

# Incorporating Smart Growth into Disaster Recovery Planning

New Partners for Smart Growth Conference  
San Diego, February 3, 2012

Moderator:

Kathleen W. Smith, AICP, FEMA

Panelists:

James C. Schwab, AICP, APA Hazards Planning Research  
Center

Kenneth C. Topping, FAICP, Topping Associates  
International

Lincoln Walther, FAICP, CSA International

John Jacob, Texas Sea Grant, Texas A&M University

# American Planning Association

Planning for Post-Disaster Recovery: Next Generation

Project Summary by Jim Schwab

# Smart Growth in Recovery: Thinking Ahead for California



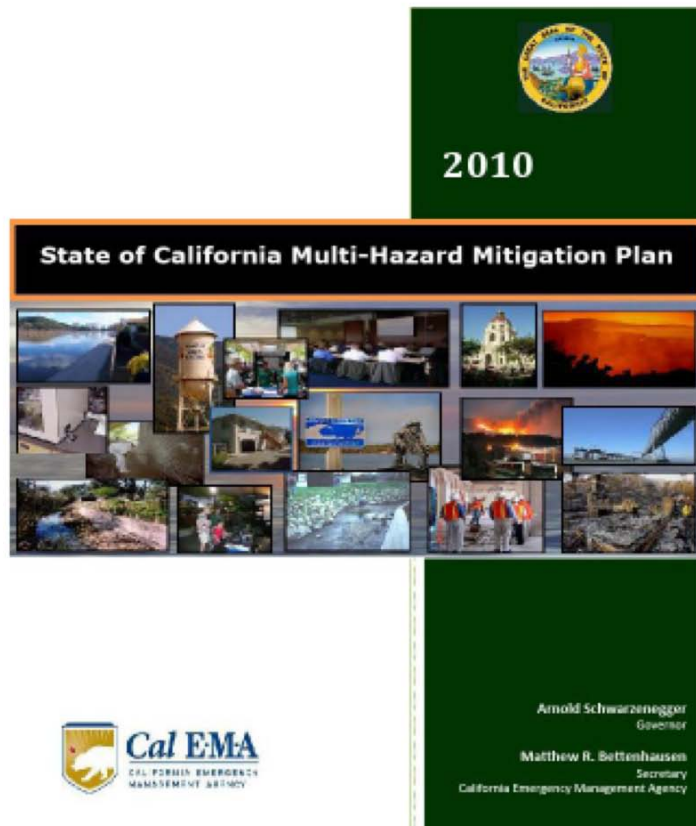
Northridge EQ  
I-5 and 14  
Interchange

New Partners for SMART Growth  
San Diego, February 3, 2012

Ken Topping, FAICP  
Cal Poly San Luis Obispo  
Topping Associates International  
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Source:  
EERI

# 2010 State Hazard Mitigation Plan



- Designated an Enhanced State Mitigation Plan by FEMA, bringing extra post-disaster grants
- Prepared by Cal Poly San Luis Obispo for Cal EMA
- Addresses mitigation strategies to counteract natural and human-caused hazards, e.g., earthquakes, flooding, wildfires
- *Recognizes climate change and the need to connect climate action and adaptation with hazard mitigation*



# What is Mitigation?

- **FEMA:** “sustained action to reduce or eliminate long-term risk to human life and property from natural and human-caused hazards”
- Examples:
  - Building flood walls
  - Avoid developing in hazardous areas
  - Strengthening structures against earthquakes
- Mitigation should support Smart Growth and vice versa
  - not guaranteed, though



New flood wall protects previously flooded mobile homes from Napa River, 2005, Yountville, California

# Climate Change Impacts: More and Bigger Natural Disasters

Severe storms

Flooding

Landslides

Sacramento-San Joaquin Delta impacts

Droughts → long-term depletion of water supplies

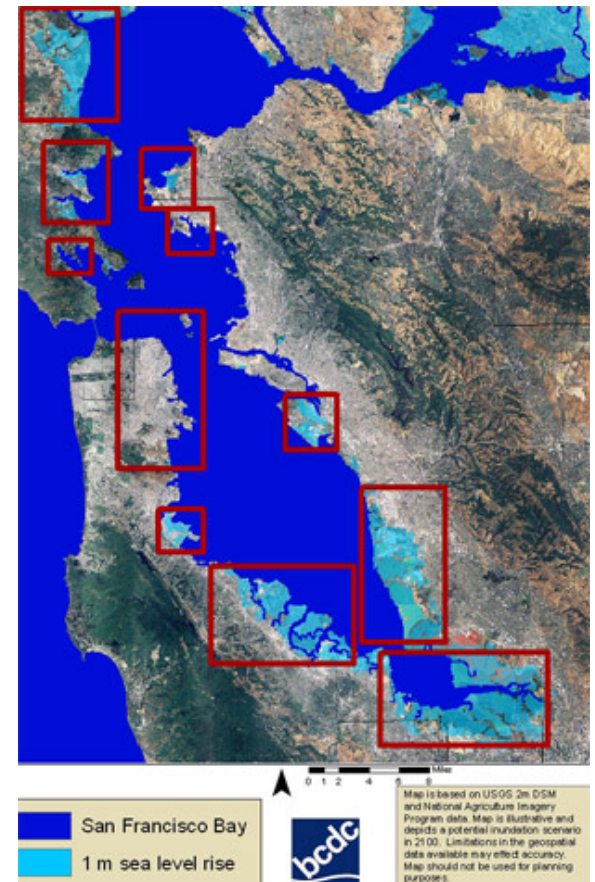
Agricultural disruption

Wildfires

Urban heat zones

Species changes

*Sea level rise*



Source: Bay Conservation and Development Commission

# Projected Sea Level Rise at San Francisco Airport

Light blue = 16 inches by 2050

Dark blue = 55 inches by 2100

Note:  
 With gradual onset disasters,  
 there is time to plan how  
 to prevent them

*Figure 23: Projected sea level rise around San Francisco Airport (SFO). (Source: San Francisco Bay Conservation and Development Commission)*





# Risk Issues in Existing Development

**Nature pushes back when we build in the wrong place:**



Landslide which killed 12, La Conchita, 2005, Ventura County...The second time in 10 years, except more killed

Source: CGS

**Or build in the wrong way:**



Collapsed soft-story building, Loma Prieta Earthquake, 1989...There are 4,000+ such structures in San Francisco

Source: USGS

Challenge:

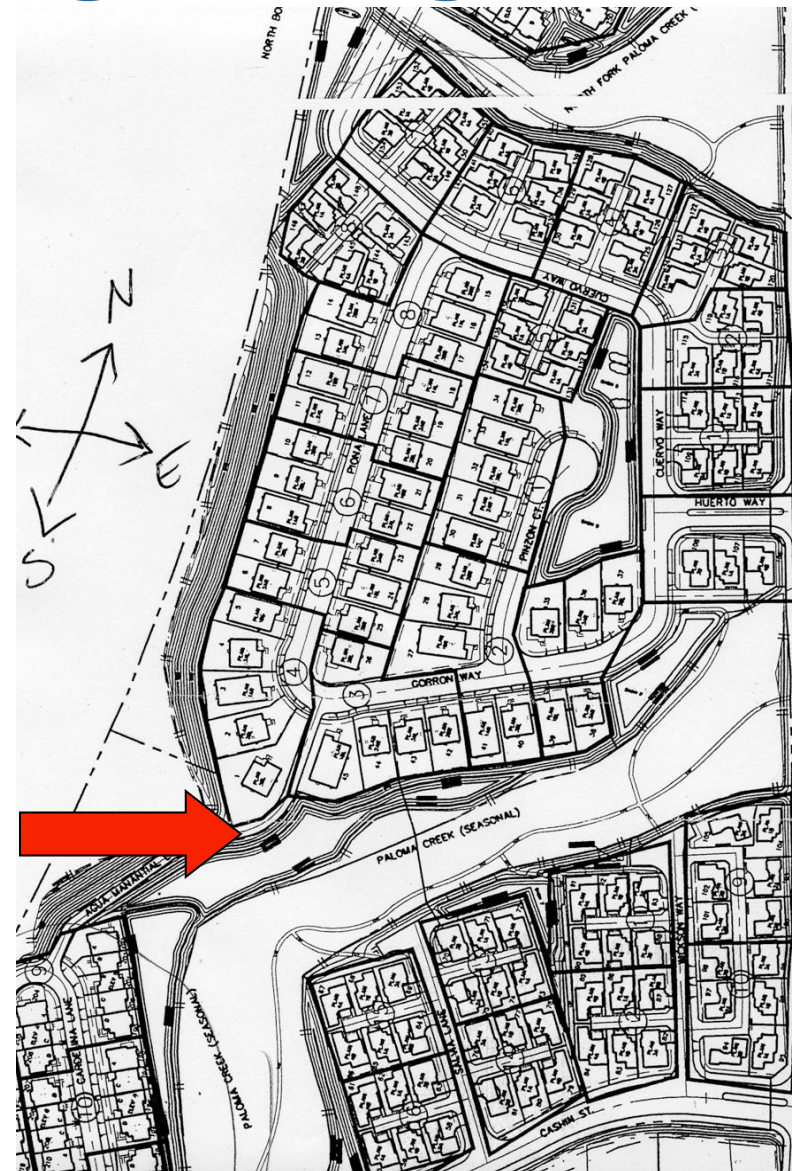
...build in the right ways and places

...design is key!

# Managing Risk through Design

## Mitigation Strategies:

- ✓ Set development back from flood hazard areas
- ✓ Lay out parcel and street boundaries to avoid hazards
- ✓ Increase densities in safer areas
- ✓ Require multiple entry-exit points for emergency access and evacuation

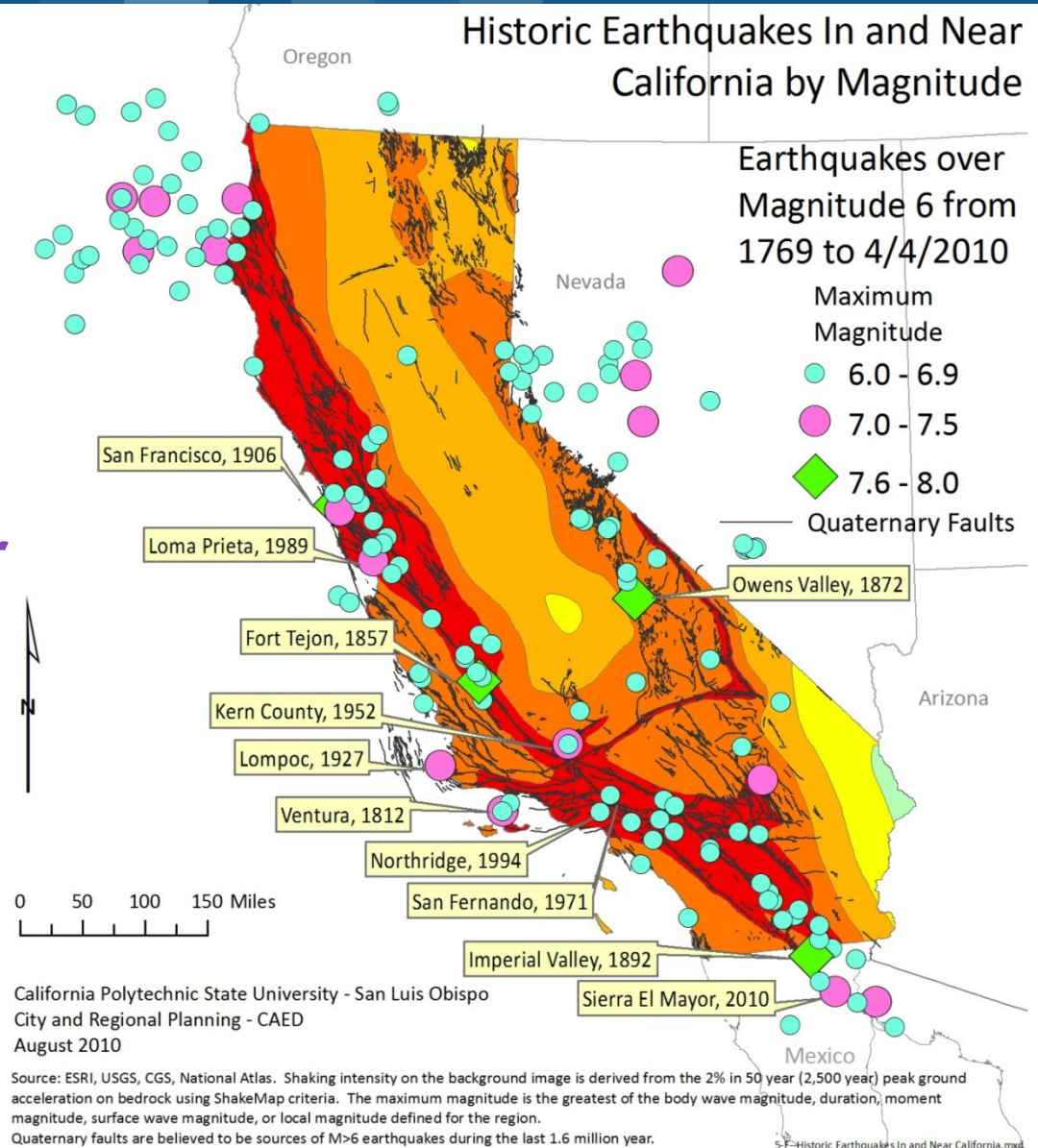




# California M6.0 – M8.0 Earthquake History

*Earthquakes are California's greatest hazard, accounting for the largest combined losses historically*

Source:  
 2010 State Hazard  
 Mitigation Plan





# M 6.8 Northridge Earthquake, 1994

57 deaths

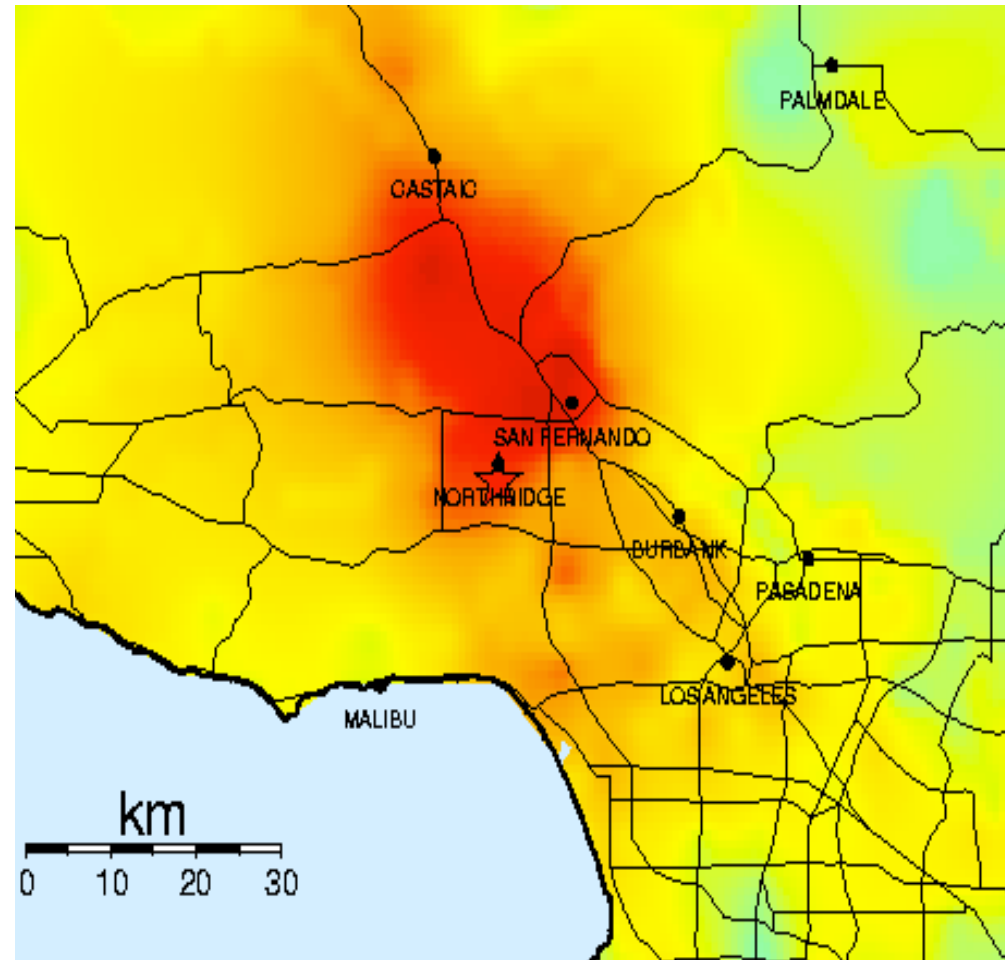
20,000 homeless

30,000 damaged  
housing units

~\$42+ billion total  
losses

- \$21 billion residential
- \$15 billion business
- \$6 billion public infrastructure

~\$14 billion insured losses (65%+ for residential structures)



# Types of Northridge EQ Damages



Source: EERI

Collapsed Office Building



# Rebuilt Apartment Buildings

## Question:

What was the key mitigation lesson from the Northridge Earthquake?



## Answers:

- Large remaining inventory of vulnerable housing structures
- Limited sustained state programs addressing this fact

# MW 6.9 Kobe Earthquake, 1995

6,400 deaths; >15,000 injuries

400,000 homeless;  
>240,000 in public shelters

>200,000 damaged buildings

Widespread road, water, gas, and sewer system damage

~\$150 billion total losses

- >\$100 billion in property damages
- <\$10 billion in insured losses (majority to commercial uses)

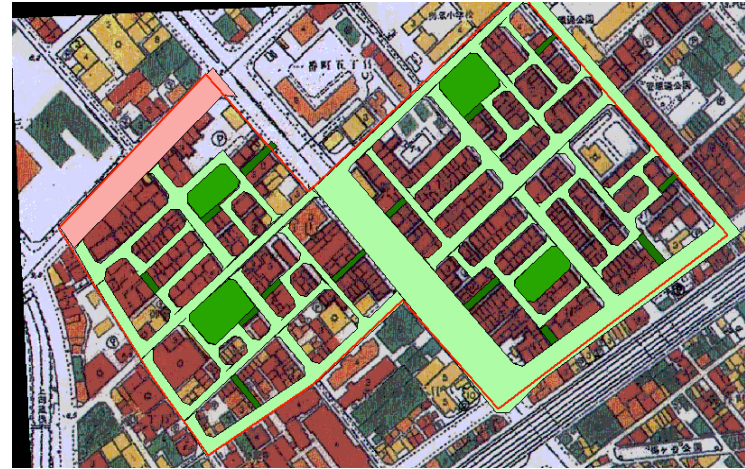


# Kobe Rebuilding: Planning Tools

## Pre-Event Plans

14 restoration  
promotion districts  
Land readjustment  
areas:

- Re-subdivided damaged areas
- Widened roads
- Added parks
- Adjusted parcel boundaries
- New water systems
- Co-op housing





# Kobe Stakeholder Engagement



*A crucial element in successful Kobe reconstruction*

New co-op housing and park



# March 2011 Earthquake and Tsunami

World Bank:

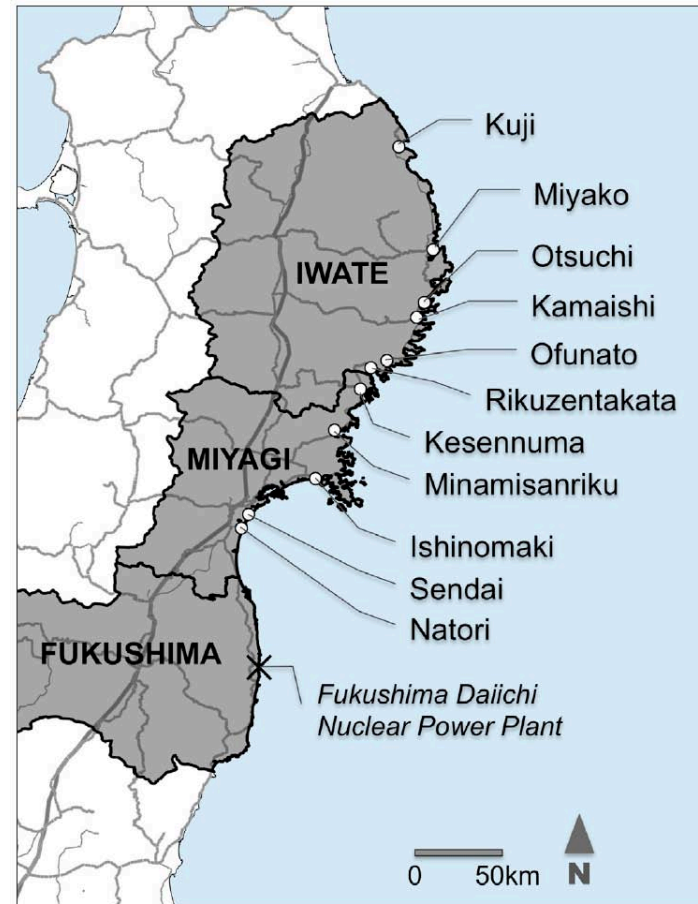
- 28,000 deaths,
- 10,000 injuries,
- 34,000 relocated



See:  
 Earthquake Engineering Research Institute (EERI)  
 Special Earthquake Report – August 2011

Learning from Earthquakes

**The March 11, 2011, Great East Japan (Tohoku) Earthquake and Tsunami: Societal Dimensions**



*Figure 1. Communities Visited by the EERI Field Team (map: S. Chang).*

# Short-Term Recovery Priorities

## Debris Management



**Figure 25.** Separated rubber tires and concrete debris in Rikuzentakata City.

Photos 25-36 by T. Norton.



**Figure 26.** Cars and white appliance rubble in Taro.



**Figure 27.** Mountain of fishing nets in Otsuchi, Iwate Prefecture.



**Figure 28.** Debris sorting along the waterway in Miyako City.

Source: EERI

## Temporary Housing/Facilities

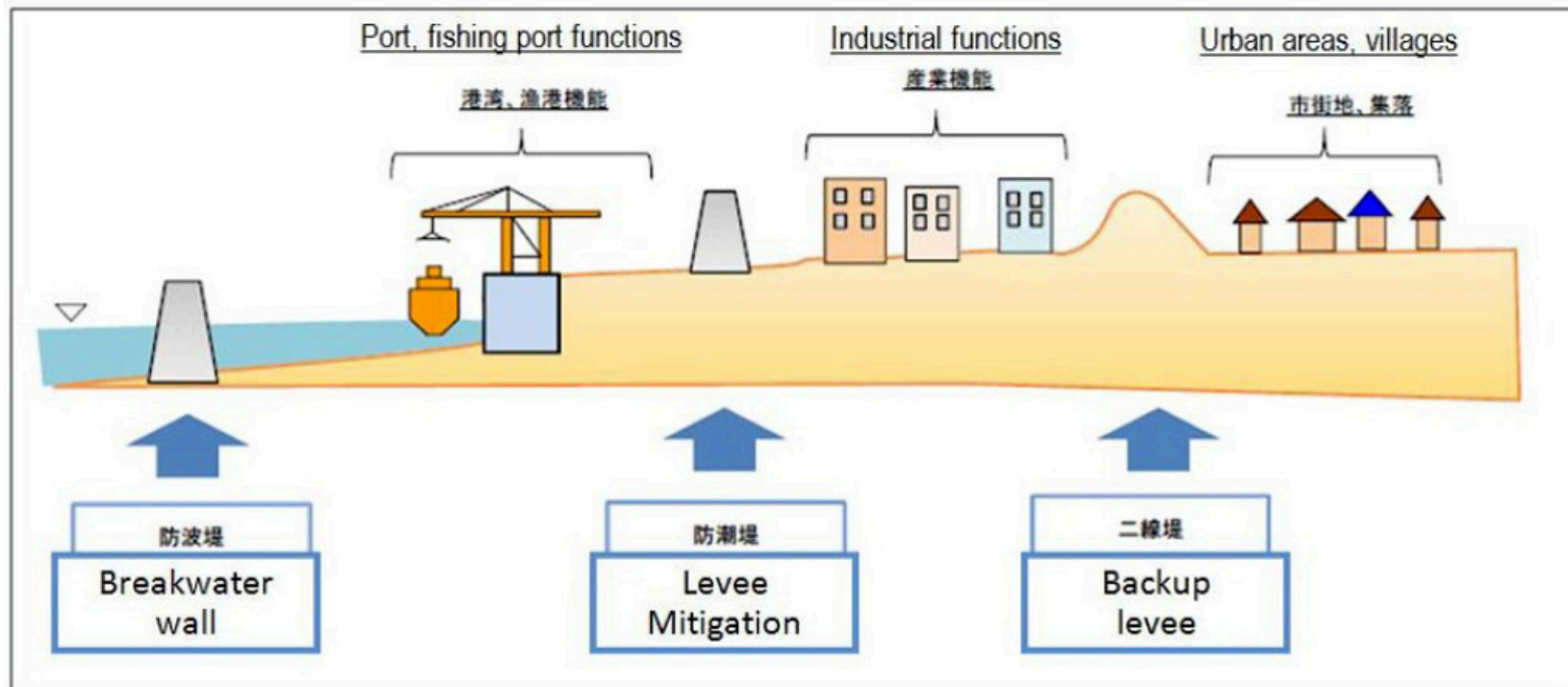


**Figure 15.** Temporary housing unit in Iwate Prefecture (photo: T. Wachtendorf).



**Figure 16.** Access ramp to community building in temporary shelter complex (photo: T. Wachtendorf).

# Long-Term Rebuilding Priority: Minimizing Tsunami Risk



**Figure 37.** Reconstruction concept for tsunami-resilient communities (source: Reconstruction Design Council, 2011).

Source: EERI



# APA/FEMA: PAS 483/484

## Pre-Event Planning

Increase community  
 resilience

Minimize life and property  
 loss

Facilitate recovery

Reduce post-disaster  
 repetitive losses

See: Model Recovery and  
 Reconstruction  
 Ordinance, Ch. 5

## Planning for Post-Disaster Recovery and Reconstruction



Jim Schwab with Kenneth C. Topping, Charles D. Eadie,  
 Robert E. Deyle, and Richard A. Smith



American Planning Association

Planning Advisory Service  
 Report Number 483/484



# Oakland Hills (Tunnel) Fire, 1991

## Realities of Recovery:

1. After a disaster time is the enemy - there is extreme pressure to restore "normalcy"

2. Opportunities to rebuild in a better way disappear quickly

3. Short-term "default" decisions are made with adverse long-term consequences

3,400+ housing units destroyed,  
25 killed



Source: Cal EMA

# L.A. Pre-Event Recovery Plan

LA had a recovery plan before the Northridge EQ

Prepared from 1986-94, was helpful in guiding Northridge EQ recovery

LA's plan has served as a model (see Schwab et al)

*CITY OF LOS ANGELES*  
EMERGENCY OPERATIONS ORGANIZATION

**RECOVERY  
AND  
RECONSTRUCTION  
PLAN**

As approved by the Emergency Operations Board  
Sept. 19, 1994



# 2008 Draft Mission Canyon Plan (Predated the 2009 Jesusita Fire)

## Pre-Event Issues:

- ✓ Fire-related regulations
- ✓ Narrow private roads
- ✓ Narrow public roads
- ✓ Structure size, bulk, scale
- ✓ Nonconforming uses, structures, lots
- ✓ Emergency egress
- ✓ Recovery Policies:
- ✓ Facilitate post-disaster reconstruction
- ✓ Improve road access



Mission Canyon Heights



The Santa Barbara Botanic Garden



Initiation Draft  
 Mission Canyon  
 Community Plan

**May, 2008**



Entrance to Mission Canyon Road Scenic Corridor

Prepared by:  
 Santa Barbara County  
 Planning & Development  
 Office of Long Range Planning

# California Disaster Recovery Act

1. California needs a Pre-Event Disaster Recovery Plan
2. Legislation should require Governor to form a Disaster Recovery Organization (DRO) at the Agency Secretary level (similar to Sustainable Growth Council)
3. The DRO should prepare a Disaster Recovery Strategy with multi-agency, public-private input
4. The Strategy should encourage Smart Growth
5. The legislation should include incentives for local pre-event recovery planning

# Disasters



Hurricanes gain a lot of attention

Other hazards

- Tornadoes
- Flooding
- Wildfire
- Earthquakes
- Drought

# Why Have a Recovery Plan?

Money / Savings – Disasters are expensive

Long-term recovery plans result in local control of the redevelopment process

Provides an organizational structure (roles and responsibilities) and process to move forward

Reduced damage means reduced impact on local government budgets

# Long-Term Recovery Process

1. Disaster Recovery Planning does not start at the time of the disaster

- **National Disaster Recovery Framework**  
Pre-Disaster Recovery Planning

“The speed and success of recovery can be greatly enhanced by establishment of the process and protocols *prior to disaster* for coordinated post-disaster recovery planning and implementation.”

2. By pre-planning for a disaster event, the community stakeholders attempt to anticipate steps to recover more quickly

# The Long-Term Recovery Process (Cont.)

3. Greater engagement of stakeholders builds in local buy-in and commitment to the defined “path ahead” following a disaster (FEMA’s The Whole Community concept)
5. No one said it would be easy
5. Plan to not just rebuild, but rebuild back with a long-term view of creating a community that is stronger, more resilient and sustainable



## The Long-Term Recovery Process (Cont.)

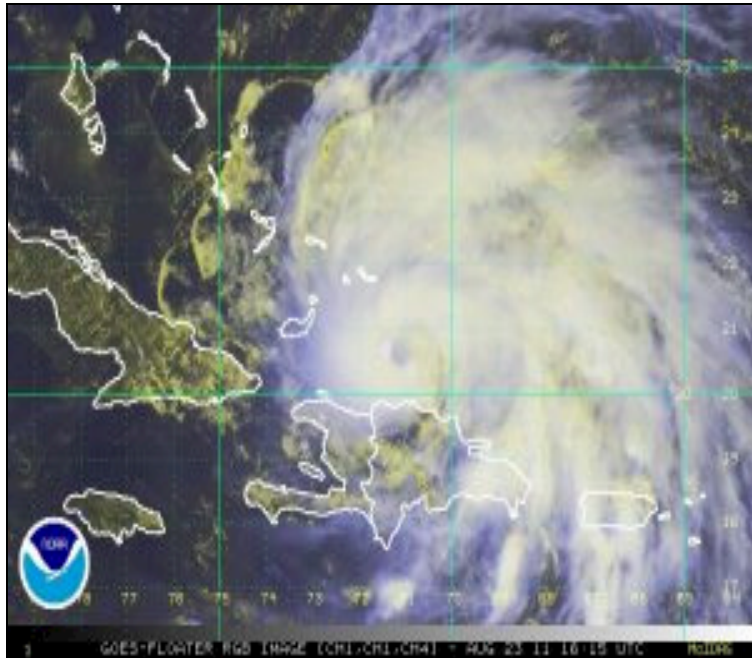
6. Having a long-term recovery plan does not mean a post-disaster reassessment will not be needed.



# THE FLORIDA EXPERIENCE

# Florida's Epiphany

1992 — Hurricane Andrew



# Florida Response

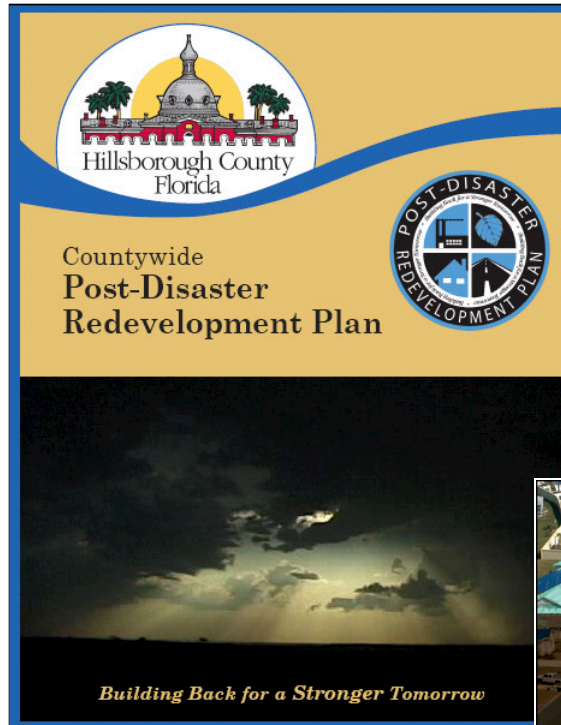
In 2007, Florida initiated the Post-Disaster Redevelopment project

Post-disaster redevelopment is required for coastal communities and encouraged for inland communities

At a minimum, Florida Statutes ((§163.3177(7)(I) F.S.) ask that the Coastal Management Element establish long-term policies regarding

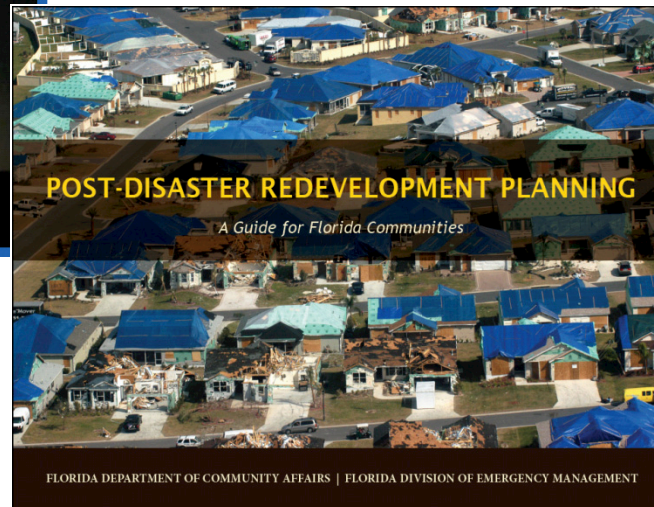
- Redevelopment
- Infrastructure
- Densities
- Nonconforming uses
- Future land use patterns

# Plans and Guidebooks



[www.pdrp.org](http://www.pdrp.org)

- PDRP designed to be a single, stand-alone guide to aid decision-makers who, during the disaster recovery period, do not have time to use several different plans



<http://www.pdrp.org/index.php/pdrp-initiatives>



# Long-Term Recovery Topics Overlap with Sustainability Issues

## Land Use

- Build-back standards for non-conforming/substantially damaged structures
- Prioritizing areas to focus redevelopment
- Reducing disaster vulnerability through land use and development regulations

## Housing

- Rebuilding affordable housing

## Economy

- Physical economic redevelopment projects

## Infrastructure and Public Facilities

- Public transportation restoration and improvement
- Relocation or hardening of facilities

## Health and Social Services

- Hospital, clinic, and medical office restoration
- Medical personnel retention and recruitment

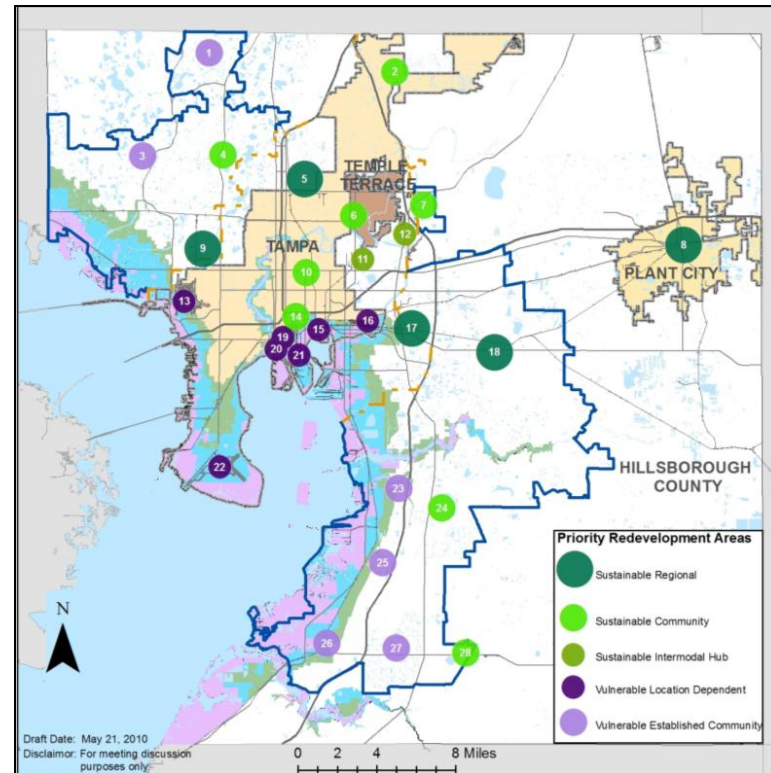
## Environment

- Green rebuilding
- Parks and urban forest restoration
- Reducing heat islands



# Priority Redevelopment Areas (PRA)

- Rapidly restore centers of economic activity and critical facilities
- Provide a staging area for restoring nearby impacted communities
- Locate recovery services in efficient and convenient hubs
- Facilitate growth into disaster resilient centers



# PRAs Focus Smart Growth Tools

Transfer of Development Rights

Density bonuses in Sustainable PRAs for those willing to relocate from more hazardous locations

Brownfield/Infill development incentives

Focus acquisition efforts

Incentivize business hubs connected with transit plans

Focus post-disaster spending on redevelopment projects in established or sustainable locations

# Post-Disaster Opportunities for Advancing Sustainability

Potential to build back better

- Fix past development mistakes or bring non-conforming development in line with current standards
- Chance to address future hazard resiliency

Large sums of Federal, State, and private funding for redevelopment projects

Coordinate with local hazard mitigation plan



# Suggested Smart Growth Techniques

Restricting growth in hazard vulnerable areas

Priority Redevelopment Areas (PRAs)

Compact, higher density development

Coordinated policies and codes relative to build-back

Reduced impervious surfaces

Improved water detention

Safeguarding environmentally sensitive areas

Mixing of land uses

Transit accessibility

Better pedestrian and bicycle amenities



# Opportunity to Address New Issues

Increasing sea level rise

Higher temperatures

Increased precipitation

Stronger or increased severe hazards



# Keys to Smarter Recovery

Leadership

Pre-plan

Whole community

Integrate Sustainable/Resilient Strategies

Post-disaster organizational structure

Partnerships



An aerial photograph of a coastal area, likely after a storm. A road runs along the top left. In the center, a two-story house with a dark roof and white porch stands amidst a landscape of mud, debris, and scattered trash. A large, semi-transparent blue overlay covers the upper left portion of the image, containing the text 'How Smart Can this Be?' in a bold, blue, outlined font.

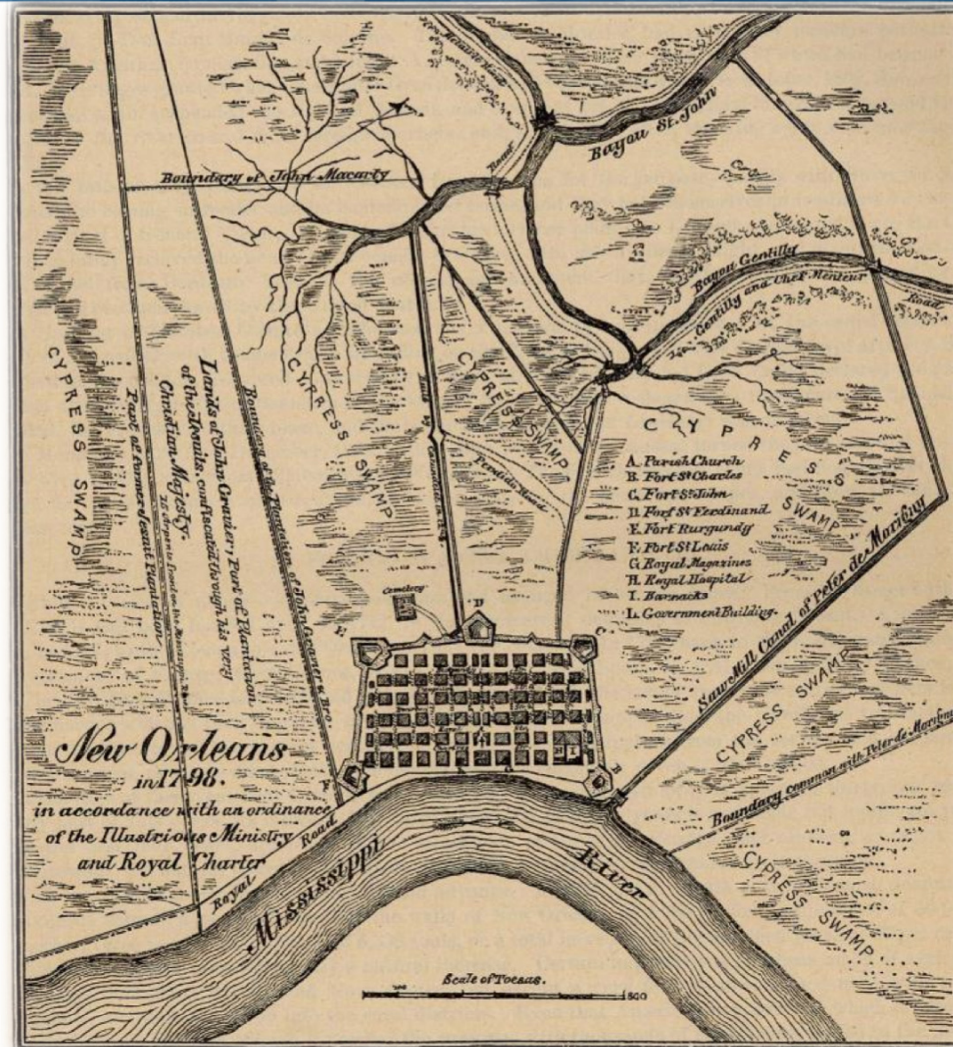
# How Smart Can this Be?

**John S. Jacob, Ph.D.**  
Texas Coastal Watershed Program  
Texas A&M University System









# Bienville's Dilemma





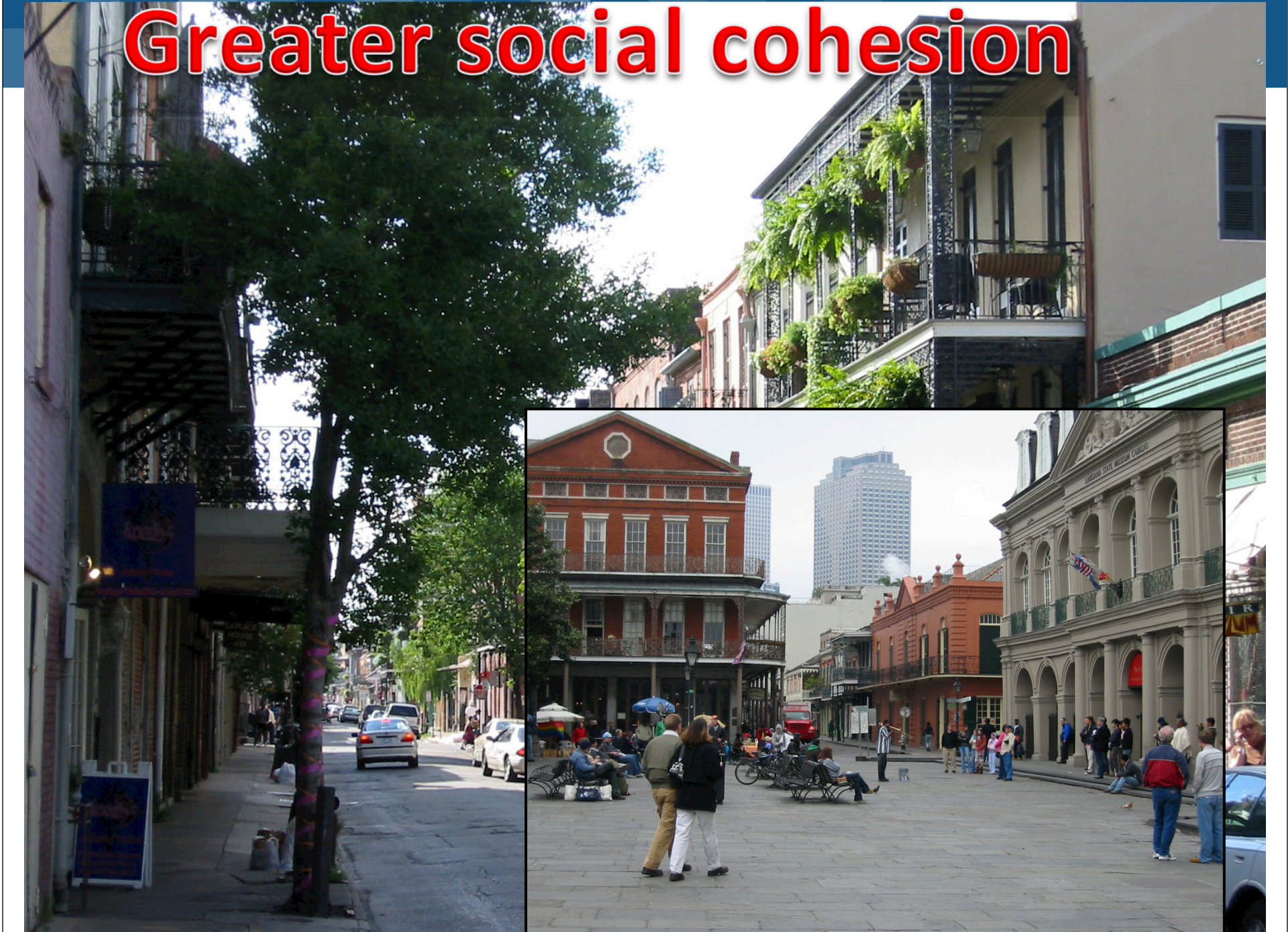
Jim Charlier

**Does Smart Growth = Resilient Growth?**



APA

# Greater social cohesion





# Less area to protect

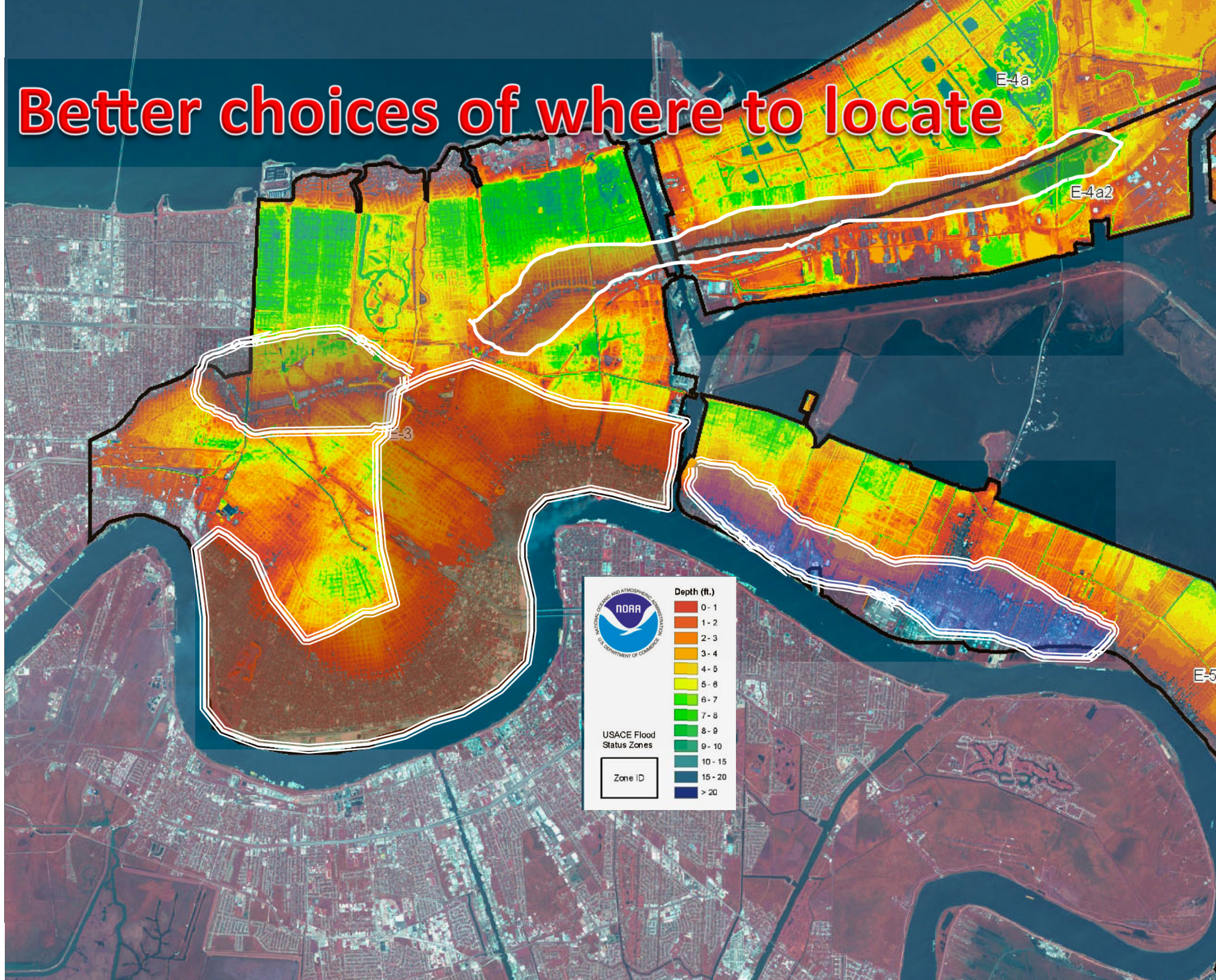
Association  
ities Happen

Image © 2009 DigitalGlobe  
Image Houston-Galveston Area Council  
Image NASA

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# Better choices of where to locate





# Sturdier structures





# Proximity to refuge



Community safe room?





# Coastal Community Resilience

# Developed

YES



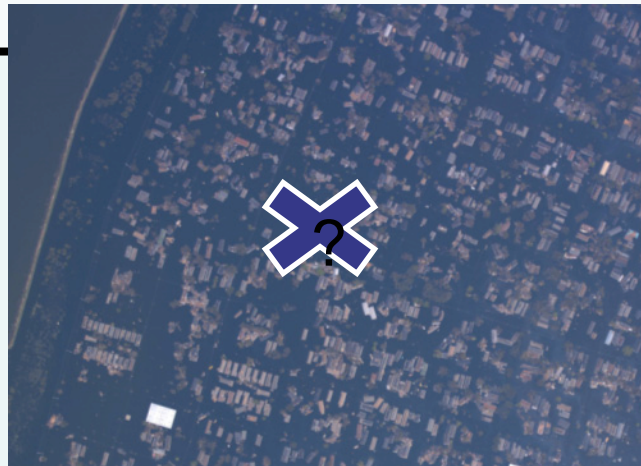
NO



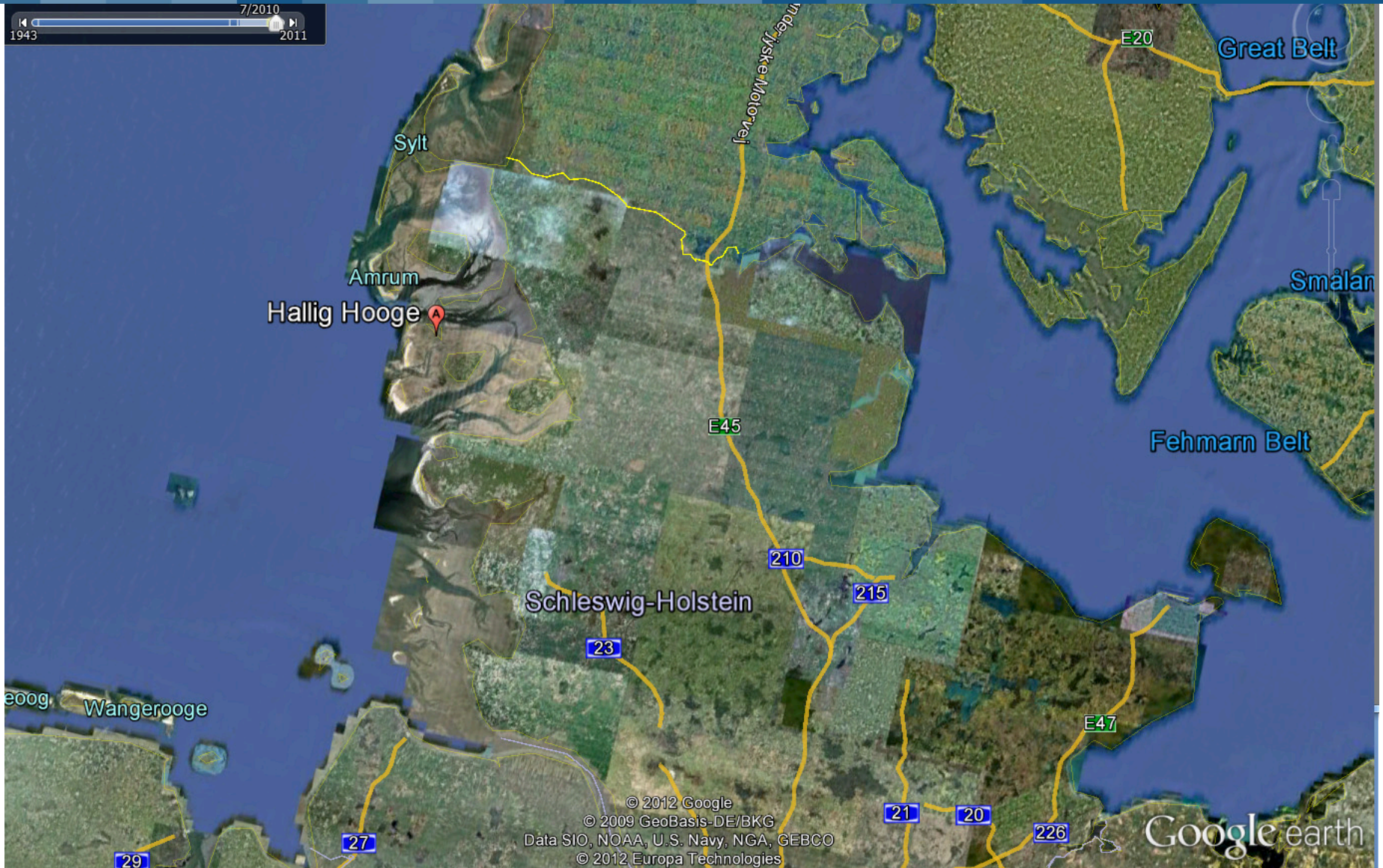
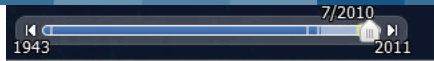
HIGH

LOW

Location Resilience







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Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
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7/30/2006

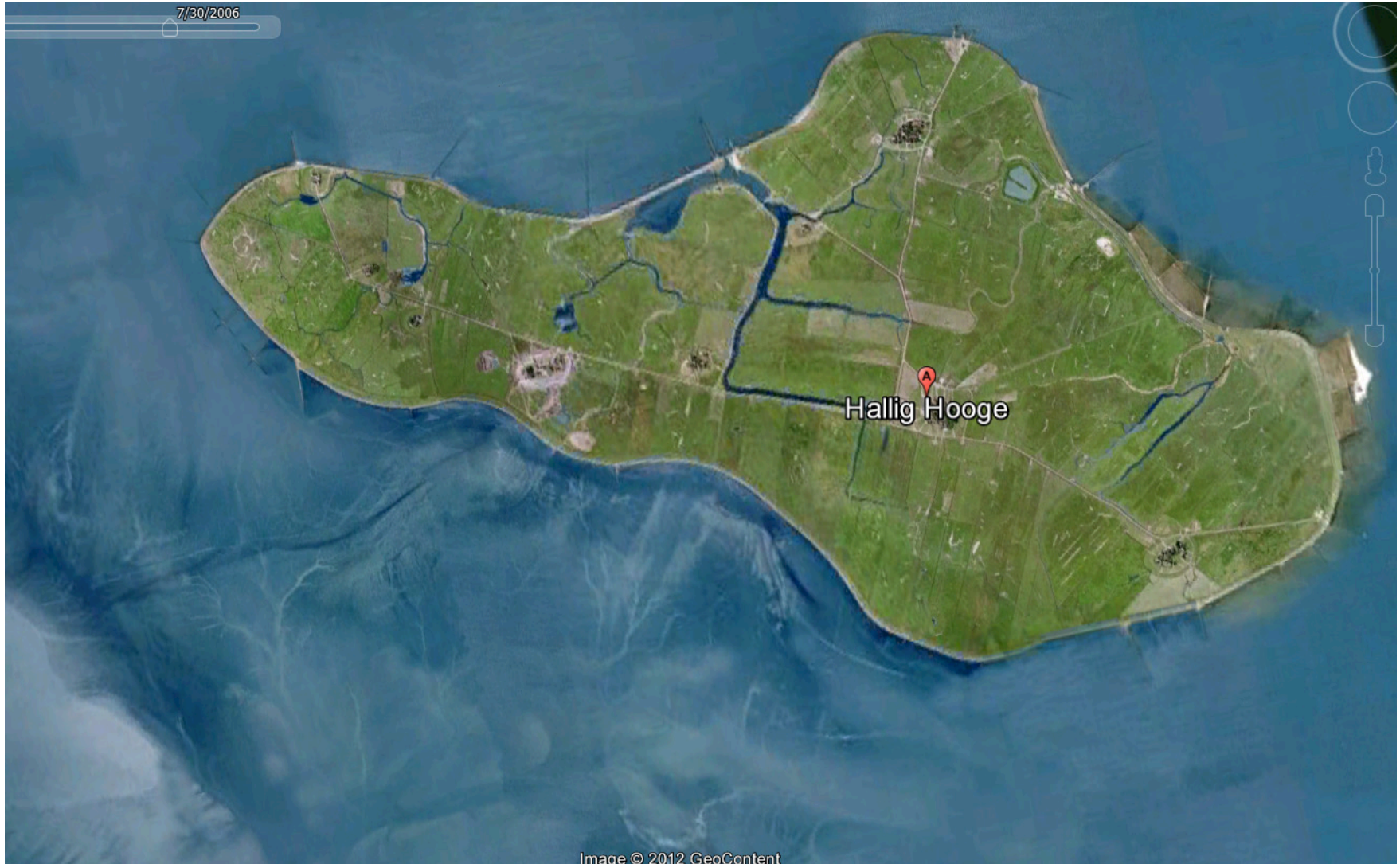
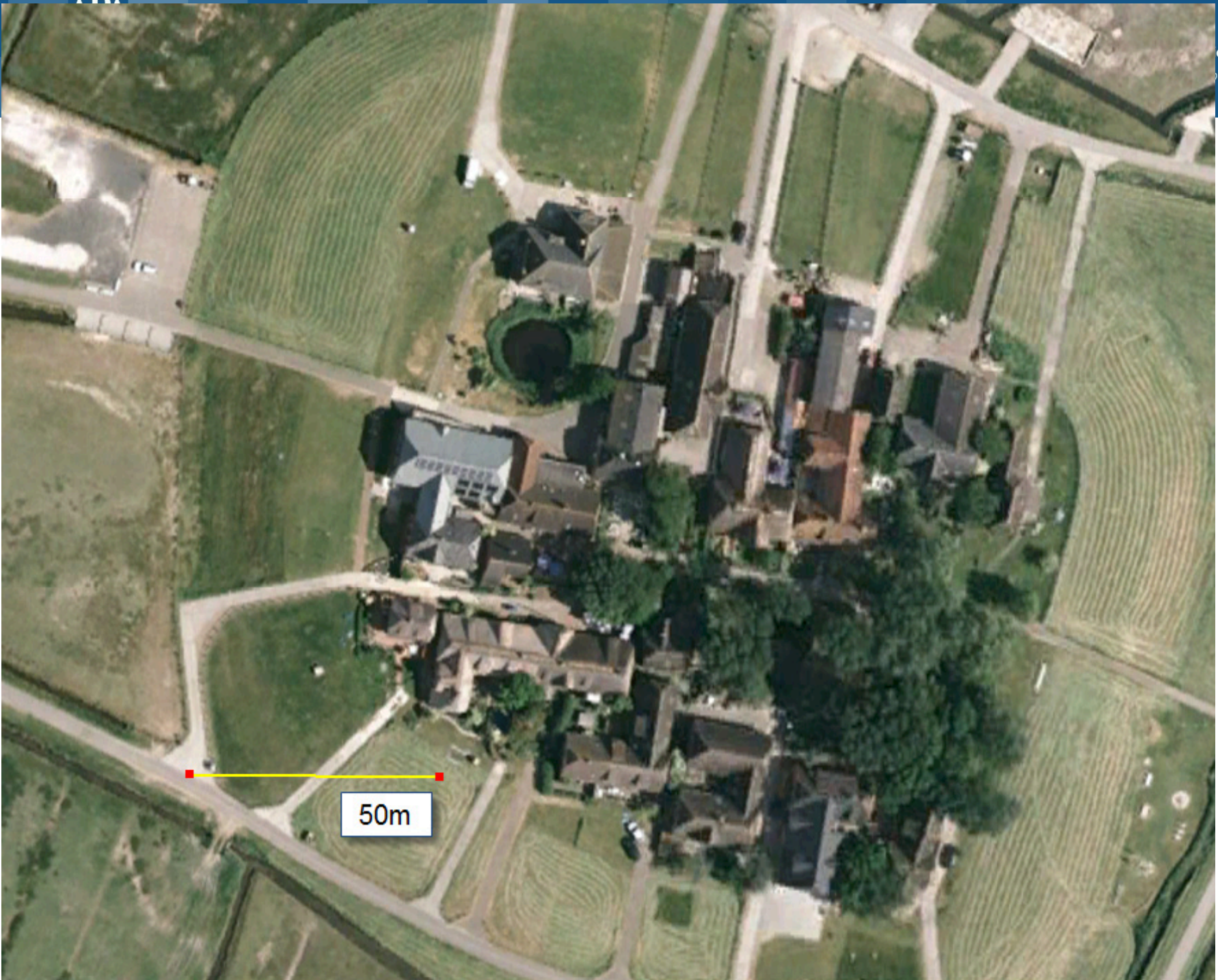


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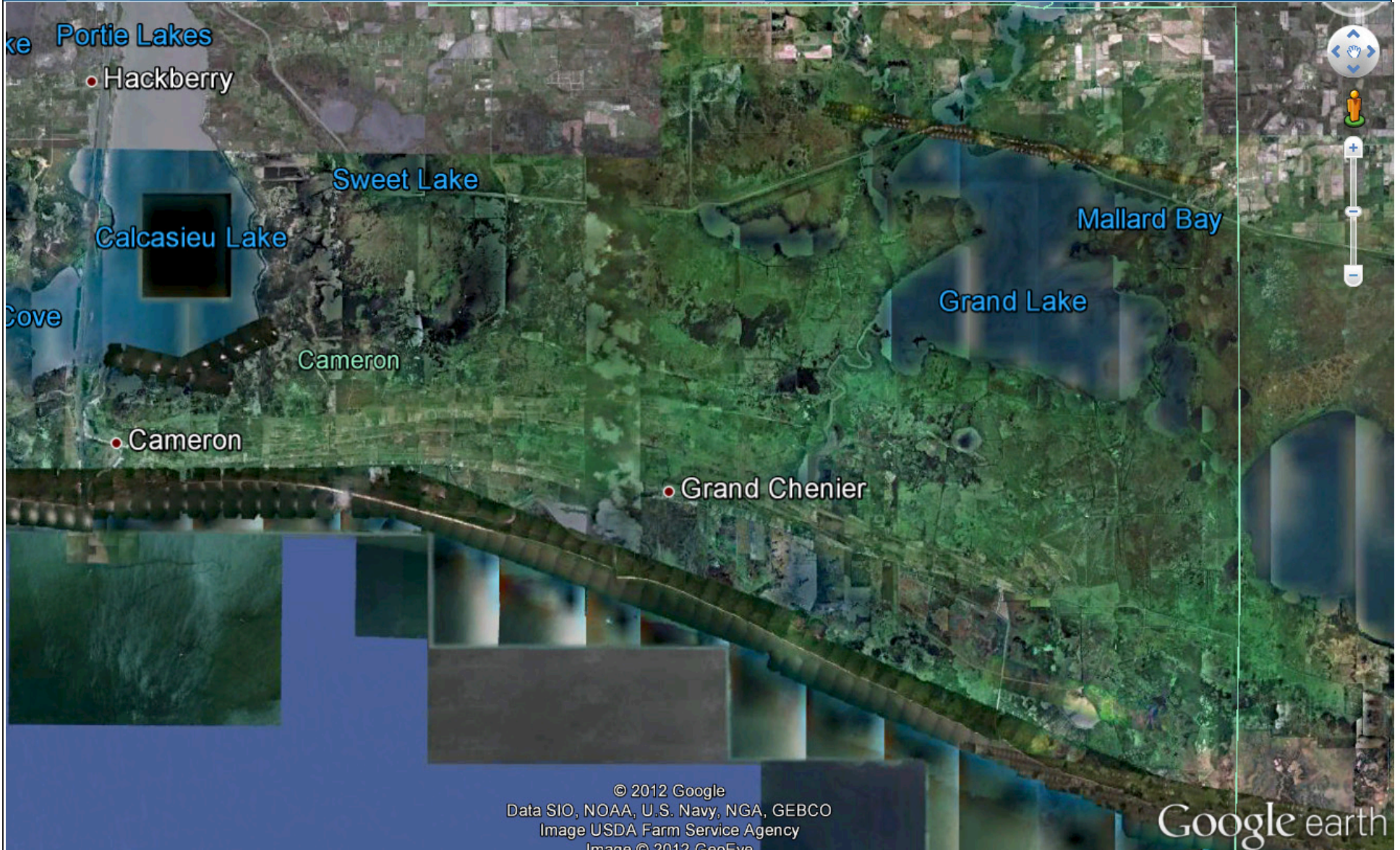












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