City

1900 – Catastrophe

1900-1915 – Response

1915-2008 – Impacts

2008 – New challenge

Photograph from mysoutex.com

GROWTH OF GALVESTON

1860: 7000 people

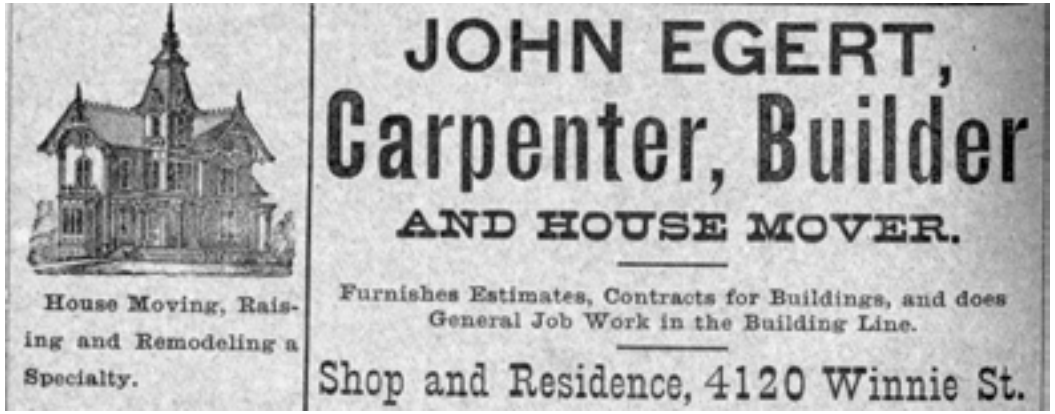
1880: 22000 (most populous city in Texas)

1856

1885

Figures from Galveston Historical Foundation
Preservation Resource Center

EARLY CLIMATE RESPONSES



Photos from Galveston Historical Foundation Preservation Resource Center

"WALL STREET OF THE SOUTHWEST"

Photos from Galveston Historical Foundation Preservation Resource Center

1900 HURRICANE

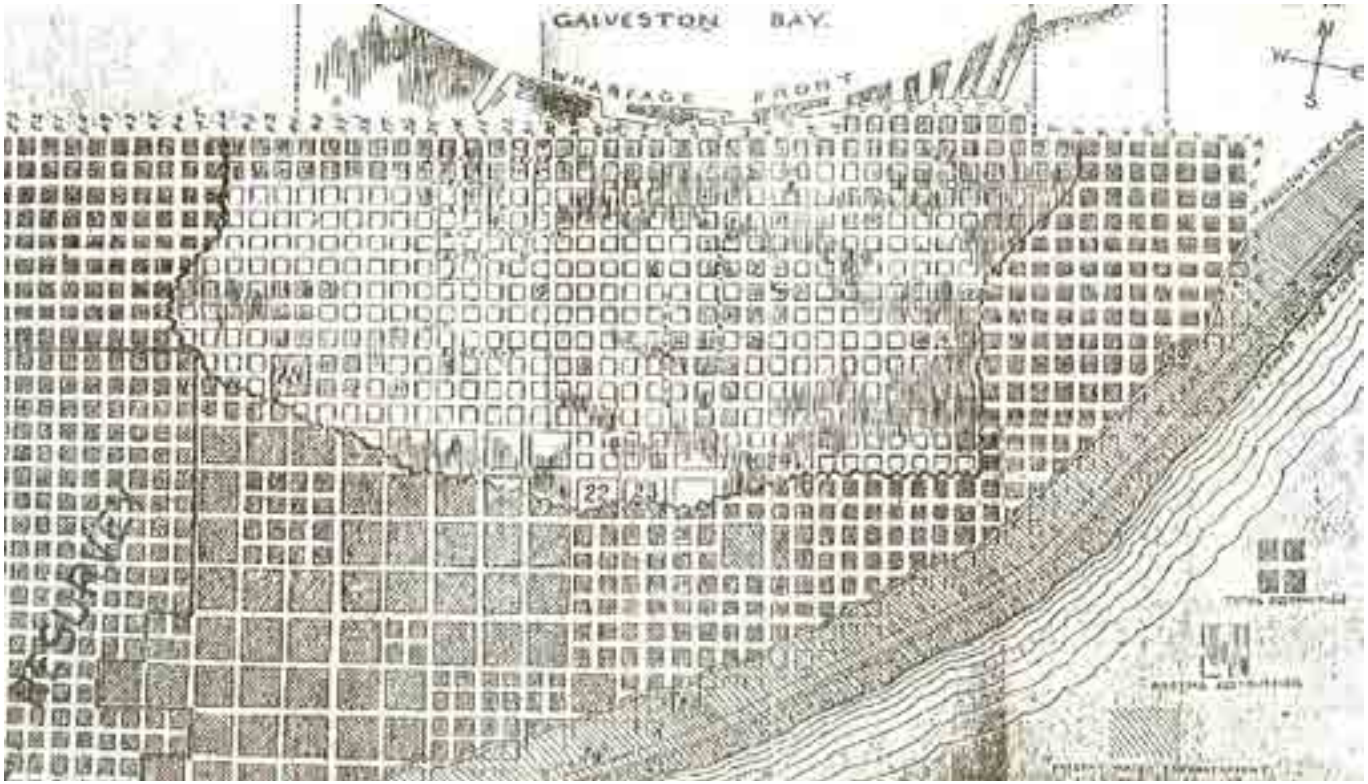


Figure from Jodi-Wright Gidley, “Galveston Seawall and Grade-Raising,” 2015.

1900 GALVESTON HURRICANE

Photos from Galveston Historical Foundation Preservation Resource Center

RESPONSE TO EXISTENTIAL THREAT

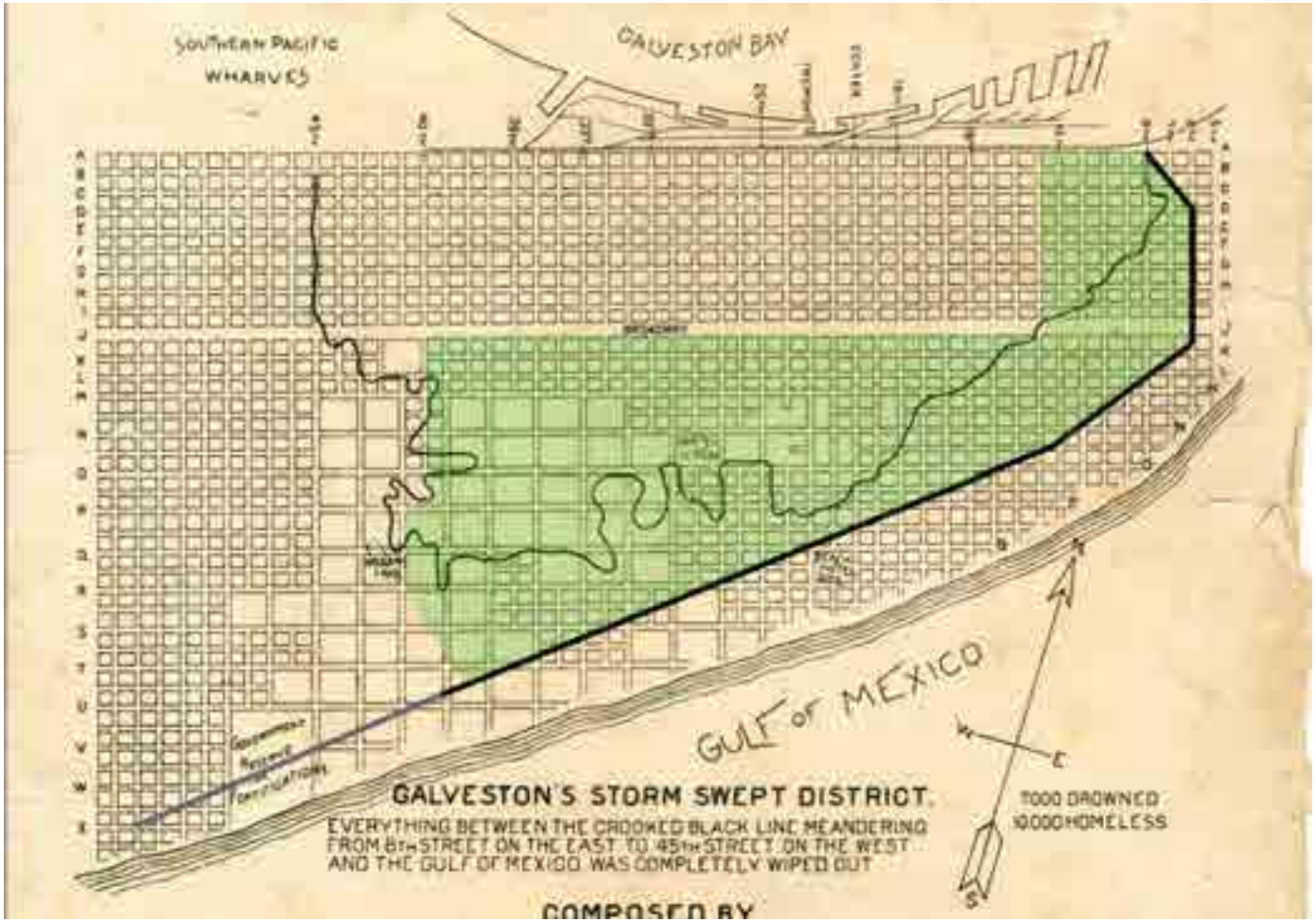


Figure from Jodi-Wright Gidley, “Galveston Seawall and Grade-Raising,” 2015.

SEAWALL

- 3.3 miles long
  (later extended to 10)
- 17 ft. tall
- 16 ft. thick at base

Photo Galveston Historical Foundation Preservation Resource Center

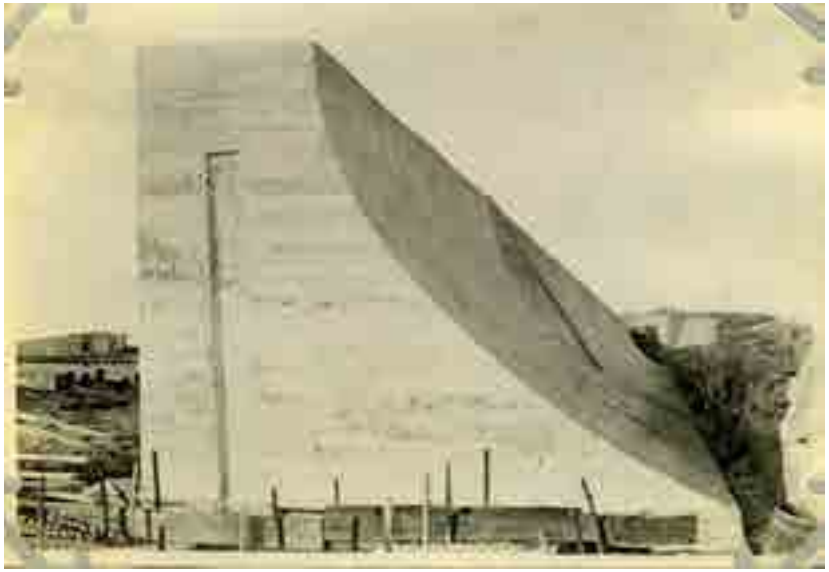


Figure from Jodi-Wright Gidley,
"Galveston Seawall and Grade-Raising," 2015.

Figure from Jodi-Wright Gidley, "Galveston Seawall and Grade-Raising," 2015.

GRADE RAISING

2100 buildings raised

Figure from Jodi-Wright Gidley, “Galveston Seawall and Grade-Raising,” 2015.

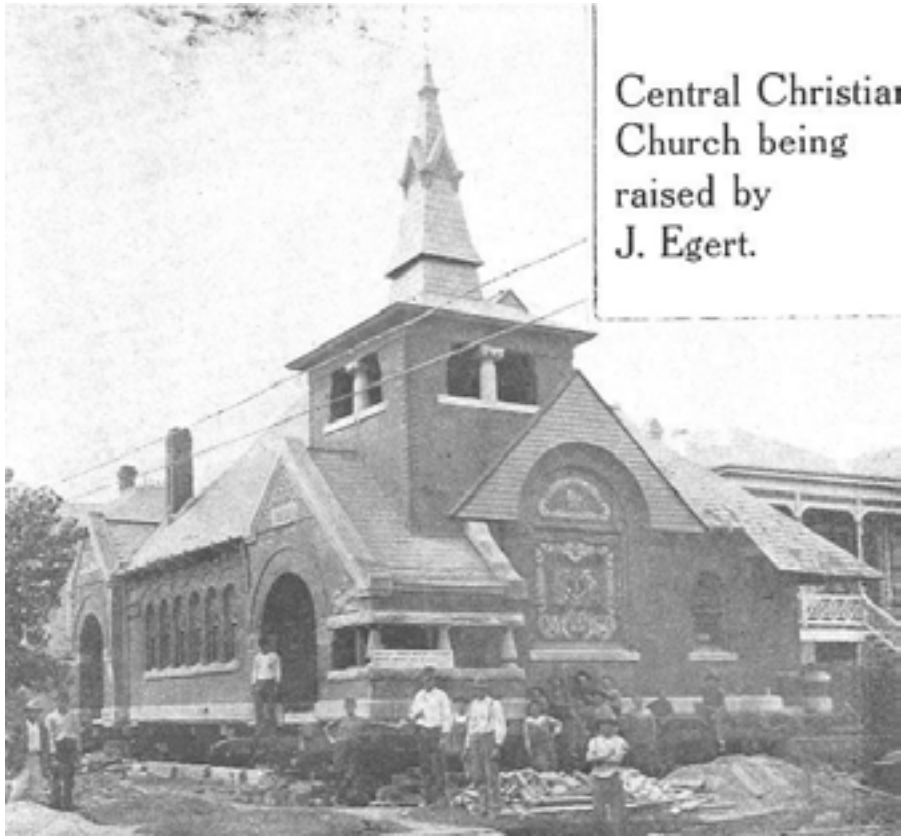


Photo from Galveston Historical Foundation Preservation Resource Center

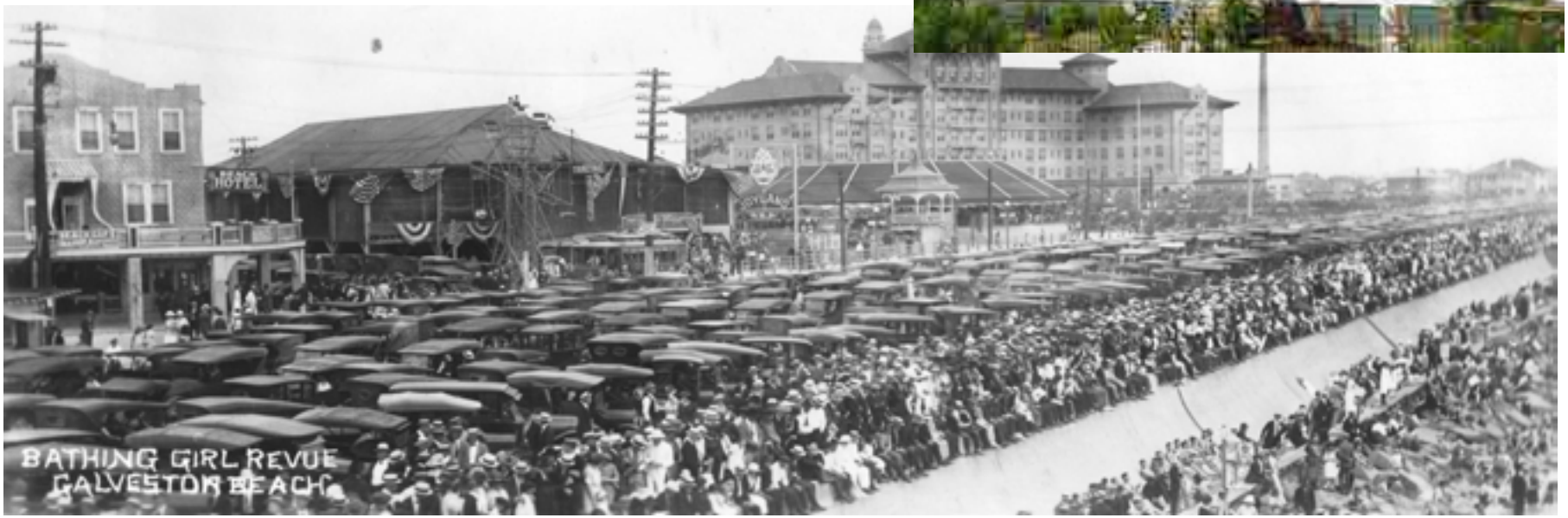
Figure from Jodi-Wright Gidley, “Galveston Seawall and Grade-Raising,” 2015.

LOCALLY FUNDED, INDIVIDUAL RESPONSIBILITY

Figure from Jodi-Wright Gidley, “Galveston Seawall and Grade-Raising,” 2015.

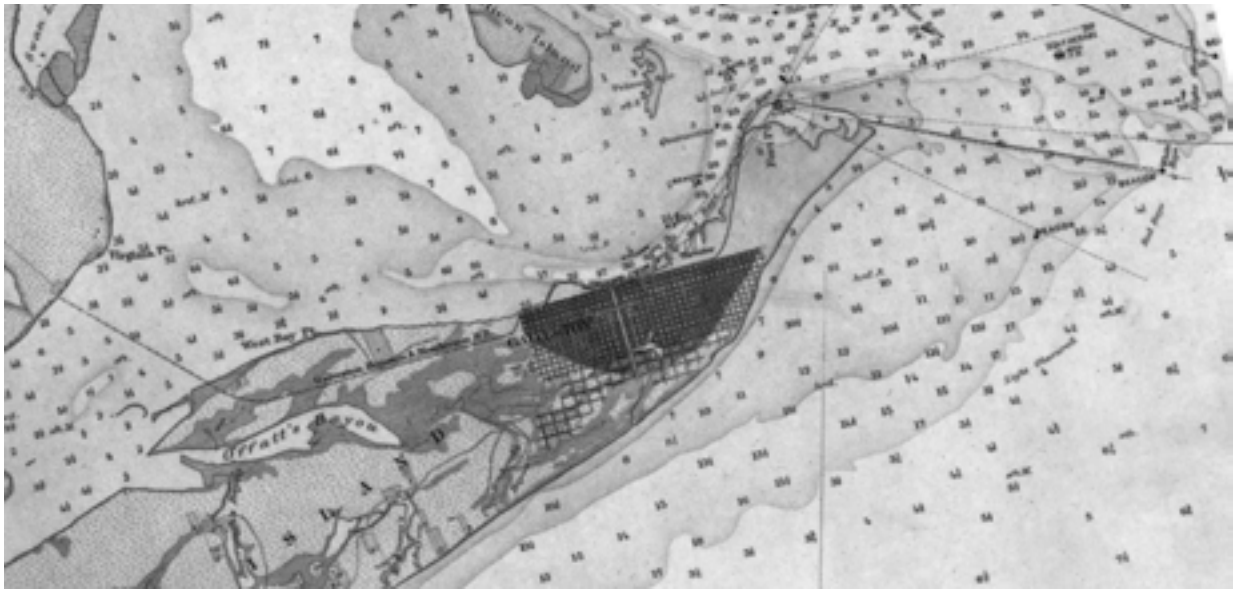
SITUATION AFTER PROJECTS

- Seawall in place
- Economy growing again
- North side left unraised
- Some buildings raised, some partially buried
- Tested against 1915 Hurricane



Photos from Galveston Historical Foundation Preservation Resource Center

1. THE ISLAND HAS CHANGED SHAPE.



Figures from Kristopher Benson, “Implications of Gulf Coast Dynamics for Coastline Building Strategies,” 2014.

2. PEOPLE BUILT IN THE WRONG PLACES.

3. PEOPLE BUILT IN THE WRONG STYLES.

4. AREAS REMAINED VULNERABLE TO FLOODING.

Photo from Galveston Daily News, September 2, 2015

Photos from Galveston Historical Foundation Preservation Resource Center

5. RISING DAMP AFFECTED PARTIALLY BURIED MASONRY BUILDINGS.

Photos from Galveston Historical Foundation Preservation Resource Center

PEOPLE PAID LESS ATTENTION TO THE ENVIRONMENT.

Photo from Galveston Historical Foundation
Preservation Resource Center

VULNERABILITIES EXPOSED BY HURRICANE IKE

Figure from Kristopher Benson, “Implications of Gulf Coast Dynamics for Coastline Building Strategies,” 2014.

IKE'S EFFECTS ON NORTH SIDE

- East End NHL – 841 historic properties in flood plain
- Strand NHL – Major cast iron issues
- Carver Park – displacement and underrepresentation of neighborhood population

Photo from Galveston Historical Foundation Preservation Resource Center

Photo from Walker Restoration Consultants, "Cast Iron Façade Assessment," 2011.

RECOVERY

Photo from Galveston Historical Foundation Preservation Resource Center

A SIMPLE APPROACH: *DON'T DESTROY USABLE BUILDINGS*

- ***Is this building historic?***
  - *It doesn't matter, don't let it go to waste*
- ***What's an appropriate flood mitigation treatment?***
  - *Anything that doesn't destroy it.*

Photos from Galveston Historical Foundation Preservation Resource Center

www.galvestonhistory.org

ABOUT + SUPPORT + ATTRACTIONS/SITES + EVENTS + PRESERVATION/CONSERVATION +

Topics in Coastal Preservation

2012 Cast Iron Symposium

DOWNLOAD THE OVERVIEW

2013 Rising Damp Symposium

DOWNLOAD THE OVERVIEW

CLICK THE SUBJECTS BELOW FOR PREVIOUS PRESENTATIONS

+ Historic Building Materials Conservation

− Adaptation and Mitigation for Historic Buildings

- Elizabeth English – 2015 – Amphibious Architecture: Where Flood Risk Reduction Meets Climate Change Adaptation (Alternative Flood Mitigation, Buoyant Foundation, Louisiana
- Mary Delaney Krugman – 2015 – Retrofitting for Resilience (Alternative Flood Mitigation, Hurricane Sandy, Flood Insurance Reform)
- Roderick Scott – 2015 – Flood Hazard Mitigation Historic Resources (Flood Insurance Reform, Building Elevation, Louisiana)
- Tanvi Mutneja and Christopher Balli – 2015 – In Between Possibilities (Building Relocation, Infill)
- Claudette Reichel – 2014 – Building for the Gulf Coast (Hurricane Katrina, Building Codes, Resilience)
- Sarah Marie Jackson – 2014 – Disaster Preparedness for Historic Building (Hurricane Preparedness, Hurricane Katrina)
- Patrick Sparks – 2014 – Engineering for the Gulf Coast (Resilience, Engineering)
- Amanda Tullos – 2014 – Living Building Challenge at the Monarch Studio School (Sustainability, Living Building Challenge, Houston)

+ Adaptation and Mitigation for Historic Cities

+ Coastal Resilience Strategies

+ Community Resilience

www.galvestonhistory.org/preservation/center-for-coastal-heritage/topics-in-coastal-preservation

MATTHEW PELZ

matthew.pelz@galvestonhistory.org

GALVESTON HISTORICAL FOUNDATION