

US Army Corps
of Engineers®



Lessons From The 2015-2016 Floods

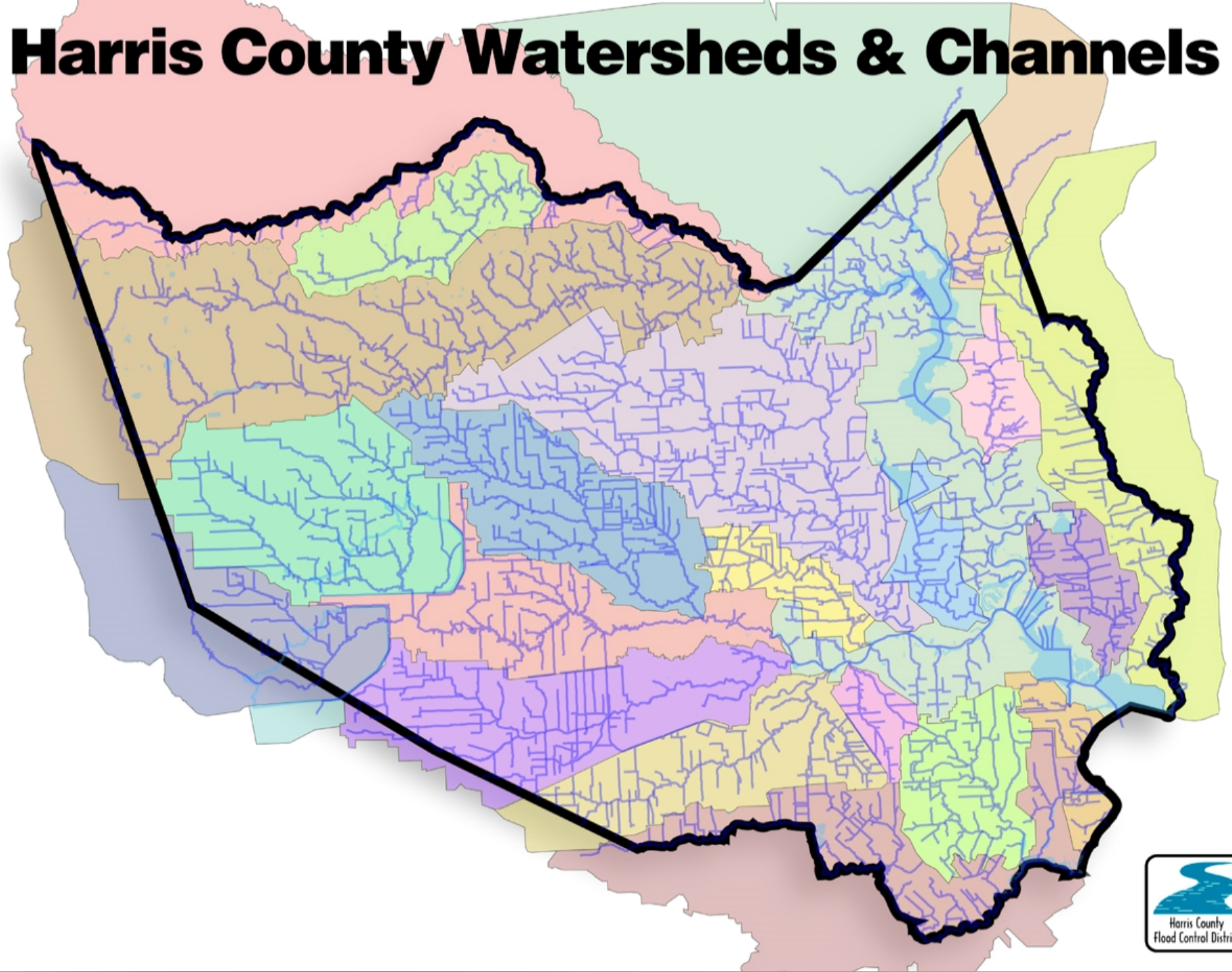
**SWG Stakeholder Partnering Forum
Galveston, Texas
August 4, 2016**

*Ian Hudson, P.E.
Project Manager*

Southeast Texas Watersheds



Harris County Watersheds & Channels



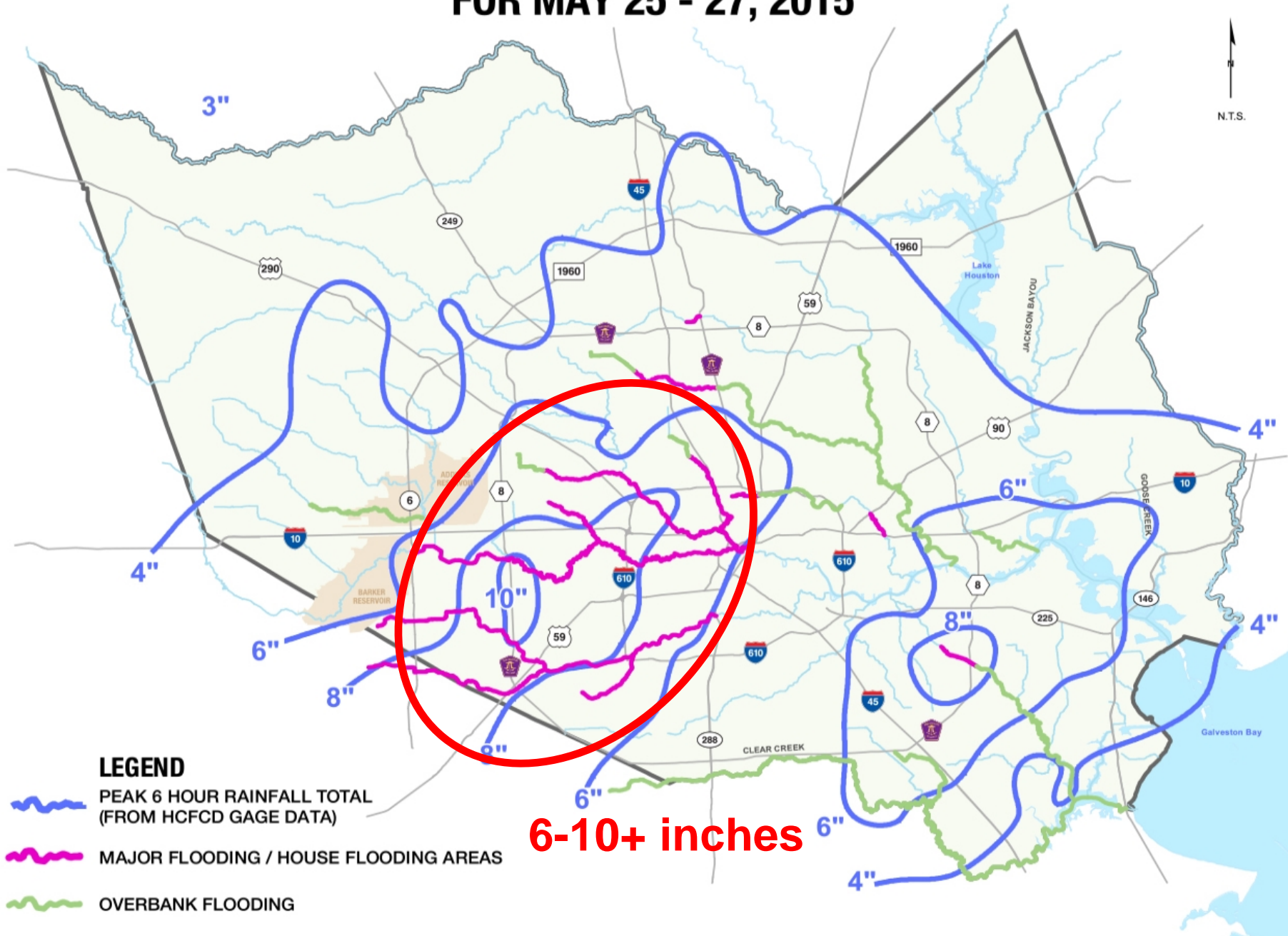
2015-2016 Activity

- **2010-2014: Drought**
- **May 25-27, 2015 (Memorial Day Flood)**
- **October 31, 2015 (Halloween Flood)**
- **April 17-18, 2016 ("Tax Day" Flood)**
- **May 26-27, 2016**
- **2015-2016 Minor/Near Floods: April 2015, May 2015, TS Bill, October 2015, March 2016, April 2016 "Near Miss"**

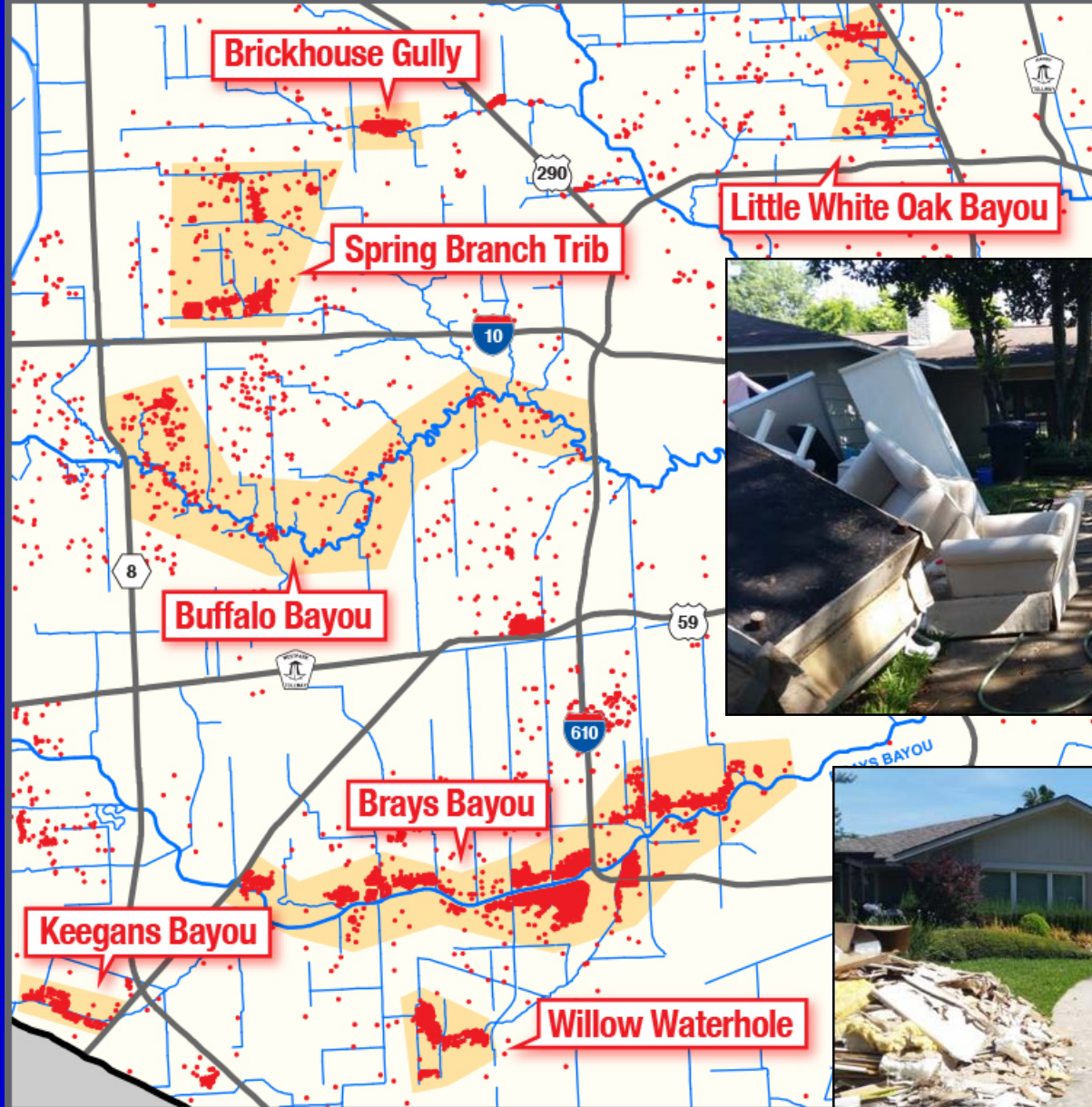
Memorial Day Flood (2015)

- **Widespread 7-17" rainfall over preceding month**
- **6-hour rainfall: 8-10" in central, SW Harris County**
- **Record crests on Brays Bayou (Meyerland), Keegans Bayou**
- **3,015 jurisdictional house counts**
- **3,320 additional flood insurance claims**
- **Seven fatalities – none in homes or businesses**

6 HOUR PEAK RAINFALL ISOHYETALS & FLOOD INFORMATION FOR MAY 25 - 27, 2015



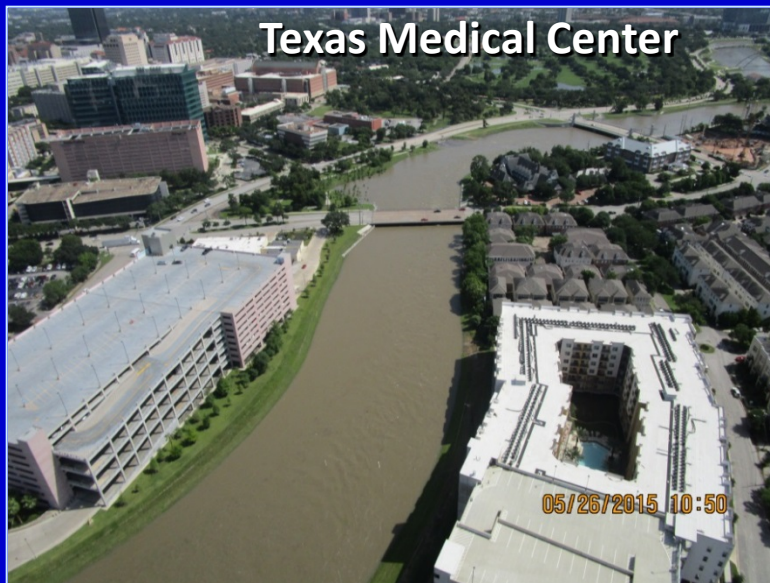
Concentrated House Flooding Areas



Brays Bayou Channel and Basins – May 26 am



Willow Waterhole looking east



Arthur Storey Park looking south

Memorial Day Flood (2015)

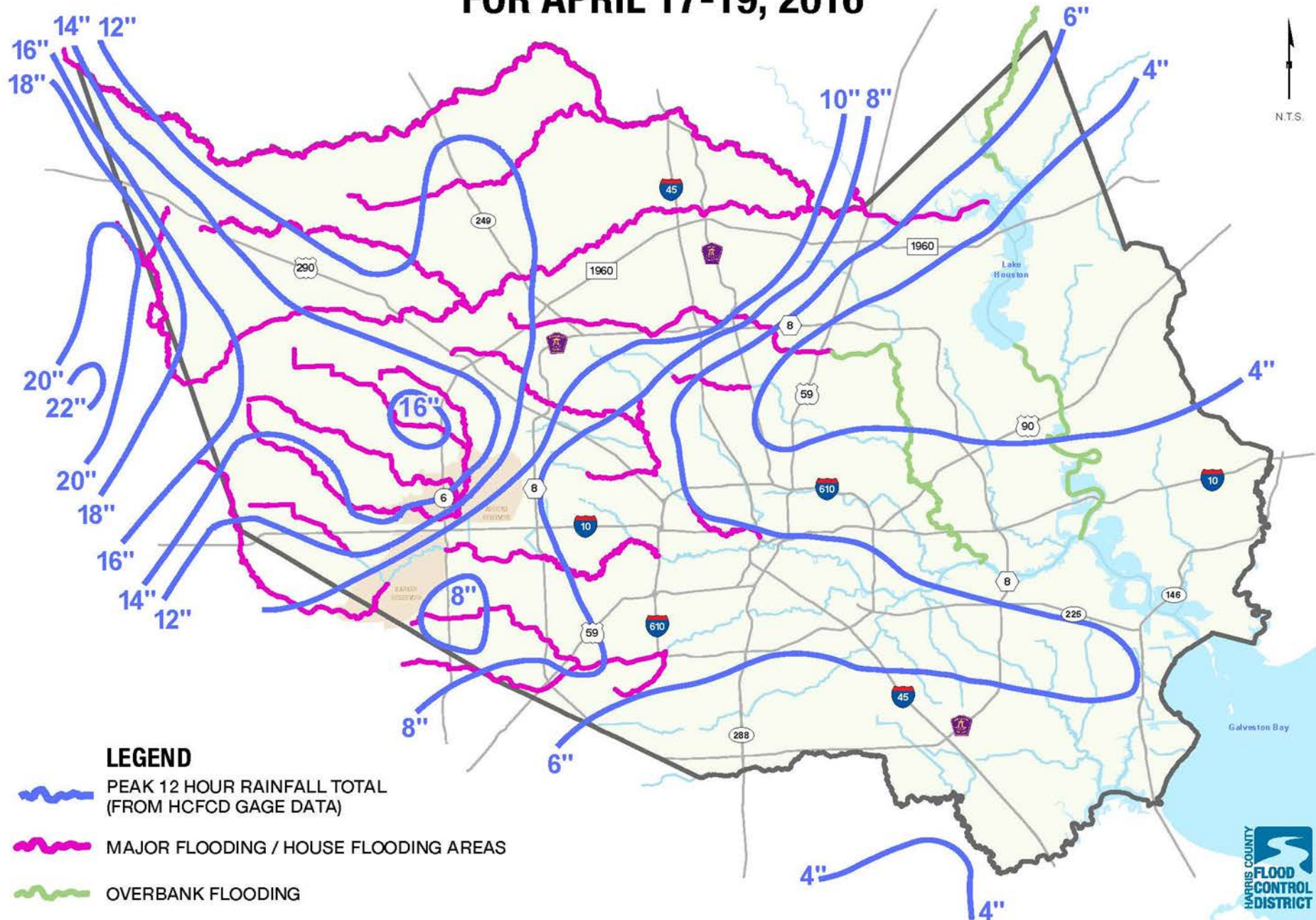
Successes

- **Flooding that DID NOT happen**
- **Brays Bayou: 1,200-1,400 homes flooded; ~2,000 did not**
- **2.2B gallons of stormwater stored in excavated basins (3.5B gallon @ 1% design)**
- **Sims Bayou: 200+ homes did not flood**
- **Sims Bayou: 1,000+ homes did not flood (Oct. 2015)**

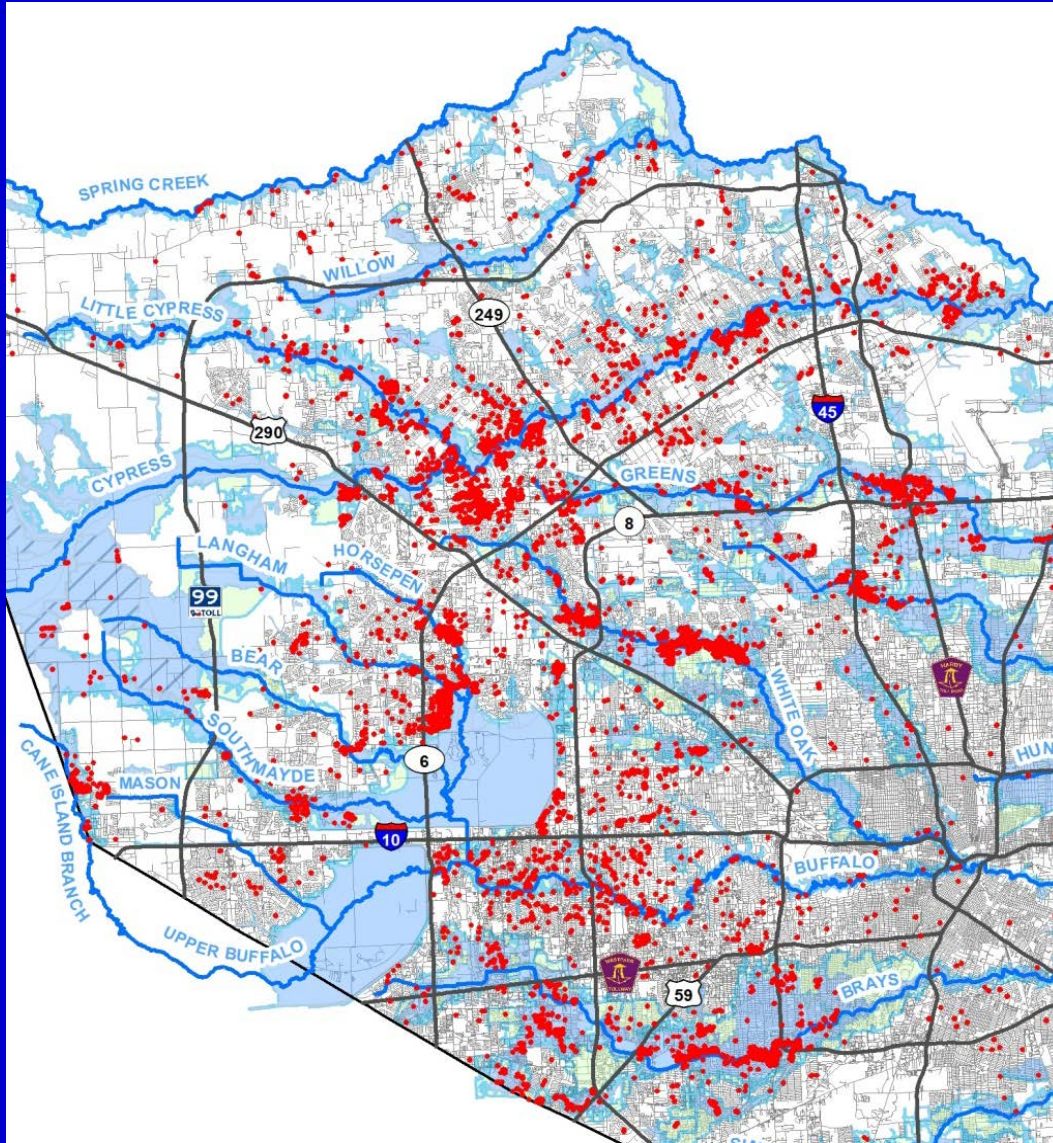
"Tax Day" Flood (2016)

- **More widespread than Memorial Day Flood**
- **12-hour rainfall: 12-16" across northwest Harris County – more in Waller County**
- **Cypress Creek – naturally occurring overflow**
- **Addicks & Barker Reservoirs – record levels**
- **Estimated 9,800+ homes and 2,700 apartment units flooded**
- **Nine fatalities – none in homes or businesses**

12 HOUR PEAK RAINFALL ISOHYETALS & FLOOD INFORMATION FOR APRIL 17-19, 2016



April 2016 House Flooding Locations



| Watershed | Appx. Count |
|--------------------|-------------|
| White Oak Bayou | 2,200 |
| Cypress Creek | 1,800 |
| Brays Bayou | 1,500 |
| Addicks Reservoir* | 1,700 |
| Buffalo Bayou | 950 |
| Other | 1,700+ |
| Total | 9,800+ |

***No homes flooded from water rising in reservoir.**

Addicks & Barker Reservoirs

Top 5 Pool Elev. (Addicks)

| Date | Elevation |
|-----------------|---------------|
| Apr 2016 | 102.65 |
| Mar 1992 | 97.64 |
| Apr 2009 | 97.08 |
| Nov 2002 | 96.63 |
| Nov 1998 | 95.88 |

Top 5 Pool Elev. (Barker)

| Date | Elevation |
|-----------------|--------------|
| Apr 2016 | 95.22 |
| Mar 1992 | 93.60 |
| Nov 2002 | 93.24 |
| Nov 1998 | 92.31 |
| Jul 2007 | 91.85 |

Road Closures (days)

Clay Rd: 21
 N. Eldridge Pkwy: 28 (twice)
 SH6: 33 (twice)
 Westheimer Pkwy: 21



"Tax Day" Flood (2016)

Successes

- **Coordination - Addicks & Barker reservoirs, Buffalo Bayou**
- **Flooding that DID NOT happen**
- **Brays Bayou: ~1,500 homes flooded;
~1,500 did not**
- **White Oak Bayou: ~2,200 homes flooded;
~2,200 did not (including 400 buyouts)**

2015-2016 Floods

Challenges & Opportunities

- **Communications during flood**
- **Finishing active projects**
 - **Local lead: Brays, White Oak, Hunting**
 - **Corps lead: Greens**
- **Addicks & Barker reservoirs**
- **Guiding public expectations**