



CITY OF
FORT LAUDERDALE

City Manager's Office

Memorandum

Memorandum No: 11-351

Date: November 30, 2011

To: Honorable Mayor and Commissioners

From: Lee R. Feldman, ICMA-CM, City Manager 

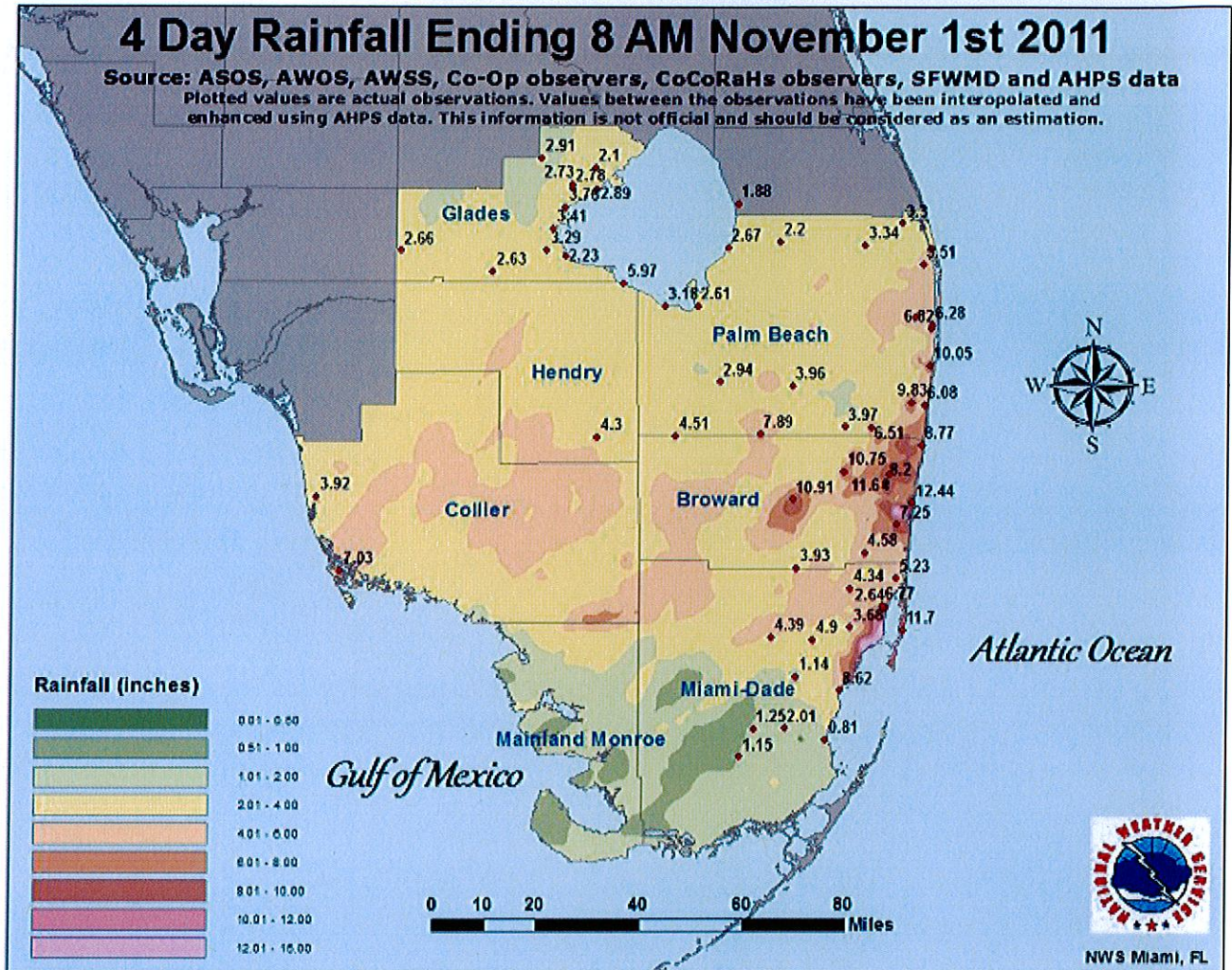
Re: Recent Extreme Weather Event After Action

During a three-day period starting Saturday, October 29th, the City of Fort Lauderdale, like many other South Florida cities, experienced street flooding following a high volume of rain, receiving more than 15 inches in a 72-hour period. This was compounded by the seasonal high tides that peaked from October 26th - 28th but the tides were still above average until November 2nd. Information received from the Broward Drainage District indicates the average rainfall for October is 5.53 inches. Additional data shows the groundwater table came up over 2 feet in a very short period of time. The City lost its unsaturated underground zone fast, leaving no place for the stormwater to go.

Below are measured rainfall totals in inches for locations across South Florida for the period from Friday through Monday (approximately 72 hours) compiled from several sources (NWS, SFWMD and unofficial, non-government-maintained sites)

BROWARD COUNTY RAIN TOTALS

CITY	INCHES	CITY	INCHES
Fort Lauderdale	15.23	Parkland	8.41
Fort Lauderdale Beach	12.44	Lauderhill	7.36
Coconut Creek	11.64	Weston	7.36
US 27/Alligator Alley	10.91	FLL Airport	6.14
Oakland Park	10.75	Davie	6.27
Lauderdale Lakes	10.43	Pembroke Pines	5.30
Pompano Beach	10.39	Hollywood	5.07
Wilton Manors	10.32	Miramar	4.70
Coral Springs	9.74		



EMERGENCY MANAGEMENT REPORT

The Emergency Operations Center (EOC) was at a level 3 [monitoring level], monitoring the weather for Hurricane Rina as she was moving in South Florida's direction the week of October 24, 2011. EOC was advised by the National Hurricane Center (NHC) that Hurricane Rina was downgrading and would turn into a tropical depression and turn back south into the Caribbean Sea, but that South Florida would see the effects of deep tropical moisture associated from the storm. Additionally, a trough of low pressure was head south which increased moisture and instability and produced heavy rain showers and thunderstorms.

Timeline of Events

- Saturday, October 29, and Sunday, October 30 - Emergency Management Bureau was in contact with the NHC and was advised when large bands of rain or severe weather were headed towards the beach area for the International Boat Show.
- Monday, October 31 at 1:30am: Fire Dispatch contacted the Emergency Management Coordinator, to advise that fire crews were running many calls for flooding and for water in neighbor's homes.
- Monday, October 31: Carter Park opened for shelter/disaster assistance.
- Carter Park Gymnasium sheltered the following number of people and provided meals:
 - 10/31 – 30 people
 - 11/1 – 15 people
 - 11/2 – 5 people
- Monday, October 31: Fire Prevention conducted a Rapid Impact Assessment (RIA) and reported the damage to the Broward County EOC and also provided the information the Emergency Management Bureau.
- Monday, October 31: Fort Lauderdale CERT Team activated, CERT members assisted American Red Cross at Shelter/Assistance Center with feeding and other administration duties. Twenty-Seven (27) CERT members where activated for this event.
- Monday, October 31: Damage assessments were conducted in the areas that the RIA provided showed the most accumulation, or the lists of calls that fire dispatch had written down. Damage assessment results are listed below.
- Thursday, November 3: The Emergency Management Bureau went door to door for damage assessments with representatives from the State (SERT), FEMA, SBA and Broward County EOC.
- Tuesday, November 15: The U.S. Small Business Administration (SBA) issued a Physical Disaster Declaration for the State of Florida, which includes Broward County. Homeowners and businesses that were affected by the severe storms and flooding on October 30 and 31, 2011, may be eligible for financial assistance from the SBA.

Joint Preliminary Damage Assessment Summary

Northwest Sections of Fort Lauderdale:

- 178 multi-family (MF) homes, 30 single family (SF) homes, as well as three business locations were inspected for signs of water lines and possible water intrusion
- One owner was in their SF in which they were insured and repairs were underway
- 80% of tenants were in their MF dwellings – all tenants did not have renters insurance
- Two out of three business establishments had insurance
- Water intrusion was either less than 3 inches or limited to garage or carport flooding at 23 SF homes, and 98 MF units
- Water intrusion was 7 inches or less at 7 SF homes and 80 MF units

Northeast Section of Fort Lauderdale:

Three MF buildings with underground garages below flood level were flooded; these buildings had insurance

- Water intrusion was either than 3 inches or limited to garage and carport flooding
- Remainder of visited residences did not meet the minimum level of flood damage assessment

** All resident/owners had insurance; tenant renters had no insurance (majority of residents appeared to be of low income level)

Southwest Sections of Fort Lauderdale:

- Water intrusion between three to nine inches
- Over 120 sites were accessed
- There was a general consensus that though backed up sewage into homes may have occurred; there was no possible way of quantifying the extent of those particular damages

*** Few of all residents/owners or tenant renters had insurance; majority of residents appeared to be of low-income level

Small Business Administration concluded their evaluations on 11/23/11 at 3:00 pm.

Impact on Public Works

The storm left approximately 15 inches of rain in the greater Fort Lauderdale area. This in conjunction with the seasonal high tides that averaged 3.2 feet left the water nowhere to drain. The City's stormwater system is designed for water to either naturally percolate into the ground or to convey to our rivers and canals by gravity. With the amount of rain and tide levels, both systems were compromised (overloaded). The water table was rising due to the rains therefore decreasing the storage capacity of the system. Also, with the rivers and canals rising, many storm drain outfalls were underwater rendering them ineffective and therefore water started to back-up.

The City of Fort Lauderdale is a nearly completely built-out urban area, with relatively low-lying topography that is intersected by numerous canals and rivers. Intense rainfall, limited soil storage (due to topography and a water table near land surface), high amount of impervious area, and limited available storage all contribute to severe flooding potential.

The Stormwater Master Plan presented to Commission in January 2010 looked at the City has a whole and identified four areas as examples to what could be constructed for drainage improvements; the cost of those improvements; and the expected benefits. Melrose Manors, along with several other neighborhoods, is a low lying area of the City that would be included in further specific reviews for drainage improvements.

Neighbor Assistance

On November 15, 2011, the U.S. Small Business Administration (SBA) approved Governor Scott's request for a Disaster Declaration, in response to the Severe Storms and Flooding in Broward County. Affected residents and businesses can apply for low-interest disaster loans from the SBA. The declaration covers all of Broward County.

Under this declaration, qualified residents may be eligible for home and/or business disaster loans to repair or replace disaster-damaged real estate or property. Loans up to \$200,000 are available to homeowners to repair or replace damaged or destroyed real estate. Homeowners and renters are eligible for loans up to \$40,000 to repair or replace damaged or destroyed personal property.

SBA's customer service representatives will be on hand at the Disaster Loan Outreach Center to answer questions about the disaster loan program, explain the process, and to help individuals complete their applications. The City's Mills Pond Park Community Center is hosting the Outreach Center.

Interest rates are as low as 2.063 percent for homeowners and renters, 3 percent for non-profit organizations and 4 percent for businesses with terms up to 30 years. Loan amounts and terms are set by the SBA and are based on each applicant's financial condition.

Future Actions

Public Works and our stormwater consultant will be reviewing the areas of the City that experienced flooding within structures and develop a plan on how to prevent that type of flooding and report back to City Commission a plan, cost and implementation time table.

The plan would may include but not limited to capital expenditures for drainage wells (both passive and active), purchase of property for stormwater retention areas, or additional exfiltration trenches.

Passive drainage wells are wells that water goes down and is dissipated by gravity and the movement of the groundwater. Active drainage wells use pumps to force the water down the wells into the groundwater.

It is anticipated this review and plan development could take up to 2 months.

Conclusion

It is important to repeat, this was an extreme weather event coupled with a high tide. There was over 15 inches of rain received in portions of the City in a 3-day period. This combination overwhelmed the stormwater and gravity sewer systems in South Florida, especially in low lying areas. It also reduced the ground's natural capacity to absorb

water as quickly as it usually does.

- c: Stanley D. Hawthorne, Assistant City Manager
- Susanne M. Torriente, Assistant City Manager
- Harry A. Stewart, City Attorney
- Jonda K. Joseph, City Clerk
- John C. Herbst, City Auditor
- Albert J. Carbon, P.E., Public Works Director
- Julie Leonard, Assistant Utilities Director/Utilities