Austin Fire Department

"Our Mission Goes Beyond Our Name"

AFTER-ACTION REPORT

HALLOWEEN FLOOD

October 30th– 31st, 2013

Photo Credit: Ricardo B. Brazziell of the Austin American Statesman

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EXECUTIVE SUMMARY

On the evening of October 30th, 2013 a historic weather event inundated Austin and the surrounding areas. Over 14 inches of rain fell in the Wimberley, Texas watershed within a very short period of time, causing Onion Creek to crest to a record high of 40.17 feet in Austin. Neighborhoods east of Interstate 35 along the Onion Creek flood plain were decimated. Unfortunately, there were three deaths.

The majority of swift water rescue and flood assist calls occurred along the Onion Creek watershed and through the communities that lie both within Austin city limits and those in the Travis County Authority Having Jurisdiction (AHJ).

The Austin Fire Department (AFD) responded to more than 800 incidents between 8:30 p.m. October 30th and 8:30 a.m. October 31st. AFD established five separate incident command areas throughout the evening, both in and outside of the city of Austin, due to the high number and varying priority of 911 calls. All five incident commands were led by veteran AFD Battalion Chiefs with enormous experience handling large-scale, chaotic events, along with senior-level company officers and members with the experience to operate within dynamic environments.

The rescue and evacuation effort was a huge success given the enormity of the situation. Roughly 370 people were rescued by boat, helicopter or contact rescue; over 400 people evacuated via boat, high-clearance vehicle, or wading with assistance; over 253 families were instructed to self-evacuate; and, close to 50 animals rescued or evacuated. Very few people were transported to local area hospitals despite 911 calls claiming medical emergencies.

AFD continually strives to enhance its level of service delivery to the community in which it serves. This After-Action Report (AAR) serves as a review at the strategic level to identify smart practices as well as areas that need further development. This AAR is designed more for the public entity in order to understand the larger frameworks of orchestrating such a large response and does not delve into the tactical and operational levels.

An analysis of the Halloween Flood identified four areas of service delivery enhancement which are already in the planning, beginning, or implementation stages of committee:

1. Implement a proactive staffing plan for water-related events, including boat resources and location.

2. Implement a community outreach plan to educate the community on AFD action plans at water-related events.

3. Vet information from the Emergency Operations Center and the Department Operations Center prior to dissemination to the field.

4. Implement an area command at large-scale incidents followed by formal notification through the chain of command.

METHODOLOGY

An event of this magnitude requires informational input from a multitude of sources. This report incorporates information from the following:

- In the days following the flood, AFD Executive Staff identified one incident number for each of the five major incident commands. The AFD Division Chief instructed incident commanders of each incident command to compile information "for each area going over the things that went well, the things that went bad, and any policy, equipment or operational changes you feel should be changed or emphasized to make our next response to similar situation safer, more effective, and more efficient for our firefighters and the citizens."
- Company officers assigned to each incident command provided a detailed account of their actions through the AFD Record Management System under each incident number specific to their area of operation.
- The AFD Planning & Research Division compiled a timeline of the first operational period and created maps of the incidents.
- Interviews with incident commanders and their staff as well as AFD representatives within the Department Operations Center (DOC)[1] and Emergency Operations Center (EOC).
- Interviews and/or written statements (in addition to incident reports) of select company officers who operated in key positions within a given incident command.

FUNCTIONAL AREA REVIEW

Notification and Initial Response

The National Weather Service (NWS)[2] for the Austin-San Antonio area issued the first notification for the pending storm at 12:49 p.m. CST on October 29th, 2013. The notification called for one to two inches of rain (with isolated pockets of four to five inches possible) targeting east of Highway 281 and north of Interstate 10 between 6:00 p.m. October 30th and 6:00 a.m. October 31st. The initial notification called for minor flooding in low water crossings and urban areas.

[1] The DOC is a command level operations center specific to one organization, in this case the Austin Fire Department.

[2] The information was taken directly from National Weather Service Austin-San Antonio communications on October 30th and 31st, 2013.

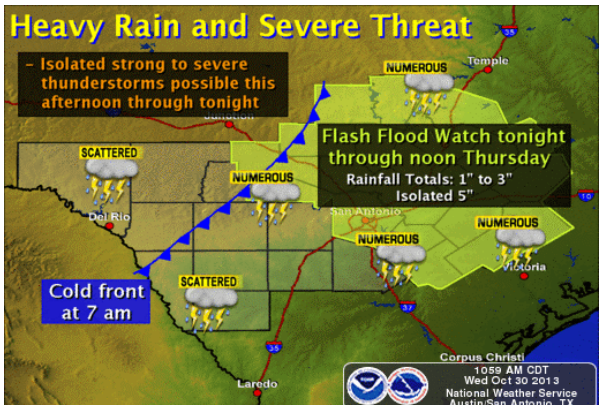

Figure 1: Flash Flood Watch issued by the National Weather Service

A second notification was issued October 30th at 11:43 a.m. with the same rainfall amounts and indicated that the areas most likely to receive the heaviest rain were north of the Llano-Austin-La Grange line. A Flash Flood Watch[3] was issued for 7:00 p.m. October 30th to 12:00 a.m. October 31st.

A third notification was issued at 9:52 p.m. on October 30th and indicated flash flooding was likely along and west of the Interstate 35 corridor as a strong band of thunderstorms – "100 miles worth of heavy rain" – had developed between Williamson County and Bexar County. West Austin had already experienced two inches of rain and several Flash Flood Warnings were in place with more rain expected within the next two hours.

A fourth notification was issued at 11:51 p.m. on October 30th. The National Weather Service issued a Flash Flood Emergency until 3:30 a.m. for most of Travis and Williamson counties due to locally heavy rainfall – six inches in isolated areas of Austin and Williamson County – and several swift water rescues in Pflugerville and Hutto. The Flash Flood Emergency called for several more inches of rain within the next few hours.

A fifth notification was issued at 2:20 a.m. on October 31st issuing a Flash Flood Emergency for Hays and Comal counties as 10 inches of rain had fallen along the Canyon Lake-San Marcos-Wimberley line. The Flash Flood Emergency called for several more inches of rain prior to daylight as swift water rescues

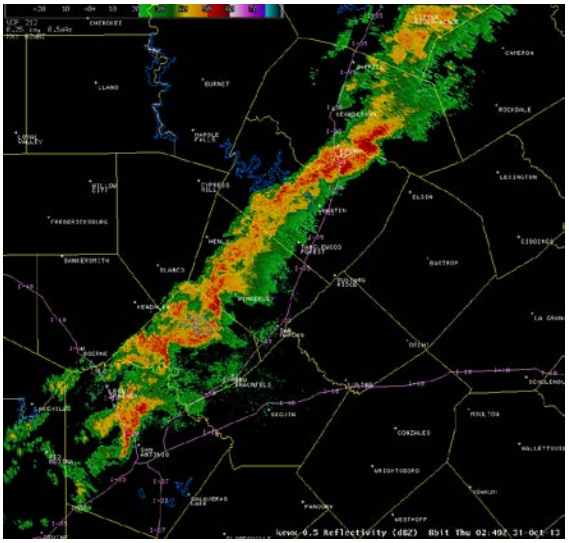

Figure 2: Radar from the National Weather Service at 2:49 a.m. October 31st.

[3] A *Flash Flood Watch* is issued by NWS " to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent."

A *Flash Flood Warning* is issued by NWS "to inform the public, emergency management, and other cooperating agencies that flash flooding is in progress, imminent, or highly likely."

A *Flash Flood Emergency* is issued by NWS when there is a significant threat for loss of life.

continued across the area and roads became impassible.

The largest amount of rainfall occurred south and west of Austin along the Wimberley-Kyle/Buda line. Rainfall amounts in the Austin Metro area far exceeded earlier National Weather Service predictions on the evening of October 30th.

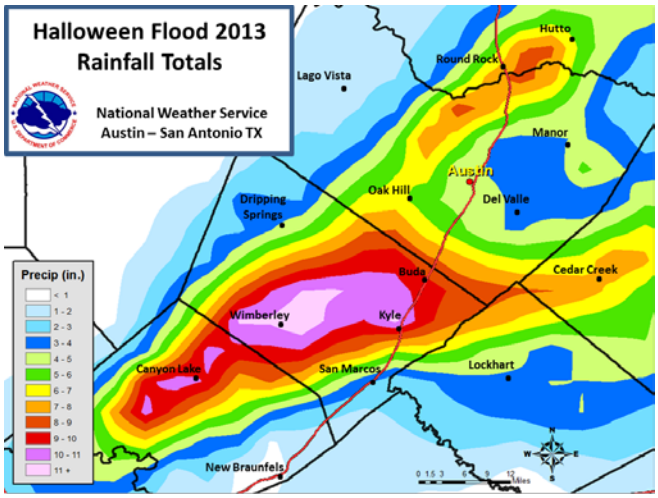

Figure 3: National Weather Service Halloween Flood 2013 Rainfall Totals

Rainfall in the Wimberley area was concentrated, occurred in a relatively short period of time, and most likely contributed to Onion Creek cresting to an all-time high in southeast Travis County.

The majority of AFD swift water rescue and flood assist calls occurred along the Onion Creek watershed and through the communities that lie both within Austin city limits and those that are in the Travis County Authority Having Jurisdiction (AHJ).

AFD responded to over 800 incidents between 8:30 p.m. October 30th and 8:30 a.m. October 31st. More than 120 of those incidents were either swift water rescue or flood assist calls, and did not include incidents that were handled directly between the DOC and incident commanders in the field via cell phone.

Incident Commands

The AFD Operations Division Chief separated incidents throughout the city of Austin and Travis County AHJ into five major incidents over the evening of October 30th and into the early morning of October 31st. It is important to keep in mind that these major incident commands materialized based on geographic location in relation to heavy call volume and were not dispatched as a congruent response.

October 30th, 2013

9:30pm	**Water Rescue Calls begin, North Austin/Pflugerville Area** ***Multiple Responses***
11:00pm	**AFD sets up** Incident Command Post **in** Pflugerville Area ***Multiple units / multiple rescues and evacuations*** ***# of People Rescued:*** *24* ***# of Residential Warnings:*** *15* ***# of Evacuations:*** *34*
11-midnight	**Continue to receive water rescue and other emergency calls in the North Austin/Pflugerville area.** ***Multiple Responses***

October 31st, 2013

Midnight-2am	**Continue to receive water rescue and other emergency calls throughout the area**
2:30am	**Water Rescue / Flood Calls begin in east Austin and eastern Travis County area** ***Multiple Responses***
3:30am	**Water Rescue / Flood Calls begin in south Austin area** ***Multiple Responses***
4:00am	**Increase in Water Rescue / Flood Calls in south Austin area** ***Multiple Responses***
4:25am	**AFD sets up** Incident Command Post **in Bluff Springs Area** ***Multiple units / multiple rescues and evacuations*** ***# of People Rescued:*** *117* ***# of Residential Warnings:*** *38* ***# of Animal Rescued:*** *24* ***# of Evacuations:*** *50*
5:30am	Emergency Operations Center (EOC) activated by AFD Chief of Staff Department Operations Center (DOC) moved from Shift Commander's office to EOC.
5:50am	**AFD sets up** Incident Command Post **in Pinehurst Dr Area** ***Multiple units / multiple rescues and evacuations*** ***# of People Rescued:*** *15* ***# of Residential Warnings:*** *100+* ***# of Animal Rescued:*** *unknown* ***# of Evacuations:*** *30*
5:45-6:00am	**AFD sets up** Incident Command Post **in S. Pleasant Valley area** ***Multiple units / multiple rescues and evacuations*** ***# of People Rescued:*** *169* ***# of Residential Warnings:*** *n/a* ***# of Animal Rescued:*** *>10* ***# of Evacuations:*** *n/a*
7:00am	**Implementation of Emergency Notification process for flooded areas**
8:45am	**AFD sets up** Incident Command Post **in Pearce/I30 Area** ***Multiple units / multiple rescues and evacuations*** ***# of People Rescued:*** *45* ***# of Residential Warnings:*** *Unknown* ***# of Animal Rescued:*** *2* ***# of Evacuations:*** *200*
9am-Noon	**Continued water rescues, evacuations, human/animal saves in Austin and Travis County.** ***In addition to flood-related incidents, AFD responded to*** *15 fire-related incidents*

Residential Warnings: AFD notified the residents of the need to evacuate, but did not need to assist.
Evacuation: AFD helped the residents evacuate (loading vehicles, animals, etc.)
Rescued: AFD rescued the individuals from their homes/vehicles.

Figure 4: Austin Fire Department Timeline of Halloween Flood Event

The five incident commands established were the Pflugerville Incident Command, the Bluff Springs Incident Command, the Pinehurst Incident Command, the South Pleasant Valley Incident Command, and the Pearce/130 Incident Command. Three of these incident commands occurred outside of the city of Austin and within the Travis County AHJ.

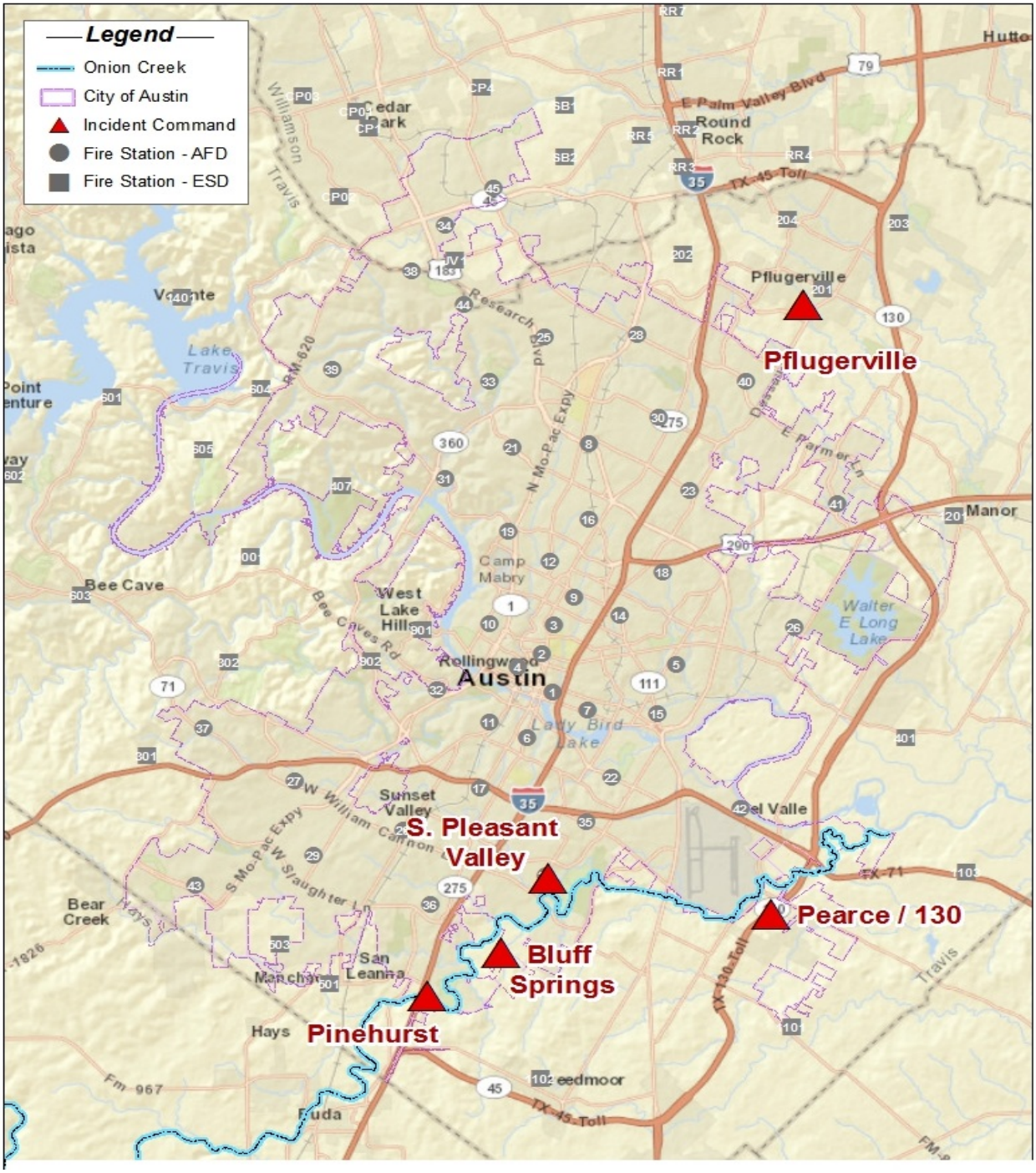

Figure 5: Map of AFD Incident Commands

Pflugerville Incident Command

The Pflugerville Incident Command was the first incident command set up and outside the city of Austin. Battalion 6 and three additional AFD apparatus responded into Pflugerville at 11:00 p.m. on October 30th to assist three Pflugerville fire apparatus with rescues and evacuations in a residential community.

Battalion 6 established a unified command with the Pflugerville Fire Department, Pflugerville Police Department, and Austin/Travis County EMS (A/TCEMS). Pflugerville Incident Command was divided geographically into two divisions, the River Right Division and River Left Division. Both were responsible for rescue and evacuation operations within the neighborhood. A collection point was also established for residents evacuated from their homes.

Pflugerville Incident Command rescued approximately 10 people via boat, assisted with the evacuation of 24 people, and verbally instructed 15 people to self-evacuate. There were no medical transports in the Pflugerville Incident Command.

What Worked Well

- Establishing a unified command with law enforcement and A/TCEMS allowed for multi-agency coordination and organization of the incident. The unified command concept also assisted in anticipating future community needs between the three disciplines.
- Dividing the management structure geographically with divisions made the activities much more manageable.

Challenges

- The incident occurred outside of the city of Austin, but was rich with resources from the city. Transfer of command to and from AFD presented challenges with other organizations.
- There was neither understanding nor appreciation of other incidents happening throughout the region which affected action plans at the Pflugerville Incident Command. For example, use of Capitol Metro buses to keep residents dry and warm was critical and beneficial, but took a long time to establish. Requesting this type of resource early and with situational awareness of other events in the region is paramount, especially during large scale events.

Bluff Springs Incident Command

The Bluff Springs Incident Command was established at 4:25 a.m. on October 31st, composed of Battalion 4 and 14 AFD apparatus, and outside the city of Austin. Battalion 4 proactively investigated the southern boundaries of this battalion in South Austin from approximately 12:00 a.m. to 2:00 a.m. due to the high call volume and changing weather patterns within the city. However, water levels rose dramatically in the two hours prior to Battalion 4 assuming the Bluff Springs Incident Command and several streets were already underwater, forcing incoming apparatus to retreat to higher ground.

Battalion 4 established a unified command with A/TC EMS and Travis County Emergency Services District (ESD) 11. Bluff Springs Incident Command was initially given six to eight addresses in need of immediate assistance and relied upon senior company officers to gain control over dynamic situations. The incident was managed through standard National Incident Management System (NIMS) conventions.[4]

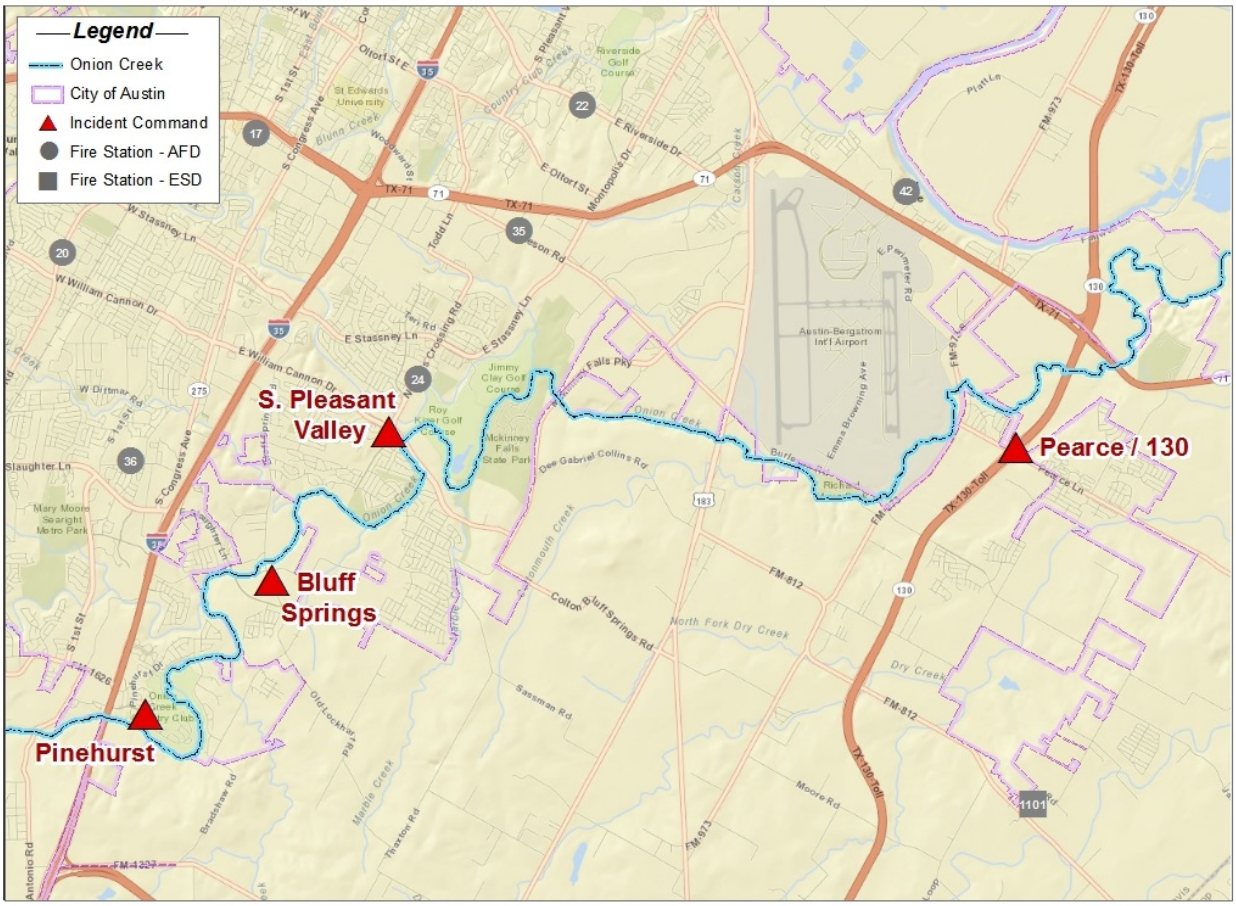

Figure 6: Map of AFD Incident Commands along Onion Creek

Bluff Springs Incident Command was initially divided geographically into three divisions; the 8301 Division and Brandt Division served rescue and evacuation priorities while the Wild Dunes Division served the needs of the residents in the area once removed from their homes.

The South Branch was established later in the incident and composed of Division 13 and Division 42, both of which served rescue operations. Command was in communication with the DOC for resource allocation and used three swift water rescue boats and numerous helicopters for rescue operations on top of cars, trees and rooftops.

[4] NIMS is required by Presidential Policy Directive-8 and a national model used to manage emergencies from preparedness through response and into recovery, regardless of cause, size, location or complexity.

At approximately 6:30 a.m., Bluff Springs Incident Command was notified by the South Branch Director of a missing woman and child, reported by the husband. An immediate search was initiated via boat and helicopter, but neither was found. Both victims were recovered downstream between the Bluff Springs and South Pleasant Valley Incident Commands by Travis County ESD 11 personnel.

Bluff Springs Incident Command rescued approximately 106 people via boat, four people via helicopter, seven via contact rescue, rescued/evacuated 24 animals, assisted with the evacuation of 50 people, and verbally instructed 38 people to self-evacuate.

What Worked Well

- Establishing a unified command with A/TCEMS and Travis County ESD 11 was critical and allowed for multi-agency communication, coordination, and organization of the incident.
- Assigning separate radio channels to the different divisions enabled clear communications within them.
- Communication with the DOC via cell phone worked well and curtailed unnecessary radio communication.

Challenges

- Flood waters changed considerably within the two hours leading up to the Bluff Springs Incident Command. A more accurate weather forecast and methodology to predict the rise and fall of waterways within the region would have allowed more time to implement operations in the area and establish appropriate resources. There were several incidents already in the area prior to establishing Bluff Springs Incident Command and requisite resources.
- Establishing the Command Post at a fire station along with personnel from at least one fire company would have assisted Bluff Springs Incident Command.
- Most divisions within the Bluff Springs Incident Command dealt with evacuations in still water. One boat capable of dynamic operations in swift water along with several boats more suitable for evacuation purposes in still water would have allowed Bluff Springs Incident Command to send appropriate boat resources to another incident command.

Pinehurst Incident Command

The Pinehurst Incident Command was established at 5:50 a.m. on October 31st and composed of Battalion 1, four AFD apparatus, and one Travis County ESD 11 apparatus. While en route, Battalion 1 was able to confirm that two AFD apparatus and one Travis County ESD 11 apparatus were actively engaged in rescue operations with conditions that were changing quickly.

Battalion 1 was ordered to establish the Pinehurst Incident Command on arrival and was in direct communication with the DOC via cell phone due to communication issues with ongoing incidents

elsewhere. Flood waters from Onion Creek changed dynamically and units engaged in rescue operations were forced to shelter residents on top of two-story roofs as routes to dry land were cut off from rising water.

Pinehurst Incident Command requested boats to the area, but was denied because all available boats were engaged in rescue operations within other incident commands. Units were forced to shelter-in-place with residents on top of roofs until an AFD and Texas Parks and Wildlife boats arrived to assist and the water level started to recede. Residents were managed through a collection point established by Pinehurst Incident Command.

Pinehurst Incident Command rescued approximately 15 people via contact rescue, rescued/evacuated an unknown number of animals, assisted with the evacuation of 30 people, and verbally instructed over 100 people to self-evacuate.

What Worked Well

- Establishing a single incident command for flood related incidents in the geographical area worked well. This allowed Pinehurst Incident Command to gain accountability for resources engaged in rescue operations in the area.

- Communication with the DOC via cell phone was paramount given the high volume of radio traffic in the area.

Challenges

- Resource allocation to the Pinehurst Incident Command was a problem. Specifically, Pinehurst Incident Command needed boats for rescue operations, but none were available. Thus, residents and rescue crews were forced to shelter-in-place on top of roofs.

- During the main phase of the incident, a communication came from the EOC indicating that the flood waters in the area were predicted to rise an additional 13 feet. Pinehurst Incident Command notified units and residents of the information and formulated a new action plan that anticipated a large number of people in the water without boat resources. However, the flood water crest prediction was completely inaccurate and water levels started to recede.

- Radio communication became an issue and caused confusion in the initial stages of Pinehurst Incident Command. Personnel from different incident command areas were operating on the FTAC 300 bank of channels. Due to the closeness of the incident commands operating at the same time, there was confusion as to who was actually operating in the Pinehurst Incident Command. At one point, Pinehurst Incident Command was communicating with and assigning tasks to personnel assigned to the Pleasant Valley Incident Command.

South Pleasant Valley Incident Command

The South Pleasant Valley Incident Command was established at 5:45 a.m. on October 31st and composed of Battalion 5, 20 AFD apparatus, and three Travis County ESD11 apparatus (with one Chief Officer). The incident occurred within Battalion 5's normal area of responsibility. Prior to the incident, Battalion 5 proactively marked the physical location in the neighborhoods by placing GPS waypoints with the Mobile Data Computer within the chief's vehicle. In retrospect, this gave analysts the ability to judge the speed at which Onion Creek began to rise as Battalion 5's previous routes were no longer passable only minutes later.

The South Pleasant Valley Incident Command encompassed the largest response of the Halloween Flood and took place as the Pinehurst Incident Command, Bluff Springs Incident Command, and Pearce/130 Incident Command were also occurring.

The South Pleasant Valley Incident Command was also geographically large[5] and used to handle and prioritize an enormous amount of calls for assistance. The incident area was divided geographically into two divisions; the Onion Creek Division and Quicksilver Division (supervised by Travis County ESD11 Battalion 1101). The Onion Creek Division utilized an Air Operations Group (due the number and different entity of aircraft used for rescue operations), a Boat Operations Group (due the number and different entity of boats used for rescue operations), a High-Clearance Vehicle Operations Group (due to the need for a massive evacuation effort in standing water), and a Victim Processing Group (due to the number of citizens rescued or evacuated from the area). Numerous A/TC EMS, StarFlight, Austin Police Department, Austin Energy, Texas Gas, and Animal Control assets were working within the incident structure of the two divisions.

It was not possible for any of the residents to evacuate safely because of the speed with which Onion Creek was both rising and flowing. The South Pleasant Valley Incident Command action plan called for the residents to remain in place until they could be safely evacuated by boat. Despite requests by first responders for residents to remain on their rooftops, some residents tried to leave and became stranded in trees, on top of cars, or clung to street lights and subsequently needed to be rescued by helicopter. Residents who reported high-priority medical complaints were also rescued by helicopter.

Boats were used to retrieve victims stranded on roof tops and in their attics once the water levels became safe for these types of operations to occur. High-clearance vehicles were also used to retrieve residents who were in areas of high, but relatively still water.

Ultimately, approximately 160 residents were either rescued or evacuated along with many animals. There was one fatality.

[5] The South Pleasant Valley Incident Command was roughly bound by Onion Creek on the south and east, South Pleasant Valley on the west, and William Cannon on the north.

What Worked Well

- Establishing a single incident command for flood-related incidents in the geographical area worked well. Eventually, all incidents (non-flood related) were sent to South Pleasant Valley Incident Command which allowed for complete accountability for all call types in the area. Calls were recorded and triaged by division supervisors and appropriate response was initiated.

- Dividing the management structure geographically and functionally with divisions and groups made the activities much more manageable. Supervisors knew the plan, where they fit in, and worked only within their area of concern. Furthermore, use of experienced officers in command and division supervisor ranks allowed for better management of those areas.

- Request for and use of Animal Control personnel early worked well because many pets were rescued or evacuated and brought to collection points without owners.

- Use of the Victim Processing Group allowed the identification, medical evaluation, assessment and release of victims to the appropriate place (A/TCEMS, Capitol Metro, Animal Control, family members, etc.).

- Personnel in the staging area were critical in managing crowds that gathered at the scene to inquire about family members, friends, or neighbors.

Challenges

- During the main action phase of the incident, while rescuing residents in an orderly fashion, a communication came from the EOC indicating that the flood waters in the area were predicted to rise an additional 13 feet. This meant that people who were deemed uncomfortable and wished to get on dry land were now emergent priorities. The action plan was completely changed; breaching tools were staged and responders were queued up to deploy as breaching teams prepared to cut open roofs and outfit residents with PFDs as there would not be enough time and resources to rescue/evacuate all the residents. It turned out that the flood water crest prediction was completely inaccurate. The waters which were actually receding continued to do so, hence the original action plan was appropriate.

- Pleasant Valley Incident Command's communication plan called for a total of six radio channels (FTAC 310-315). Channels FTAC 313-315 were not available during the incident, requiring a reconfiguration of the communication plan during the middle of the incident. Subsequently, personal cell phones with texting capability became an important communication adjunct.

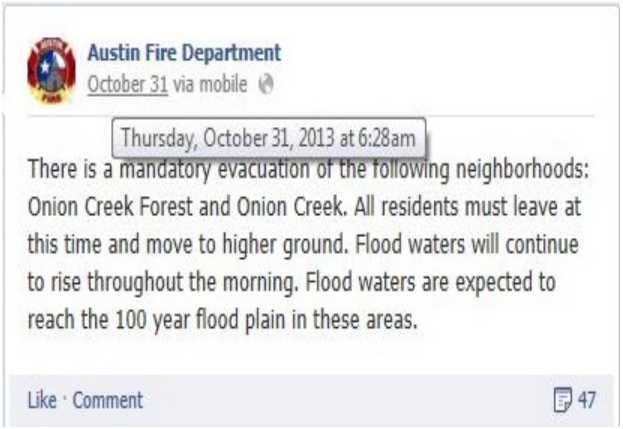

Figure 7: Austin Fire Department Facebook Page Evacuation Order for South Pleasant Valley Incident Command

- It is critical to work within the constraints of NIMS. Someone representing the city of

Austin issued a "mandatory evacuation order" for the South Pleasant Valley Incident Command area without consulting, gaining approval, or even informing the incident commander. The Austin Fire Department Facebook page posted the "mandatory evacuation order" at 0628 hours, October 31st. This is especially critical since the only deaths from the event came from citizens who were not in or had left their homes.

Pearce/130 Incident Command

The Pearce/130 Incident Command was established at 8:45 a.m. on October 31st outside the city of Austin. It was the last and furthest downstream incident command and composed of eight AFD apparatus, three ESD 11 apparatus, and numerous personnel from the Travis County Sheriff's Office (TCSO), Austin Police Department, A/TC EMS, StarFlight, Department of Public Safety, Texas Parks and Wildlife, and Texas Army National Guard (TXARNG).

Battalion 8 was ordered by the DOC to establish a command post in the area of Pearce Lane and Toll Road 130 as numerous swift water rescue calls and "door to door" evacuations were taking place by TCSO and Travis County ESD 11. Water levels from Onion Creek rose so rapidly that both TCSO and Travis County ESD 11 personnel became trapped while attempting to rescue or evacuate civilians.

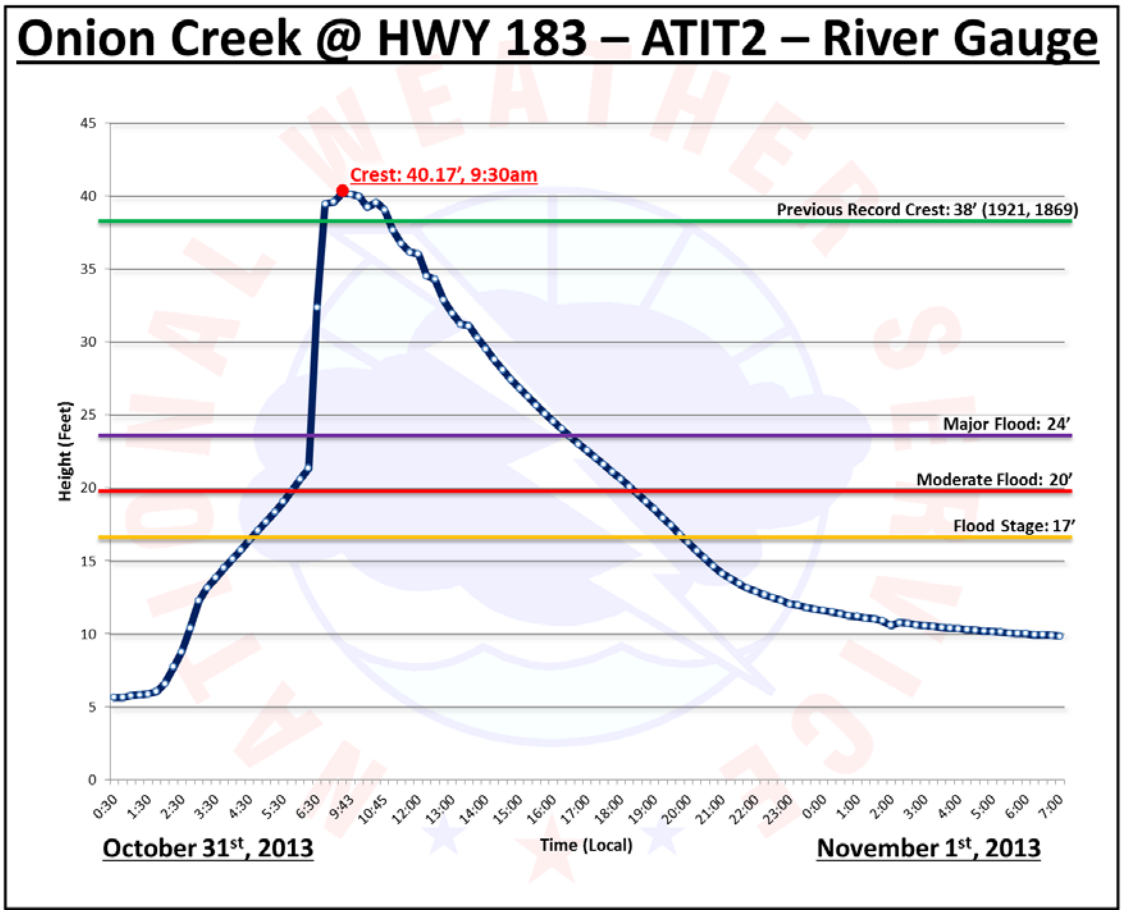

Figure 8: Onion Creek River Gauge at Hwy183 per NWS

Battalion 8 established a unified command with TCSO. Pearce/130 Incident Command divided the incident functionally and geographically into the Law Enforcement Group, Medical Group, Air Rescue Group, North Division, and South Division.

Once Pearce/130 Incident Command was established, rescues continued by boat, air and TXARNG high-clearance vehicles. Pearce/130 Incident Command rescued approximately 15 people via boat, 15 people via helicopter (including three law enforcement officers who became trapped), 15 via contact rescue, rescued/evacuated two animals, and evacuated 200 people with boats and high-clearance vehicles. Two people were transported by A/TC EMS.

What Worked Well

- Establishing a unified command with law enforcement was critical and allowed for multi-agency communication, coordination, and organization of the incident.

Challenges

- AFD boat operators were tired from operating within several different incident commands and needed to be replaced in order to remain effective and safe.
- Fast-changing conditions trapped first responders and complicated rescue efforts. Priorities change quickly when the rescuer is need of becoming rescued.
- Equipment maintenance problems ultimately required requests for more resources.

Recommendations

The AAR identified four areas of service delivery enhancement at the strategic level through an analysis of the incident commands discussed herein.

1. Implement a proactive staffing plan for water-related events, including boat resources and location.

   AFD identified a need to proactively staff resources for pending weather during the wildfire season of 2011. As a result, a successful wildfire staffing plan is now in place with finite benchmarks for activation. Additionally, resources are placed in opportune areas as seen fit by the on-duty Division Chief.

   AFD should apply this service delivery enhancement to flood-related weather by implementing an enhanced staffing plan. This would allow AFD to pre-position water resources in opportune areas based on finite metrics provided by weather forecasting, command-level experience, and situational awareness of affected communities.

   AFD maintains a Memorandum of Understanding with the Texas A&M Engineering Extension Service (TEEX) that provides boat rescue squads and helicopter rescue swimmers for statewide response. The boat squads consist of six boat operators, two boats, and two tow platforms while

the helicopter rescue swimmers are typically dispatched in teams of two. Both are managed by the AFD Water Team Manager. AFD was requested by the State to roster one boat team for flood potential in South Central Texas at 2:00 p.m. on October 30th. That boat team was never put into action by the State or AFD. At approximately 8:30 a.m. on October 31st, AFD activated four helicopter rescue swimmers with TXARNG helicopters, but canceled the operation as the flood waters receded. Both of these types or resources are valuable assets that can be considered early and incorporated into a proactive response plan for inclement weather.

Further, AFD should continue to enhance and support its expectation of personnel, specific to boat operations and swift water rescue skills. Currently, AFD utilizes five boats capable of operating in a swift water environment along with an educational curriculum that trains firefighters on their use in dynamic environments. The Halloween Flood significantly tasked AFD boat resources. AFD should continue to evolve its boat allocation and staffing plan to meet the needs of the community when these types of events occur.

Prior to October 30th-31st, AFD implemented changes to improve staffing specific to water-related events throughout the city. All four fire stations designated within the Special Operations Battalion had members trained to the Swift Water Rescue Technician[6] level on duty. Additionally, a comprehensive training drill specific to removing victims from automobiles stuck in water was conducted during the month of October for the entire Special Operations Battalion.

AFD maintained three boats in-service for swift water response[7] plus one more for still water response.[8] These resources were exhausted quickly. AFD also had two more boats rated for swift water response[9] that were not in-service at the time; one boat had just returned from repair and was not inflated while the other was kept at the AFD Maintenance Shops on 51st Street. Off-duty members attempted to prepare and staff these additional water rescue resources at 11:00 p.m. on October 30th, but were told to stand down due to an assessment that weather was moving out of the area. Again at 1:00 a.m. on October 31st, members returning from specialized boat training on the Texas Coast attempted to staff additional water rescue resources, but were denied due to an assessment that they were physically tired from arduous

[6] AFD certifies all personnel to operate within a water rescue environment. However, AFD provides advanced training to certify additional members to the technician level for the water rescue environment.

[7] On October 30th-31st AFD maintained two Zodiac 420 (4.2 meters long) and one 470 (4.7 meters long) inflatable boats, each with 40 horse power motors, capable of dynamic rescue operations in swift water. These boats are kept at the fire station and ready for immediate response.

[8] AFD maintains one rigid inflatable boat rated for still water or lake response. This boat is kept at a fire station near Decker Lake for immediate response.

[9] Two Zodiac 420 swift water boats with 40 horse power motors.

training and the long drive back to Austin. At approximately 6:30 a.m. on October 31st, both additional boats were put in-service and dispatched to the Pinehurst and South Pleasant Valley Incident Commands.

AFD maintains an emergency staffing policy based on the ability to maintain an acceptable level of service with available resources. When certain trigger mechanisms are met, the resource condition (ReCon) can be manually changed at the discretion of the Operations Division Chief to provide more resources or demobilize from large incidents. The ReCon level was not changed prior to or during the event. A review of the ReCon procedure will help in identifying if the process should be changed or eliminated to better fit current staffing plans for pending events.

2. Implement a community outreach plan to educate the community on AFD action plans at water-related events.

   AFD identified a need to educate the community on wildfire planning, prevention and response following the wildfire season of 2011. As a result, the AFD Wildfire Division has a strong and respected voice within the community as it relates to wildfire events.

   AFD also created a successful "Turn Around, Don't Drown" campaign to educate the community on the dangers of driving through low-water crossings during flood related weather. As a result, the community understands the risks and AFD works strenuously to continue this outreach initiative because it saves lives. However, the community may not understand how AFD will respond to those in need during flood-related events.

   AFD should continue this level of service delivery enhancement to flood related weather by educating the community on expectations during water rescue response. AFD will utilize resources to rescue those in the greatest amount of danger first. During the Halloween Flood, residents were sheltered-in-place on roof tops because it was the safest option. This enabled the immediate rescue effort to focus on victims clinging to trees, cars, or streetlights. However, several residents either did not understand or chose to ignore this request and ended up in the water.

   Residents with medical emergencies were placed at the top of the list and many were removed from rooftops with dangerous helicopter rescue operations. However, despite these medical emergencies very few residents (now victims) were transported to area hospitals.

   As mentioned within this AAR, the flood waters rose rapidly and residents transitioned quickly from sleeping peacefully to being thrust into the water or forced on to roof tops. AFD should understand and incorporate this viewpoint into the overall action plan for flood related events.

3. Vet information from the Emergency Operations Center and the Department Operations Center prior to dissemination to the field.

Incident commanders rely on data from the EOC to be both vetted and accurate in order to form and modify action plans. During the Halloween Flood the EOC communicated to both the Pinehurst and South Pleasant Valley incident Commands that Onion Creek was about to dramatically rise an additional 13 feet. This meant residents and first responders stranded on roof tops and islands would now be in the water with boat and helicopter resources stretched thin.

It turned out that the flood water crest prediction was completely inaccurate.[10] Personnel from the Flood Early Warning System embedded within the EOC called for Onion Creek to rise from 36 feet to around 40 feet. Where this breakdown in communication occurred between the EOC and incident commanders is unknown. Fortunately, incident commanders made a calculated decision to rely on information from their personnel rather than the EOC. For example, the Onion Creek Division Supervisor within the South Pleasant Valley Incident Command used fire department poles (pull-down hooks) marked with duct tape every two inches, as water gauges. Even though the EOC was calling for an additional crest in Onion Creek, these impromptu flood gauges said differently and provided command with more accurate information.

4. Implement an area command at large-scale incidents followed by formal notification through the chain of command.

   AFD has successfully used the NIMS Area Command concept at major, large-scale incidents in the past including the 2011 Wildfire Season and the 2010 Domestic Terrorism Attack on the IRS building. All five incident commanders reported that establishing one incident command within their respective area was an enormous value-added asset. AFD should continue to evolve the application of an area command to set overall strategy and priorities, provide critical resource allocation based on overall need and availability, and ensure that all incidents are managed according to set strategies.

   Currently, there is no formalized process within AFD to recommend activation of the EOC. Despite widespread area flooding, resource allocation concerns, and multi-agency emergency response, the EOC was not officially activated until approximately 5:30 a.m. when the AFD Chief of Staff and Homeland Security/Emergency Management Director spoke directly with one another.

   AFD should develop a formalized process that allows for timely activation of the EOC. At 9:57 p.m. on October 30th, AFD crews responded to a water rescue alarm in North Austin for automobiles that were stuck in high water.[11] There were no life hazards present, but the flood waters in the area had washed out the rocks and soil that support the rails for the Union Pacific

[10] It is assumed that this crest of water already happened, hence the number of people rescued and sheltered-in-place on roof tops.

[11] AFD incident #13101435.

railroad at Mopac and Duval Road. Union Pacific was contacted by an AFD representative and railroad service was shut down. Despite a major transportation corridor shut down due to a weather event, there was no notification process up the chain of command for potential EOC activation.

Area command and representatives within the EOC should coordinate resource pools for area incidents through regional agreements and relationships that are arranged before an event occurs. During the Halloween Flood, the Pinehurst Incident Command was in need of boat resources, but all available boats were engaged in other incident commands. Area command can assist with the overall strategy by ensuring the right equipment is dispatched to the appropriate place given the overall need in the region.

All five incident commanders reported that receiving incidents directly from the DOC was beneficial to overall accountability of incidents in a given area. Calls managed through the 911 system as water rescue-related incidents were automatically populated in the AFD dispatch system as water rescue-type incidents and, therefore, multi-unit responses. AFD personnel discontinued use of automated dispatch system as the number of 911 calls increased and resource allocation became a problem. Incidents were manually triaged through the DOC and sent directly to incident commanders for appropriate response.

All five incident commanders also reported that establishing unified command was beneficial. Three of the incident commands mentioned crowd control and air operations were issues that they struggled with. Area command can assist with unified command development, particularly when multiple agencies are engaged within an area outside normal functional and geographic jurisdictional boundaries. Crowd control becomes a law enforcement concern, but must be handled within the confines of the incident management system as many people are simply trying to find family members, friends, pets, and neighbors.

Area command should also assist with air operations capability when many aircraft from multiple agencies are utilized within an area. During the Halloween Flood, there were multiple aircraft from four different agencies (Austin Police Department, StarFlight, Department of Public Safety, and TXARNG) involved in rescue operations under the AFD incident commander and the airspace was saturated. Area command should establish an overall Air Operations Supervisor with knowledge and communication ability with both the incident commander and the pilot.

CONCLUSION & NEXT STEPS

The Halloween Flood was a historic event and took the lives of three people. The low death toll and small number of medical transports to local area hospitals is a true testament to the outstanding actions performed by all first responders within the five incident commands. AFD is accustomed to responding to flood-related events and does so multiple times each year. The city of Austin experiences a historic event roughly every 10 years – the 2001 November Flood, 1991 Christmas Flood, and 1981 Memorial

Day flood – and the actions and lessons learned from the 2013 historic Halloween Flood should be incorporated into AFD response paradigms.

AFD has already identified and started work on service delivery enhancements specific to flood-related events and is in the planning, beginning, or implementation stages of committees that will analyze:

- The appropriate benchmark for proactively staffing and deploying water rescue resources.
- The appropriate number and type (swift water versus evacuation) of boats needed for water rescue operations. Effective January 12th, 2014 all five AFD swift water rescue boats were re-deployed throughout the city to each of the Special Operations Battalion fire stations.
- Boat resource availability amongst agencies within the region. There are roughly seven different agencies within the immediate central Texas region with boats. Discussions are underway on how to best allocate an equipment pool under the area command concept for large-scale events that are resource challenged.
- Agencies within the region continue to collaborate on multiple planning initiatives. This builds an understanding around different capabilities and builds recognition and rapport between agencies when unified command concepts are utilized.

AFD will continue to review and adjust its internal Standard Operating Procedures and Guidelines for improvement at the tactical level while department training will continue to enhance the service delivery model that the citizens of Austin expect.