Applying Risk-Informed Floodplain Management Lessons from Overseas in the USA

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WATER + ENVIRONMENT + TRANSPORTATION + ENERGY + FACILITIES

Overview

- Objectives for discussion
- Summary of the EU Floods Directive
- Case Studies
- Conclusions

Objectives for Discussion

- The ASFPM International Committee has sponsored a number of presentations in recent years describing Flood Risk Management in the UK, Netherlands, France, and Spain.
- Explore the Floods Directive and look at how its provisions might have served communities in Southeast Texas during Harvey.
- What conclusions can we develop for ways that EU Floods Directive can inform US policy to better prepare for floods and flood risks?

Floods Directive (2007) - Overview

- Framework guidance for each member state to interpret
- Explicit recognition that floods:
  - Cause fatalities
  - Displace people
  - Damage the environment
  - Harm the economy
  - And that while flooding is a natural occurrence, human activity can exacerbate damages.
- Goals are to reduce adverse effects to:
  - Human health and life
  - Environment (water quality and ecology)
  - Economic activity and infrastructure

Floods Directive

- Chapter I – Administrative (General Provisions)
- Chapter II – Preliminary Flood Risk Assessment (2011)
  - Sets the stage for future flood risk management
  - Watershed based
  - Makes use of readily available information
  - Captures historical flood events
  - Assesses potential adverse **consequences** of future floods.

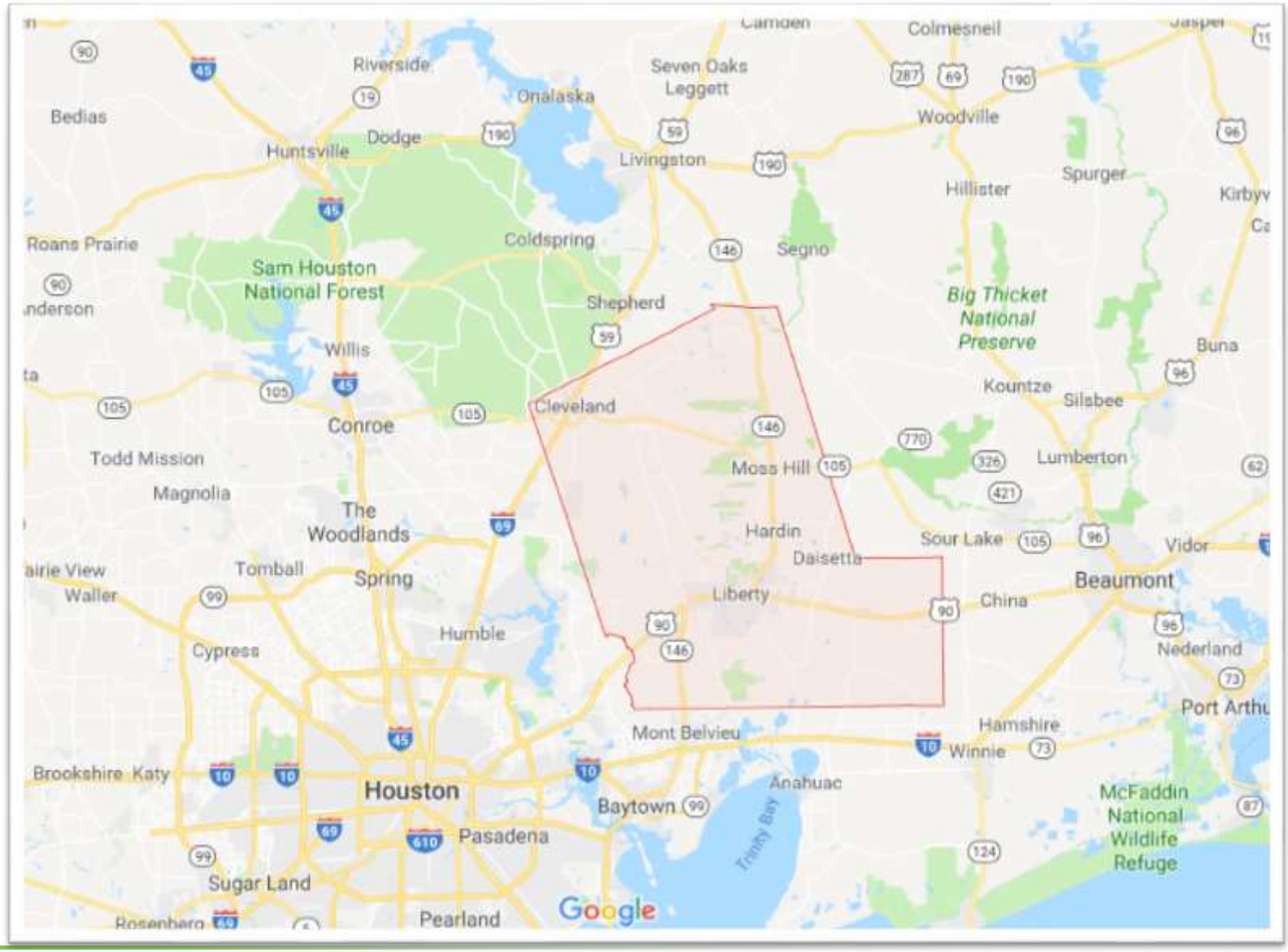
Floods Directive

- Chapter III – Flood Hazard Maps and Flood Risk Maps (2013)
- Flood Hazard Maps
  - Low Probability (undefined)
  - Medium Probability (100-yr or greater)
  - High Probability (where appropriate)
- Flood Risk Maps
  - Number of inhabitants affected
  - Type of economic activity affected
  - Environmental costs (e.g. spills, pollution, etc.)

Floods Directive

- Chapter IV – Flood Risk Management Plans (2015)
  - Watershed based
  - Establish “appropriate objectives” to reduce adverse consequences from flooding for:
    - Human health
    - Environment
    - Cultural heritage
    - Economic activity
  - Measures to Reduce the likelihood of flooding
  - Incorporation of costs:benefits
  - Focus on prevention, protection, and preparedness

Case Study – Trinity River



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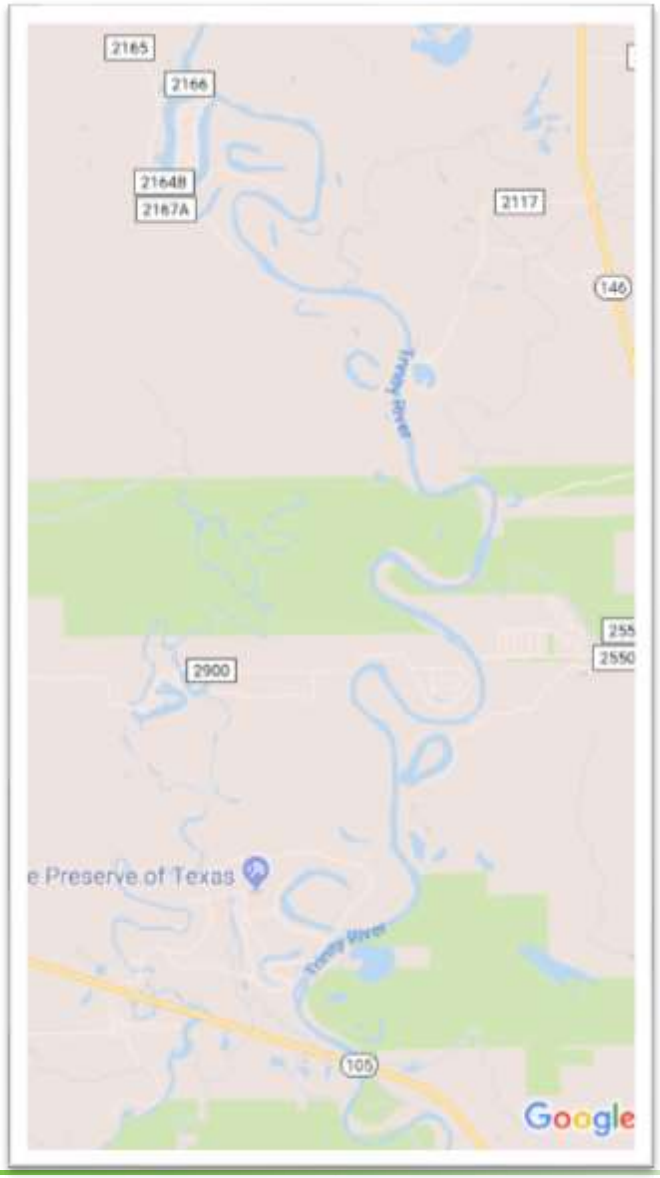

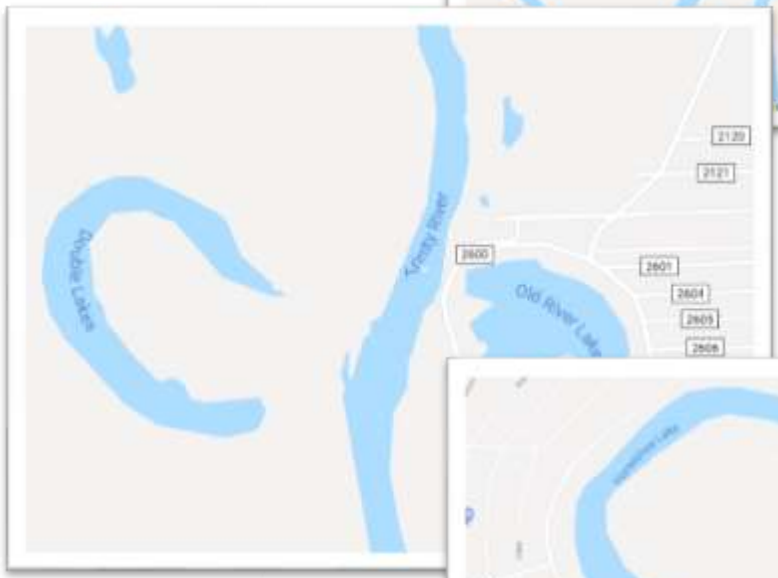

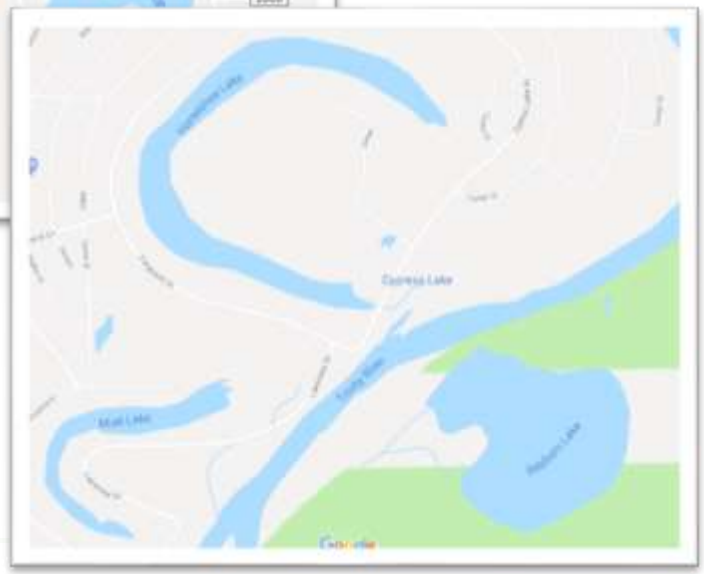

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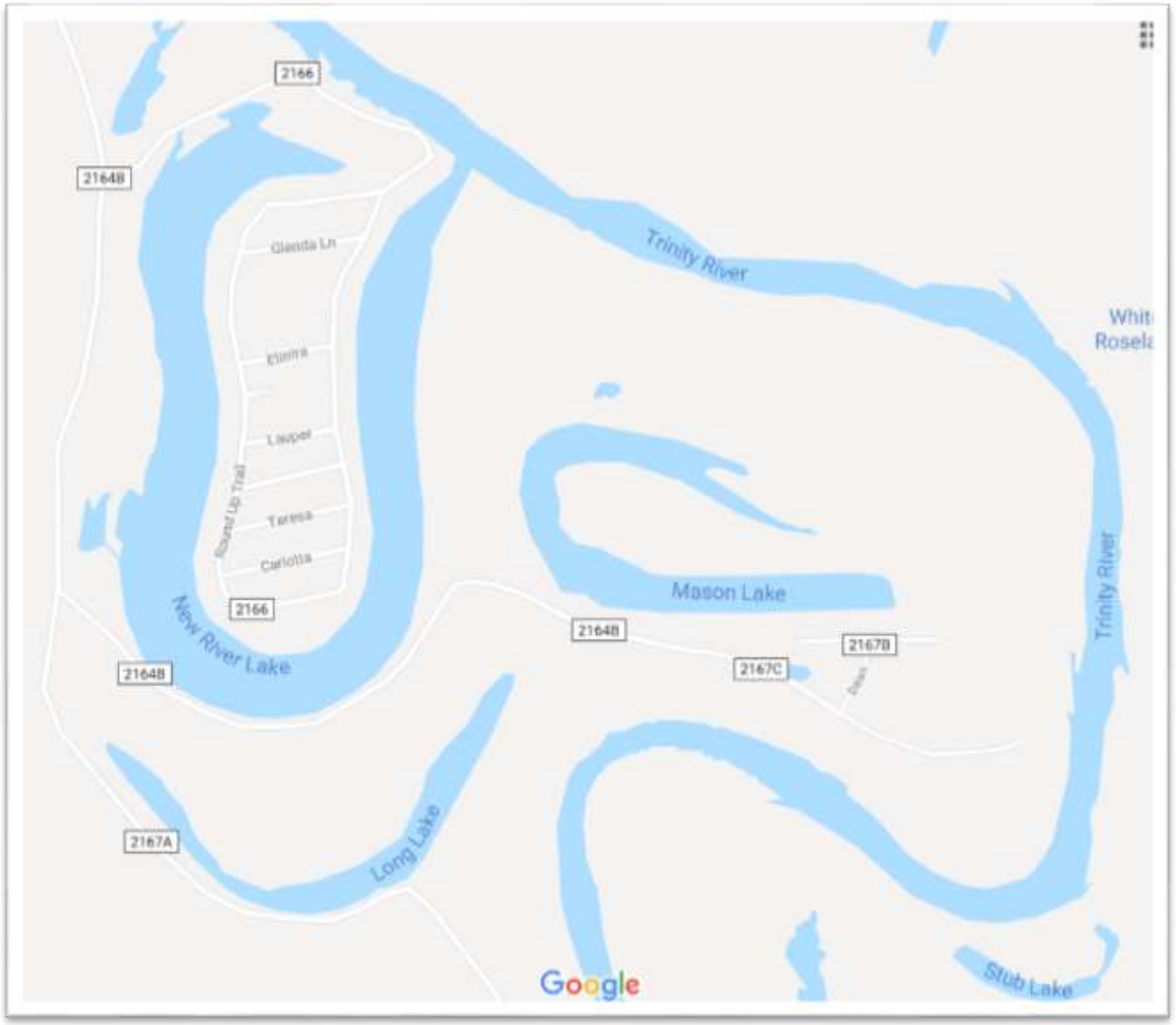

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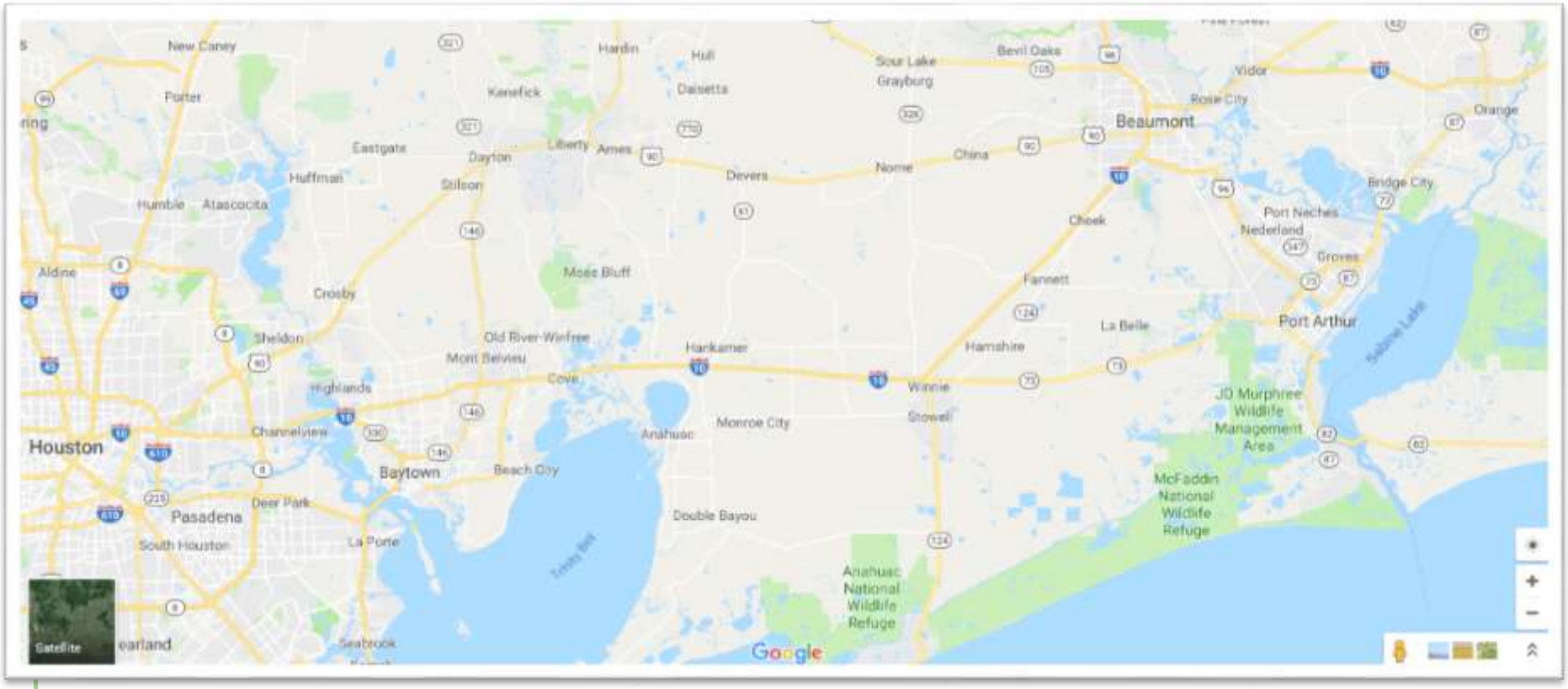
Case Study – Jefferson and Hardin Counties, TX



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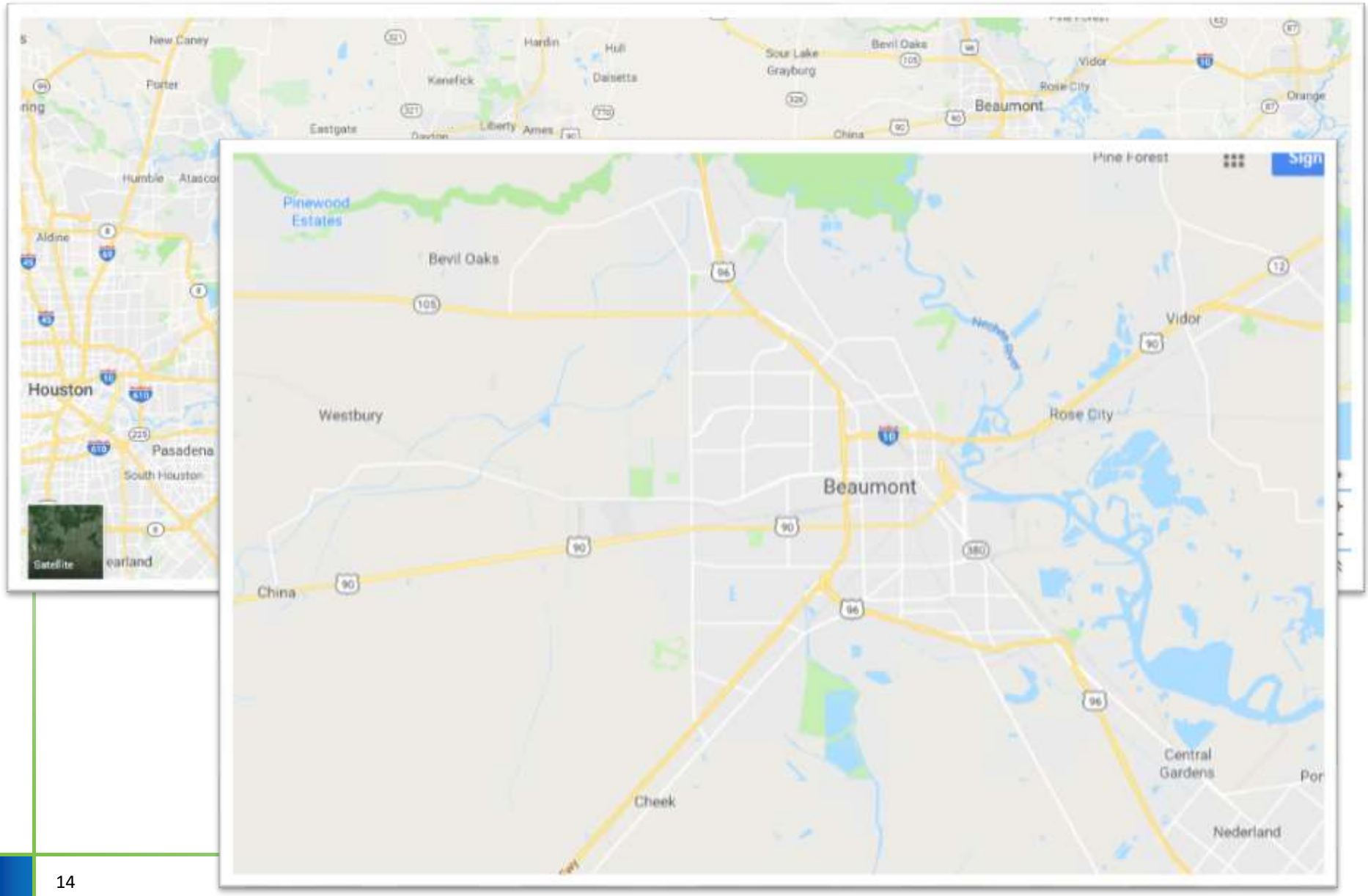

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Texas Longhorns and Residents Benefit from Buyout Program

Texas Longhorns graze on leased land by citizen from the Hardin County Buyout Program. FEMA/Kimberly Phelon

Sour Lake, TX- On September 13, 2008, Hurricane Ike, a dangerous and powerful hurricane came ashore crippling and mangling cities in Texas, including small city in southern Harden County, Sour Lake, population 1813.

Ike's destructive forces were so shattering that it prompted a buyout to hel mitigate against future losses.

Buyouts, also called acquisitions and relocatic projects, allow residents move permanently out of harm's way. Residents are able to sell their repetitive loss properties to the county and receive the fair market value of their home. The buyouts save the government money because flood insurance payments and federal assistance payments are reduced. Because acquisition projects permanently eliminate flood risks for purchased properties, their benefits continue far into the future.

Beginning in 2009, thirteen homes were part of the Harden County Buyout Program. The acquisition project funded through the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) helps states and local governments implement long-term mitigation measures. FEMA funded 75 percent of the cost of the mitigation project with the recipient paying the remaining 25 percent. The total cost of the buyout paid by HMGP was 869,874.96 and the state of Texas administered funds.

When Category 4 Hurricane Harvey came along on August 26, 2107, the homeowners who participated in the buyout were no longer threatened. They were high and dry in another location while homes of their former neighbors succumbed to several feet of water. In addition to avoiding Harvey floodwaters, the homes in the buyout program evaded inundation during the Halloween flood in 2015, and 2016 when problems with flooding hit the area. The initial buyout of homes began in 2009 and ended in 2012.

property owner from the Hardin County Buyout Program. FEMA/Herman Price

"If anyone turned down the buyout offer and remained in their home, they flooded during Harvey," said Amanda Young, Floodplain Administrator for Hardin County. "The flooding in Sour Lake was so bad that everyone had to depend on individuals with boats for five days."

Buyouts require that counties or cities accept the responsibility for monitoring and enforcing the proper use of acquired property or open space. Typically, communities will convert the open space to a public park; however, Harden County established a leasing program to limit the cost of maintenance. After demolition, interested residents leased the land for $1.00 per year. The program prohibits building houses on the property after the acquisition.

Citizens mainly lease the land for gardens, livestock and extra parking space. One individual leased the land for the grazing of his Texas Longhorns. The process involves the county administrator sending letters to adjacent property owners first to see if they are interested in leasing the land. "We have no problem leasing with many asking about leasing property,"' said Young. "It works out really well for the county because it saves them maintenance costs and the land is in use."

Eligible applicants for the voluntary buyouts includes only communities that participate in the National Flood Insurance Program (NFIP).

According to Young, the county has plans for other mitigation strategies such as elevations and relocations. In addition, the county is considering submitting another application to FEMA for buyouts of severe repetitive loss property since Harvey inundated property.

For additional information contact: https://www.fema.gov/faq-details/Buy-out-of-flooded-property-1370032125293

https://www.fema.gov/media-library/assets/documents/85455

Credit: Herman Price

Case Study – Jefferson and Hardin Counties, TX

Credit: Zillow

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Case Study – Jefferson and Hardin Counties, TX

Credit: Michael Jackson

Conclusions

1. Framework:
   - The US has challenges that are different from those in the EU
     - Property Rights
     - Landuse decisions are managed at the local level
     - Federal Agencies function as silos
   - Flood Risk Management in the US is built upon the NFIP, which is, by definition, a reactive approach.
     - Every year we spend $27 billion on disaster response and only $600 million on mitigation/prevention! (Larson)
     - The EU starts with a holistic approach to Flood Risk Management emphasizing prevention, protection, and preparedness. Disaster response is subordinate to the overall directive.
   - Flood Risk Management in the US is prescriptive, with a one size fits all approach.

Conclusions

- The EU Floods Directive provides a “performance-based” approach that allows member states to adopt appropriate measures and focus efforts where history, modelling, and risk analyses suggest the efforts are warranted.
- Flood Risk Management in the US is poorly coordinated
  - Of the $255B spent on disasters between 2005 and 2014, only $111B came from FEMA’s Disaster Relief Fund. $144B (56%) came form the budgets of 17 Federal Departments and Agencies. (PEW)
- Perhaps a solution to our unsustainable insurance program is the creation of a new framework to address flood risk management in a holistic manner, and let the NFIP be subordinate to that, and allows for regulations to be put into place .

Conclusions

2. Governance – partnership between planning, policy and enforcement to protect the people – NOT to ignore risks for short-term economic growth goals that externalize long-term costs to the public.
   - Conundrum of economic growth now versus the potential for damage later – Don't give politicians and public officials the wiggle room to make short-term decisions.
   - Increase the accountability for decisions made that are NOT in the public interest.

Conclusions

3. Education and Outreach – Needs to effectively educate the general population about risks.
   - RiskMap has developed a lot of risk communication tools, but the communication doesn't appear to be reaching the public so that they can make informed decisions.
   - Various mapping products can help convey flood risks – How do we get the public to see them???
   - Messaging in financial documents doesn't raise awareness. Messaging has to be on the ground and highly visible in order to communicate with the public.

Thank You!