Post-Disaster: Floodplain Management Challenges and Solutions

Presented By:

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State Coordinator
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Past President
Texas Floodplain Management Association (TFMA)
Agenda

• Why am I interested in this topic? It rarely rains in Texas
• Statistics
• What is a Floodplain?
• Basics of the National Flood Insurance Program
• Disaster Strikes! Reactions During and After a (flooding) event
• Community response
  ▪ Safety
  ▪ Substantial Damage/Improvement
  ▪ Repetitive Loss Properties
• Mitigation / Grants
• Outreach
• Conclusion
Why am I Interested in Floodplain Management?

Stratford, Texas, 1935
24 Hour Rainfall Ending
8 AM Monday, September 26, 2016

Images are created from a combination of Doppler radar precipitation estimates and reliable ground-based rain gauges. Some totals may be unrepresentative.
Austin: May 2015
Halloween Flood, 2013
Hurricane Ike, 2008
Tropical Storm Allison, Houston, 2001
Severe Storms, 1998

Oct. 17-18, 1998
30” in 36 hours
31 lives lost
$750 million

NOAA
Hurricane Alicia, 1983

21 deaths
$7.3 billion
Austin, 1935
Statistics

Floods are the leading cause of death from natural disaster
• ~200 per year in the U.S.
• ~ 50% perish in vehicles in the U.S.
• Flooding causes more damage than all other natural disasters combined*

Texas leads the nation in flood-related fatalities, (840+)
• This is over 3X as much as the next highest state (Pennsylvania - 265+)
• ~76% perish in vehicles in Texas
• Texas ranks 2nd in nation for flood financial loss*

*FEMA
Coastline is #6 in U.S., 367 miles
Major rivers = 15

Streams = 11,247
80,000+ miles
What is a Floodplain?

Characteristics of a Floodplain

- Floodplain
- Flood Fringe
- Floodway
- Base Flood Elevation (BFE)
- Normal Channel
- Fill

Source: NFIP Guidebook, FEMA
Why Is Floodplain Management Needed?

“Floods are natural - Flood Losses are due to actions of man.”

- Dr. Gilbert White
“The Three-Legged Stool”

- The NFIP balances three related program areas:
  - Flood Hazard Identification (mapping).
  - Floodplain Management (regulations such as building codes and zoning).
  - Flood Insurance (provision of low-cost insurance for property owners in participating communities).
FIRMs (Flood Insurance Rate Maps)

- Identify flood hazard areas.
- Show floodplains with Base Flood Elevations (BFEs) and without BFEs.
- May show areas within the regulatory floodway.
- May show community landmarks.
- Divide the study area into zones used to establish actuarial insurance rates.
Example: Site Location on FIRM

Proposed
Single Family Home
Applicant - I.M. Wright
APN 005-150-04
2550 Shady Lane
Floodville, CA 96580

Scale: 1" = 200'
NFIP: A Quid Pro Quo Program

FEMA agrees to make flood insurance available within a community when that community agrees to adopt and enforce floodplain management regulations.
Basic Rule #1: Communities must use the latest maps and flood data published by FEMA.

Basic Rule #2: A permit is required for all development in the SFHA shown on your FIRM.

Basic Rule #3: Development must not increase the flood hazard on other properties.

Basic Rule #4: New, substantially improved or substantially damaged buildings must be protected from damage by the base flood.

Basic Rule #5: V Zones have special building protection standards in addition to the requirements for A Zones.

Note, there are some additional requirements that help ensure that the buildings stay habitable and additional flood problems are not created.
NFIP Roles: Federal and State

• Federal:
  ▪ National program oversight.
  ▪ Risk identification (mapping).
  ▪ Establish development/building standards.
  ▪ Provide affordable insurance coverage.

• State:
  ▪ State program oversight.
  ▪ Establish development/building standards.
  ▪ Provide technical assistance to local communities/agencies.
  ▪ Evaluate and document floodplain management activities.
NFIP Role: Local

- Adopt/enforce local floodplain management ordinances/orders that comply with Federal/State laws.
- Development oversight is local.
- Issue or deny development/building permits.
- Inspect development, early and often.
- Maintain records.
- Assist with new flood mapping efforts as available.
- Contact the TWDB if a flooding event occurs.
Disaster Strikes! What Next?
Reactions During or After a (Flood) Event

• Shock
• Horror
• Sadness
• Disbelief

• Want to get back to ‘normal’ as soon as possible
Community Response

- Take a deep breath!
- Follow the Hazard Mitigation Plan
- Inform affected homeowners
  - Do not start work on house until approved to do so
    - Safety issue
    - Substantial damage estimate, as needed
    - Contact TWDB staff for guidance
- Inspect for Substantial Damage
- Issue permits for work, if warranted
- Apply for Hazard Mitigation Grant Program funds, if available, through Texas Division of Emergency Management
Safety

• Drowning is the leading cause of death
• Electrocution is the 2nd leading cause of death in flooding (FEMA 480)
• Furniture and other objects shift with water movement
  ▪ Tear up floors, cabinets, and other items that may result in broken wood, sharp points, other dangers
• Critters
• Water mixes with everything
  ▪ Sewage back-flow
  ▪ Pesticides
  ▪ Oil or gas
• Mold occurs after only a few days
State Role – Texas Water Development Board

- Contact community Floodplain Administrator(s) before event if possible
  - Mass email(s) and phone call(s)
- Maintain contact after event:
  - Provide general technical assistance
  - Provide information on the Hazard Mitigation Grants (through the Texas Division of Emergency Management) or other grants/loans as available
- Contact FEMA representative(s)
  - Prioritize communities as needed
  - Maintain a presence at Joint Field Office
- Developed TexasFlood.org (yes, shameless plug)
  - Check water levels, stream gages, road conditions, weather, etc.
  - Guide for residents; What to do Before, During, and After Flood Event
State Role - Texas Natural Resource Information System (TNRIS)

• Housed under the Texas Water Development Board
• Source of USGS maps, floodplain maps, and digital products
• State clearing house for over 1,000,000 images, many going back to the 1800’s
• Administers StratMap – Texas Strategic Mapping Program which provides LiDAR and GIS base data services for Texas
• Developed Geospatial Emergency Management Support System (GEMSS) to assist first responders with mapping
• Developed Flood Viewer for TexasFlood.org
State Role - Others

• Texas Division of Emergency Management:
  - Coordinates for Texas and its community’s Hazard Mitigation Plans
  - Responds to (flood) events
  - Administrator for:
    - Pre-Disaster Mitigation Grants
    - Hazard Mitigation Grant Program

• Texas General Land Office:
  - Administers Coastal Management Program
  - Under Section 16.320 of TWC, develop a program to manage Coastal Erosion – establish coastal erosion zones and certify structures subject to imminent collapse
  - Under Section 16.321 of the TWC, adopt rules for protection from flooding on barrier islands, peninsulas, and mainland areas fronting on the Gulf of Mexico
If event is declared a presidential disaster:

- Public assistance may be available
  - Life-saving infrastructure (eq. hospitals, electric)
  - 75% federally funded
- Individual assistance may be offered ($33k)
  - Housing assistance
  - Other needs (medical, clothing, funeral, etc.)
- Set up a Joint Field Office, typically in Austin
- Set up Remote Field Office(s), as needed
- May help conduct Substantial Damage Estimates
Substantial Damage
Substantial Damage

- 50% or more of value of structure

Hurricane Ike, Galveston, TX
Courtesy of TWDB Staff
2001 Flood: Substantial Damage

Damage = $75,000
Market Value = $100,000

BFE 10’ NGVD

FLOOR
Substantial Improvement vs. Substantial Damage

- Substantial improvement: Cost to rebuild/improve a structure in the floodplain, whether damaged or not = More than 50% of market value prior to work start.
- Substantial damage: Cost of post-damage repair = More than 50% of pre-damage market value.
There are thousands of homes constructed that exist below the BFE…

Why?

- Year of Construction, building codes and flood inventory at the time.
- Knowledge of flood risk within community
- FIRMs do not cover the entire natural drainage network of the US
- Local permitting requirements are not always known to the individual

What are the common reasons for homes remaining under the BFE?

- **Pre FIRM Homes**
  - We didn’t know…
    - Homes built prior to a Flood Insurance Rate Map being available
    - Not all communities are mapped, so this inventory will continue to grow

- **Grandfathering of Insurance**
  - We have an existing policy showing a lower risk…
    - Structures may have a rating based on a historic map with a lower flood risk determination that is maintained
    - FEMA advises home owners in revised mapping areas to purchase prior to Zones changing
    - This number will continue to escalate.
Definition of Substantial Damage

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damage condition would equal or exceed 50% of the market value of the structure before the damage occurred.

“Damage of any origin” includes fire, lack of maintenance, termites, and damages by sources other than natural hazards.
Substantial Improvement/Damage Conditions

- A substantially improved or substantially damaged structure must be:
  - In the floodplain.
  - Noncompliant with current floodplain standards.
  - Formally declared substantially improved or damaged by community authority.
Floodplain Management Regulatory Requirements

SI/SD equation:

\[
\frac{\text{Cost of Improvement or Cost to Repair to Pre-Damage Condition}}{\text{Market Value of Building}} \geq 50\%
\]
Estimating “Improvement Cost” or “Damage Value”

- Itemized estimates from licensed contractors or professional estimators
- Damage estimates from NFIP claims data
- “Qualified estimates” by local officials who know local costs
- Marshall & Swift (national construction industry guide)
- Standard Building Code
Estimating “Improvement Cost” or “Damage Value” (Continued)

- RS-Means construction cost data
- Building inspection departments
- Emergency management agencies
- Tax assessments
- Damage assessment field surveys
- Other State or local agencies
Methods To Determine “Market Value”

• Independent appraisals by a professional appraiser
• Uniform Residential Appraisal Report: Depreciates value by age/construction quality
• Detailed estimates of the structure’s Actual Cash Value
• Value of structure from NFIP claims data
• Qualified estimates from tax assessor’s or building department staff
Replacement Cost vs. Market Value

• Replacement cost does not equal market (actual cash) value.
• Replacement cost may be used to estimate market value only if depreciated.
Community Responsibility

Community:

• Only entity that can make a substantial improvement/substantial damage determination.

• Must assure:
  ▪ Accuracy of improvement cost and actual repair/damage value.
  ▪ Consistent market value estimates.
Pre-FIRM Building, before damage, 6 feet below BFE
NFIP Premium: $1,079

Substantially Damaged, repaired without permit or without proper SI/SD determination, 6 feet below BFE
NFIP Premium: $12,694
Substantially Damaged, repaired and elevated to BFE
NFIP Premium: $998

Substantially Damaged, repaired and elevated to
2 feet above BFE
NFIP Premium: $347
Elevation and Flood Insurance Costs

30-Yr Comparison of Flood Rates
Zone AE - Post-FIRM Building - $100,000 structural coverage
Single Family - No Basement - One Story

* Assumes a 3.5% per year increase

Cumulative Insurance Premiums (Thousands of Dollars)

- $12,183 (2 ft above BFE)
- $29,218 (at BFE)
- $96,070 (2 ft below BFE)

Year

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

$0 $20,000 $40,000 $60,000 $80,000 $100,000 $120,000
Increased Cost of Compliance

- An **additional flood insurance claim payment** to help cover the cost of bringing a substantially or repetitively damaged building into compliance with the local floodplain management ordinance
- The insured building must be in the regulatory floodplain
- The claim must be a **direct result of a flood loss**
Increased Cost of Compliance (ICC)

- If the community declares a building substantially damaged or a repetitive loss due to flooding:
  - An owner with an ICC policy can file an insurance claim.
  - The ICC benefit pays the cost to bring the building into compliance with State and/or local floodplain management laws or ordinances.
  - ICC coverage provides payment up to $30,000 for mitigation measures such as elevation.
ICC Mitigation Solutions (FRED)

• Floodproofing (nonresidential properties only)
• Relocating to a new site
• Elevating above the flood level in the community
• Demolishing the building
Repetitive Loss vs. Substantial Damage

• An ICC repetitive loss structure, per community determination:
  ▪ Was flood-damaged twice within 10 years.
  ▪ Had a repair cost that equaled/exceeded 25% of market value each time.

• An ICC structure substantially damaged by flood:
  ▪ Was flood-damaged by a single event.
  ▪ Will cost 50% or more of the pre-flood market value to restore to pre-damage condition.
Local Role in ICC

• Enforce the repetitive loss provision in the floodplain ordinance if repetitive losses occur.
• Make “substantial damage” and “repetitive loss” determinations.
• Provide mitigation options to policyholders; help package ICC benefits with other funding sources.
• Coordinate to issue building permits for mitigation measures.
• Issue Certificate of Completion/Occupancy.
Repetitive Loss
What is an NFIP Repetitive Loss Property?

• A property, insured by the National Flood Insurance Program (NFIP), that has experienced:
  ▪ at least two paid flood losses of more than $1,000 each in any 10-year period
  ▪ Can include any type of property (residential, commercial, industrial, public facility, etc.)
Repetitive Loss Situation for NFIP

- RLP - NFIP Policies
- RLP vs Total NFIP Claims

1% 28%
Put into Perspective

• Nationally, Since 1978 – 199,203 total RLP’s have been documented with 598,222 claims costing the NFIP $16.7 billion in nominal dollars (as of 01/31/17).
(SRL) Severe Repetitive Loss

- Subset of National List
- Approximately 10,718 properties
- The only property type is single family (1-4 family structures).
- To qualify for this list, a property must meet at least one of the paid loss criteria:
  - 4 or more insured losses of at least $5,000 that cumulate to more than $20,000
  - 2 claims which cumulative losses paid exceed the property value
Region VI Validated SRL

<table>
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<tr>
<th>State</th>
<th>Number</th>
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<tbody>
<tr>
<td>Arkansas</td>
<td>36</td>
</tr>
<tr>
<td>Louisiana</td>
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<tr>
<td>New Mexico</td>
<td>1</td>
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<tr>
<td>Oklahoma</td>
<td>59</td>
</tr>
<tr>
<td>Texas</td>
<td>1,781</td>
</tr>
</tbody>
</table>

- Region VI has 4,166 SRL properties, this is 40% of the nation’s total as of 1/31/2017.
Resolving repetitive losses is in the public good

- Allowing repetitive loss properties to continually rebuild or remain “status quo” helps no one in the long run.

- Areas facing repetitive flood losses deteriorate and become blighted. This cycle compounds the political and emotional problem by ensuring that these areas become home to those with the fewest means.

- Failing to break this cycle continually puts citizens at risk for loss of life and property.
1st Step: Organize, Process and Clean Data

- Acquire RL data from Regional RL Coordinator
- Update address information
- Correct obvious spelling and cosmetic inaccuracies.
- Update location information, i.e., Community, County
- Update the current status of the structure, i.e., demolished by owner, destroyed by fire, elevated by owner, ICC, PDM, HMGP, etc. (AW501)
Any Questions Contact:

John Bowman – FEMA Region 6 RL Coordinator

Phone: (940) 898-5556

JohnE.Bowman@fema.dhs.gov
Value to Local Floodplain Managers

- Field verified data in digital format.
- Basis for preparing HMGP and HMA applications.
- Provides data necessary to develop federal grant applications for mitigation.
- Provides a basis Project Budgets for HM actions.
- Paints a clear and in-depth picture for Local FPA & other mitigation stakeholders
- Provide a targeted area analysis for community education and outreach.
Legislative Impacts on SRL

Biggert Waters Act 2012 (BWA) impacts structures with:

• Cumulative loss history in excess of market value;

• Structures with Substantial Damage (one loss over 50% of the market value);

• Severe Repetitive Loss structures (four or more losses of $5000 OR two losses which exceed the value of the structure).

Subsequent Homeowners Flood Insurance Affordability Act 2014 (HFIAA), requires gradual rate increases (up to 25% as required by BWA 2012 until they reach full risk).
NFIP Reauthorization
National Flood Insurance Program Debt Grows
NFIP Reauthorization

• Congress must reauthorize the NFIP no later than September 30, 2017 in order for FEMA to continue selling and renewing policies.

• In 2017 and beyond, Congress will face significant policy questions about the tradeoffs involving insurance affordability, allocating risk, achieving a sound financial framework, and greater private sector participation in flood insurance markets.

• The NFIP is currently $23 billion in debt to the U.S. Treasury because the program is not generating sufficient revenues to cover catastrophic losses like the billions of dollars paid on claims from the 2005 and 2012 hurricanes.
Mitigation / Grants
Mitigation

Information creates options:

- Elevation
- Relocation
- Acquisition and Demolition
- Flood proofing nonresidential and/or historical structures
- Other means of mitigation
Grant Opportunities

- FEMA Hazard Mitigation grants
- Small Business Association loans (businesses & homeowners)
- Clean Water State Revolving Fund loan
- Housing and Urban Development grants
- FEMA Flood Mitigation Assistance grants
- Flood Protection (Planning) grants
- *Federal Register / Texas Register* may post certain funding opportunities
Mitigation Grant Programs

• Before a disaster:
  - Pre-Disaster Mitigation-Competitive (PDM-C)
  - Flood Mitigation Assistance (FMA)

• Following a declared disaster:
  - Hazard Mitigation Grant Program (HMGP)
Funding Recovery After a Disaster

• FEMA - IA
• HMGP
• FMA
• Increased Cost of Compliance (ICC) coverage
• Small Business Administration (SBA) loans
• Community Development Block Grant (CDBG)
PDM-C Grants

- Nationally competitive program with awards based on ranking factors and evaluation criteria.
- Grants for plans or projects.
- For natural hazards, but multi-hazard plans may include non-natural events such as terrorism.
- FEMA-approved local mitigation plans are required for project grant funding.
- Funding by fiscal year.
- Awarded without reference to State allocations or quotas.
- Local governments: Apply through their States.
FMA Grants

- Targeted to reduce the number of repetitively flood-damaged structures.
- Funded through the National Flood Insurance Program (NFIP).
- Include grants for planning, projects, and technical assistance.
- Approved plans required as a condition of project grant funding.
- “In FY 2016, the total amount of funds distributed under the FY2016 FMA Grant Program will be $199,000,000.” (FEMA.gov)
Hazard Mitigation Grant Program

• Available after Presidentially declared disasters.
• HMGP funding: The program may provide a state with up to 15 percent of the total disaster grants awarded by FEMA.
• 75% Federal share with 25% local cost share, may include cash and in-kind services.
• Requires approved hazard mitigation plan.
• 7% of available funding can be used for planning activities.
• Community will apply through the state (TDEM).
Outreach
Goliad City/County Precinct 2

Turn Around Don’t Drown Signs
Turn Around Don’t Drown Poster Contest / Calendars
TFMA’s Stormwater/Flood Models
TFMA’s Stormwater/Flood Models

TFMA has 7 Flood Models. They are located in:

- Region 1 – Lubbock
- Region 3 – El Paso
- Region 4 – Cleburne
- Region 5 – Cedar Park
- Region 6 – San Antonio
- Region 8 – Pasadena
- Region 9 – McAllen

- The models can be checked out with the Regional Director in these regions or by contacting the TFMA Executive Office.
Flood awareness week has been declared by the Governor of Texas, Greg Abbott. This week is dedicated to raising awareness about flood events and their impact on Texas. The Governor encourages all Texans to participate in flood awareness activities, including wearing blue on Wednesday, May 24.

Flood Awareness Week is from May 22 to 26, 2017. During this time, the Texas Floodplain Management Association (TFMA) and the Texas Water Development Board (TWDB) will be highlighting the importance of flood safety and preparedness.

The TWDB will be promoting the #TexasFloodWeek hashtag on social media to encourage conversation and sharing of flood safety information. The Governor's proclamation can be found on the TWDB website.

In conclusion, Flood Awareness Week is a crucial time for Texans to come together and prepare for potential flood events. By wearing blue on May 24 and sharing information, we can help save lives and protect property in the event of a flood.
Texas Flood Awareness Week
May 23 – 27, 2016

Such a great response for our first ever "Wear Blue Day" for #TexasFloodWeek.
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City of Dallas

Halff McAllen

ABC 13 Houston
Texas Flood Awareness Week
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Such a great response for our first ever "Wear Blue Day" for #TexasFloodWeek.

City of Austin

San Antonio River Authority

Weisser Engineering Co.
#TexasFloodWeek

Wearing blue today for #TexasFloodWeek. #TurnAroundDontDrown @TexasCFM

Putting together your morning forecast, sporting blue for @TexasCFM TX Flood Awareness Week. #TexasFloodWeek

Do you know what the difference is between a watch/warning/advisory when it comes to floods? #TexasFloodWeek

What Do Our Flood Products Mean?

- **Watch**: Flash flooding is expected or likely occurring over the next 72 hours. Heavy rainfall will cause be prepared for flash flooding.

- **Warning**: Flash flooding is occurring now. Take immediate action to move to higher ground within the next 15 minutes.

- **Advisory**: Flash flooding has occurred, or conditions are expected to worsen.

5/25/16, 7:02 AM
1 RETWEET 9 LIKES

5/25/16, 4:58 AM
5 RETWEETS 6 LIKES

5/24/16, 7:00 PM
26 RETWEETS 14 LIKES
#TexasFloodWeek continues. @NWS shows you what flood waters can do in this video: ow.ly/N5FY300wZas
#TurnAroundDontDrown

#TexasFloodWeek Flash flooding is the #1 weather-related killer in Texas
#TurnAroundDontDrown @TexasCFM @SmithCoFMO

Texas Flood Week PSA
Never Drive or Walk into Flood Waters - Turn Around Don’t Drown! Flooding is one of the leading causes of weather related fatalities in the U.S. On average, ...
Floods and flash flooding have threatened Texans’ safety, property and
occupations throughout our history and can occur any time of the year. Over the past
several years, our state has seen flood events of extraordinary levels. As we approach
the second anniversary of the tragic flooding of Memorial Day weekend in 2015, and after
recent flooding in Central Texas, it is imperative that Texans unite and prepare for
potentially sudden and violent acts of Mother Nature. Flash floodings is the No. 1 cause
of weather-related damage, and sadly, Texas often leads the nation in flood-related
deaths, many of which are preventable.

While dangerous floods and flash floods are possible throughout the year, they
often have a higher frequency during spring and summer thunderstorms, tropical storms
and hurricanes. Intense rainfall or slow-moving storms that track over the same areas can
cause a rapid rise of water, and flash floods can develop within minutes.

It is crucial that Texans understand and respect the power of water. Planning and
preparing are the keys to reducing loss of life and property. Texans should be familiar
with the implications of flood watches and warnings, assemble a “preparations kit” of
supplies, develop a communication strategy for reaching friends and family members in
case of emergency and designate a meeting place in case of evacuation.

At this time, I encourage all Texans to be informed and prepared for floods and
flash floods and to be mindful of signs and barriers warning of flood dangers. Always
“Turn Around, Don’t Drown” — you could save your life or the life of a loved one.

Therefore, I, Greg Abbott, Governor of Texas, do hereby proclaim May 22–26, 2017, to be

Flood Awareness Week

in Texas, and urge the appropriate
recognition thereof.

In official recognition whereof,
I hereby affix my signature this the
19th day of April, 2017.

Governor of Texas

2017 TFMA Flood Awareness Week
May 22 – 26, 2017
Wear Blue on Wednesday, May 24
Post-Disaster: Floodplain Management Challenges and Solutions

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