One Creek. Two Floods. A Comparison of the Storms and Response
TFMA 2016 Spring Conference

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The Halloween Flood 2013
2013 Halloween Flood Rainfall

Halloween Flood 2013 Rainfall Totals
National Weather Service
Austin – San Antonio TX

Onion Creek watershed

Precip (in.)
- < 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 6 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 11
- 11 +

Canyon Lake
San Marcos
New Braunfels
Wimberley
Kyle
Buda
Oak Hill
Del Valle
Cedar Creek
Austin
Round Rock
Hutto
Lago Vista
Manor
Dripping Springs
2013 Halloween Flood Impacts

- At least 850 Homes impacted City-wide
- 40 roads closed
- More than $10 million damage to public infrastructure in Austin
- 4 fatalities in Austin and Travis County
2015 Halloween Flood Rainfall
2015 Halloween Flood Impacts

- Record rainfall totals
  - Over 14” in 6-hours
  - >500-year rainfall
- ~ 400 structures damaged
- Onion Creek hit hard again
- Extensive flooding outside of mapped floodplains
- 3 fatalities in Travis County
City Responses to Assist Community

- Expanded Buyout Project
- Flood Warning System Improvements
- Updated Onion Creek Floodplain and Mitigation Study
- Improvements in Damage Assessment
- Flood Mitigation Task Force
- Other Observations
Accelerated Property Buyouts in High Risk Lower Onion Area

- Total Project Cost Estimate $170M
  - $46.5M USACE
  - $1.5M FEMA
- 855 homes at risk in buyout area
  - 323 prior to 10/2013
  - 262 between 10/2013 and 10/2015
  - 62 since 10/2015
  - 208 remaining
Lower Onion Buyouts by year

* as of 3/7/2016

10/30/2015 Flood
10/31/2013 Flood

* FY16*
Buyout Program Coordination

- Buyout Status Viewer
  - Recently made outward-facing
- Code Compliance
  - Building permits
  - Maintenance
  - Demolition
- Police Department
- Fire Department
  - Occupied structures
FEWS System Upgrades

- FEWS System Upgrades
  - “Flood Hardening” of USGS gauges and FEWS equipment
  - Installation of additional USGS and COA gauges
  - Improved telemetry technology for FEWS sites
  - Installation of web-based cameras for monitoring of low water crossings
  - Improvement of models and server reliability
  - Investigations to expand the forecast window (NWS HRRR product)
  - FEWS evaluation study and monitoring software enhancements
    - Common Operating Picture
    - Enhanced Modeling and Flood Inundation Mapping
  - Improved communication with 3-1-1, Public Safety, and NWS
  - Improved communication with the public
FEWS – Improved Telemetry and Data Visualization
FEWS – Expanded Outreach Efforts

• ATXfloods Alerts!
  – Text, email and phone notifications of flood hazards (targeted) in English and Spanish
  – Subscription based service

• ATXfloods.com – Road Closures
  – Addition of other communities and surrounding counties
  – Incorporate web-based cameras

• Addition of TV spots in anticipation of severe storms
  – Supplement current radio spots, and social media
  – TADD message
Onion Creek Floodplain Study

Updated Hydrology
New Hydraulics (~64 stream miles)
11 FEMA FIRM Panels
Fully Developed Conditions
Onion Creek Mitigation Study
High-level Feasibility Analysis

Regional Detention Channel Modifications Floodwalls / Levees Limited Buyouts for Structural Solutions Comprehensive Buyouts
Damage Assessment Improvements

- More thorough damage assessment by Austin Code Dept.
- More effective tools for data communication
- Consistent damage categories between agencies
Flood Mitigation Task Force

- Council Resolution June 4, 2015
- 22 Member Task Force
  - 2 appointees by each City Council member
  - First meeting in September 2015
  - Report with recommendations finalized by April 2016
- 3 Working Groups
  - Buyouts and Floodplain Variance Policies
  - Mitigation / Capital Improvement Projects
  - Operations & Maintenance
Other Observations
Flood Insurance Claims Data

- Significant aid in the determination of damaged structures and provides a check of damage calculations
- Quick Claim Data provided by the State (TWDB)
  - Date claims opened
  - Preliminary structure and content damage numbers
- BureauNet Data provided by FEMA
  - More comprehensive data about claims
  - Processed on an infrequent basis - not always timely
  - Looking forward to improvements with the Phoenix system
Other Observations
Department and Agency Cooperation

• Effective response to catastrophic flooding takes preparation, cooperation, and communication before, during, and after the event

• Emergency Operation Center
  – Multi-jurisdictional coordination: Austin, Travis County, Capital Metro, Red Cross
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Onion Creek Watershed