

# MEMORANDUM



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Houston, TX 77092  
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**DATE:** January 14, 2022  
**TO:** HCFCD/Partners  
**FROM:** Jeff Lindner  
Meteorologist / Director Hydrologic Operations  
**RE:** Immediate Report – Final  
January 8-9, 2022 Storm and Flood Information

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This is the first and final report summarizing the rainfall and minor flooding that occurred across portions of Harris County on January 8<sup>th</sup> and 9<sup>th</sup> 2022.

## **GENERAL FLOODING STATEMENT**

A slow moving warm front and surface trough of low pressure combined with very high moisture levels for early January to produce heavy rainfall, flash flooding, and tornadoes across portions of Harris County from midday on the 8<sup>th</sup> into the early and mid morning hours of the 9<sup>th</sup>. Showers and thunderstorms began to develop mid to late morning on the 8<sup>th</sup> along a slow moving warm front and continued to expand and intensify into the afternoon hours. The majority of the heavy rainfall was focused across the eastern and northeastern portions of Harris County extending into central and northern Liberty County where a corridor of 3-6 inches of rainfall occurred mainly to the northeast of Huffman and Kingwood.

After a brief lull in activity in the late afternoon, a secondary band of thunderstorms developed along an east-southeast moving surface trough and convergence boundary from Bay City to Katy to Conroe. This line of storms gradually intensified while moving into Harris County in the mid to late evening hours. These thunderstorms produced brief tornadoes and very heavy rainfall while training along a line from Mission Bend to Spring Branch to Aldine to Kingwood from late in the evening on the 8<sup>th</sup> into the early and mid morning hours on the 9<sup>th</sup>. Flash flooding quickly developed during the late evening hours as hourly rainfall rates of 2.0-3.0 inches became common within the slow moving and training storms leading to rapid and significant street flooding and rises on area creeks and bayous.

In addition to the heavy rainfall and flooding, National Weather Service survey teams confirmed four tornadoes in Harris County. All of the tornadoes were short lived and on the lower end of the EF scale with damage to trees, fences, and power lines. A few locations experienced structural damage to buildings in the Humble and Spring Branch tornadoes. It is not uncommon in this area to experience both flash flooding and tornadoes from the same thunderstorm and several events have produced similar results in the past. The table below lists the details of the four confirmed tornadoes.

Location	EF Rating	Length	Width	Wind Speed	Time
BUSH IAH/JFK	EF-0	.80 mi	30 yards	65 mph	3:55 pm
Humble #1	EF-1	.60 mi	50 yards	90 mph	1:17 am
Humble #2	EF-1	.70 mi	40 yards	90 mph	1:19 am
Kingwood	EF-1	2.2 mi	75 yards	90 mph	1:25 am
Spring Branch	EF-1	1.1 mi	40 yards	90 mph	11:55 pm

## **RAINFALL**

**Duration** – The heaviest rainfall occurred in a narrow band from northeast Fort Bend County near Mission Bend to Spring Branch to Aldine to Kingwood and then northeast into central and northern Liberty County. All of the rainfall occurred in less than a 24-hr period and the majority occurred within a 2-hr to 4-hr period during the late evening of the 8<sup>th</sup> and early morning hours of the 9<sup>th</sup>. The table below provides the maximum point rainfall intensity per each time period.

Duration	Max Rainfall (in)	Duration	Max Rainfall (in)
15-min	1.6	3-hr	5.2
30-min	2.4	6-hr	5.7
1-hr	3.7	12-hr	6.3
2-hr	4.8	24-hr	8.5

**Total Amounts** – Total 12-hr rainfall amounts ranged from 4.0-6.0 inches from Mission Bend to Kingwood in a narrow band. Shorter duration amounts of 2.5-4.5 inches in 1-hr and 2-hr were common along this line. Rainfall totals to the northwest and southeast of this band were generally less than 2.0 inches for the entire event and in some cases less than 1 inch.

The spatial coverage of the narrow band of very heavy rainfall likely helped to limit larger rises on watersheds across Harris County as the configuration of the line of storms only impacted portions of watershed drainage basins instead of the entire watershed. Smaller creeks in the Spring Branch area, where rainfall distribution was larger across the entire drainage area, experienced more substantial rises.

Heavy rainfall and flooding occurs every month of the year in Harris County and there have been other recent heavy rainfall events in January and the rainfall duration and intensity of those events are compared in the table below.

Rainfall Duration	1-9-22	1-18-17	1-9-12
15-min	1.6	1.3	2.0
30-min	2.4	1.8	2.8
1-hr	3.7	2.7	4.1
2-hr	4.8	4.3	5.8
3-hr	5.2	5.4	6.3
6-hr	5.7	6.3	6.5
12-hr	6.3	7.0	6.6
24-hr	8.5	7.0	6.6

The January 2022 event is similar in rainfall duration and intensity to other previous events in 2012 and 2017 with the majority of the rain falling in a short period of time. Similar meteorological conditions were in place during the 2012 and 2017 events with a slow moving warm front over the area helping to focus heavy rainfall in narrow corridors of training storm cells.

**Exceedance Probability** – Rainfall for the 1-hr to 3-hr time periods averaged between the 50% (2-yr) and 10% (10-yr) exceedance probabilities across portions of the following watersheds: middle Buffalo Bayou, Luce Bayou, middle and upper Halls Bayou, middle Greens Bayou, middle and lower White Oak Bayou, and the lower portion of the East Fork of the San Jacinto River. The 12-hr and 24-hr exceedance probabilities for all the impacted watersheds were between the 50% (2-yr) and 20% (5-yr).

Note: rainfall exceedance probabilities are on NOAA ATLAS 14

## **CHANNEL CONDITIONS**

Isolated areas of channel flooding occurred along portions Brickhouse Gully and middle Halls Bayou. Buttermilk Creek (W140-06-00) in Spring Branch and Briar Branch (W140-01-00) in the City of Spring Valley experienced isolated overbank flooding that resulted in street flooding in nearby areas. Water surface elevations on Rummel Creek (W156-00-00) and Spring Branch (W140-00-00) remain well within their banks.

### **Brickhouse Gully**

Overbank flooding occurred along Brickhouse Gully from upstream of Magnum to upstream of Bingle. Flow from the channel overtopped the bridge decks at both the Antoine and Bingle crossings. Water surface elevations along Brickhouse Gully exceeded the 10% (10-yr) exceedance probability from Costa Rica to US 290. Water surface elevations along the remainder of Brickhouse Gully were below the 10% (10-yr) exceedance probabilities. Water surface elevations along Brickhouse Gully were similar to the August 7, 2017 and April 18, 2016 (Tax Day) flood and 1.0-2.0 ft lower than

Tropical Storm Imelda and Harvey. The flood of record along Brickhouse Gully is Tropical Storm Allison.

### **Buttermilk Creek**

Overbank flooding occurred along Buttermilk Creek (W100-06-00) at the Mooreberry bridge crossing resulting in flooding of several roadways in the area. Upstream and downstream of the Mooreberry crossing the creek was at bankfull. HCFCD investigated the flooding at this location and determined that street flooding in nearby areas was a result of both high levels in Buttermilk Creek and high short duration rainfall totals. Water levels on several streets were at least halfway into yards and at some locations near the slab threshold. The historic data period is short at Mooreberry and data comparisons to previous events is not available.

### **Briar Branch**

Isolated overbank flooding was observed along Briar Branch (W140-01-00) in Spring Valley, but water levels remain generally at the bankfull threshold. Water surface elevations at Campbell were near the 1% (100-yr) water surface exceedance probability and close to both Harvey and the April 18, 2016 (Tax Day) floods. The period of record at this location is limited and the May 25, 2015 (Memorial Day flood) or Tropical Storm Allison are likely the flood of record.

### **Halls Bayou**

Minor overbank flooding occurred from upstream of Airline Dr. to just upstream of I-45 with widespread street flooding around I-45 and West Mt. Houston and downstream at Sweetwater. Water surface elevations along Halls Bayou were below the 10% (10-yr) exceedance probability. Water surface elevations from upstream of Airline Dr. to Turney St. were similar to the June 19, 2006 and September 13, 2008 (Hurricane Ike) floods.

## **HOUSE FLOODING ESTIMATES**

House flooding occurred along Brickhouse Gully on the west side of Bingle Rd. Approximately 6-8 structures experienced flooding of depths of 4.0-6.0 inches. Other isolated structures may have flooded in portions of Spring Branch due to the intense rainfall rates overwhelming street and local drainage systems. A few houses also flooded along Valley Stream downstream (east) of I-45 along Halls Bayou.

## **HIGH WATER MARKS**

HCFCD conducted high water marks along the following channels: Halls Bayou from US 59 upstream to the headwaters (15), Brickhouse Gully (9), Buffalo Bayou tributaries in Spring Branch (4). One high water mark was obtained at the Brickhouse Gully stormwater detention basin on the west (upstream) side of US 290. A total of 29 high water marks were collected over a 2-day period.

## **HARRIS COUNTY FLOOD CONTROL DISTRICT ACTIONS**

- HCFCD real time flood warning gages reported 26 rainfall alarms (1 inch rainfall in 15-min) and 14 water level alarms (3 ft below bankfull)
- HCFCD crews conducted 13 discharge (flow) measurements between January 8<sup>th</sup> and January 10<sup>th</sup> along Cedar Bayou, Luce Bayou, Tarkington Bayou, Halls Bayou, Greens Bayou and Buffalo Bayou. The data collected from these measurements is listed in the table below.

Station number	Station name	Date	Start Time	Ave. Stage	Total Q (CFS)	Quality	Rise_Fall
1600	Greens Bayou @ Mount Houston Parkway	01/09/22	11:52 AM	33.88	7,067	Good	Falling
1675	Halls Bayou @ Tidwell Road	01/09/22	1:04 PM	29.26	2,123	Good	Falling
1690	Halls Bayou @ Airline Drive	01/09/22	8:31 AM	72.80	1,710	Poor	Falling
1730	Cedar Bayou @ FM1942	01/10/22	2:25 PM	14.46	1,815	Poor	Rising
1730	Cedar Bayou @ FM1942	01/09/22	12:41 PM	16.18	2,301	Good	Rising
1745	Cedar Bayou @ FM 1960	01/10/22	1:14 PM	65.27	787	Fair	Falling
1745	Cedar Bayou @ FM 1960	01/09/22	11:09 AM	67.80	1,303	Fair	Steady
1940	Luce Bayou @ FM 2100	01/10/22	11:19 AM	44.53	3,788	Poor	Falling
1960	Luce Bayou @ SH 321	01/10/22	10:08 AM	94.10	1,066	Poor	Falling
1960	Luce Bayou @ SH 321	01/09/22	10:10 AM	94.27	955	Good	Rising
1960	Luce Bayou @ SH 321	01/08/22	7:06 PM	92.78	257	Poor	Rising
1975	Tarkington Bayou @ SH 105	01/10/22	9:05 AM	124.01	73	Poor	Falling
2245	Buffalo Bayou @ Woodway Drive	01/09/22	10:37 AM	25.12	5,457	Fair	Falling

- The high water indicator pipe at Briar Branch and Campbell Rd (gage 2253) was damaged during the flooding. The pipe was replaced on January 11, 2022.
- The HCFCD Flood Warning System website recorded approximately 14,000 users between the 8<sup>th</sup> and 9<sup>th</sup> with a total of 3,000 users around 12:00 a.m. on the 9<sup>th</sup>.
- Five HCFCD gages were out of service due to ongoing bridge construction: 910, 2060, 1520, 770, and 1685.

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

<b>Clear Creek, A100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
100	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	A100 Clear Lake 2nd Outlet @ SH 146
105	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	Mary's Creek @ Winding Road
110	0.2	0.4	0.4	0.5	0.5	0.5	0.8	0.8	0.8	A100 Clear Creek @ I-45
115	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	Cowart Creek @ Baker Road
120	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	A100 Clear Creek @ FM 528
125	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	Chigger Creek @ Windsong Lane
130	0.2	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	A100 Clear Creek @ Bay Area Boulevard
135	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	A100 Clear Creek @ FM 2351
140	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4	A119 Turkey Creek @ FM 1959
145	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	A100 Clear Creek @ FM 1959
150	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.4	A100 Clear Creek @ Country Club Drive
160	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	A120 Beamer Ditch @ Hughes Road
170	0.2	0.3	0.4	0.4	0.4	0.5	0.7	0.8	0.8	A100 Clear Creek @ Nassau Bay
175	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.5	0.5	A100 Clear Creek @ Pearland Pkwy
180	0.2	0.4	0.4	0.5	0.5	0.6	0.8	0.9	0.9	A100 Clear Creek @ Mykawa Road
190	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.4	A100 Clear Creek @ SH 288
200	0.1	0.2	0.3	0.3	0.3	0.4	0.6	0.6	0.7	A104 Taylor Lake @ Nasa Road 1

<b>Armand Bayou, B100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
210	0.2	0.4	0.4	0.4	0.4	0.5	0.8	0.8	0.8	B100 Armand Bayou @ Pasadena Lake (Nasa Road 1)
220	0.4	1.1	1.4	1.5	1.6	1.6	1.9	2.0	2.0	B100 Armand Bayou @ Genoa-Red Bluff Road
230	0.3	0.6	0.8	0.9	0.9	1.0	1.4	1.5	1.5	B106 Big Island Slough @ Fairmont Parkway
245	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.5	0.5	B100 Armand Bayou @ Space Center Boulevard
250	0.2	0.4	0.5	0.6	0.6	0.6	1.0	1.0	1.0	B104 Horsepen Creek @ Bay Area Boulevard
270	0.4	0.8	1.2	1.2	1.3	1.3	1.7	1.8	1.8	B112 Willow Spring Bayou @ Fairmont Parkway

<b>Sims Bayou, C100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
310	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.6	0.6	C106 Berry Bayou @ Nevada Avenue
320	0.1	0.2	0.2	0.2	0.3	0.4	0.8	0.9	0.9	C106 Berry Bayou @ Forest Oaks Boulevard
340	0.2	0.4	0.4	0.4	0.5	0.5	1.0	1.1	1.1	C100 Sims Bayou @ Telephone Road
360	0.1	0.2	0.2	0.2	0.4	0.4	0.6	0.6	0.6	C100 Sims Bayou @ Martin Luther King Road
370	0.2	0.5	0.6	0.6	0.6	0.7	0.9	0.9	0.9	C100 Sims Bayou @ SH 288
380	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	C100 Sims Bayou @ Hiram-Clarke Road

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

Brays Bayou, D100										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1020	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	NRG Park
400	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	D109 Harris Gully @ South McGregor Way
405	0.1	0.2	0.2	0.2	0.4	0.5	0.6	0.6	0.6	D100 Brays Bayou @ Martin Luther King Blvd
410	0.2	0.4	0.4	0.4	0.5	0.5	0.6	0.8	0.8	D100 Brays Bayou @ Lawndale Street
420	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	D100 Brays Bayou @ South Main Street
430	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	D100 Brays Bayou @ Stella Link Road
435	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	D112 Willow Water Hole @ Willowbend Boulevard
440	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	D100 Brays Bayou @ Rice Avenue
445	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	D112 Willow Water Hole @ Landsdowne Drive
460	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	D100 Brays Bayou @ Gessner Road
465	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.7	0.7	D100 Brays Bayou @ Beltway 8
470	0.2	0.5	0.6	0.8	1.0	1.0	1.0	1.8	1.8	D100 Brays Bayou @ Belle Park Drive
475	0.1	0.2	0.3	0.4	0.4	0.5	0.5	1.0	1.0	D100 Brays Bayou @ Bellaire Boulevard
480	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.5	0.5	D118 Keegans Bayou @ Roark Road
485	0.4	1.2	2.2	3.1	4.1	4.4	4.5	4.8	4.8	D100 Brays Bayou @ SH 6
490	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.6	0.6	D118 Keegans Bayou @ Keegan Road
495	0.2	0.4	0.8	1.2	1.8	2.0	2.1	2.2	2.2	D118 Keegans Bayou @ Rocky Valley

White Oak Bayou, E100										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
510	0.3	0.6	0.8	1.2	1.8	1.9	1.9	2.9	3.0	Harris County Flood Control @ Brookhollow
520	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	E100 White Oak Bayou @ Heights Boulevard
530	0.1	0.2	0.3	0.4	0.6	0.6	0.6	1.1	1.2	E100 White Oak Bayou @ Ella Boulevard
535	0.6	1.4	2.3	3.6	4.6	4.8	4.9	6.2	6.3	E100 White Oak Bayou @ Pinemont Drive
540	0.5	1.4	2.3	3.3	3.9	4.1	4.2	5.0	5.2	E100 White Oak Bayou @ Alabonson Road
545	0.5	1.2	1.6	2.1	2.5	2.8	2.8	3.0	3.0	E100 White Oak Bayou @ Fairbanks North Houston Road
550	0.3	0.4	0.8	1.1	1.6	1.7	1.7	1.7	1.7	E100 White Oak Bayou @ Lakeview Drive
555	0.3	0.8	1.0	1.4	1.6	1.6	1.6	1.7	1.7	E100 White Oak Bayou @ Jones Road
560	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	E101 Little White Oak Bayou @ Trimble Street
570	0.5	0.8	1.2	1.8	2.2	2.2	2.3	2.8	3.0	E101 Little White Oak Bayou @ Tidwell Road
575	0.5	1.3	2.2	3.5	4.4	4.8	4.8	6.3	6.4	E100 White Oak Bayou @ Tidwell Road
580	0.5	1.3	2.3	3.7	4.8	5.0	5.0	6.3	6.4	E115 Brickhouse Gully @ Costa Rica Road
582	0.5	1.0	1.7	2.9	4.0	4.5	4.6	5.6	5.6	E115 Brickhouse Gully @ Hollister
585	0.6	1.6	2.4	3.4	4.2	4.5	4.7	5.7	5.8	E121 Vogel Creek @ Victory Drive
590	0.5	1.3	2.0	3.0	3.8	4.0	4.1	5.0	5.0	E117 Cole Creek @ Deihl Road
595	0.6	1.4	2.3	3.2	3.8	4.0	4.1	4.9	5.1	E121 Vogel Creek @ Gulf Bank Road

Little Cedar Bayou, F216										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
605	0.1	0.2	0.3	0.3	0.3	0.3	0.6	0.6	0.6	Taylor Lake @ Port Road
610	0.1	0.2	0.3	0.3	0.3	0.3	0.6	0.6	0.6	A104 Taylor's Bayou @ Shoreacres Boulevard
620	0.2	0.2	0.3	0.4	0.5	0.5	0.8	0.9	0.9	F216 Little Cedar Bayou @ 8th Street
640	0.3	0.7	0.8	0.9	0.9	1.0	1.5	1.6	1.6	F101 Lateral @ Sens Road
650	0.2	0.4	0.6	0.6	0.8	0.8	0.9	1.0	1.0	B112-06 Patricks Bayou @ East 8th Street
660	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.5	0.5	G105 Boggy Bayou @ San Augustine Street

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

San Jacinto River, G103										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
710	0.2	0.4	0.7	0.8	0.9	1.0	1.1	1.1	1.1	G103 San Jacinto River @ Rio Villa
720	0.1	0.2	0.2	0.3	0.5	0.6	0.7	0.8	0.8	G103 San Jacinto River @ US 90
740	0.3	0.7	1.0	1.3	1.6	2.0	2.9	3.1	4.7	G103 Lake Houston @ FM 1960
750	0.2	0.5	0.6	1.0	1.4	1.6	2.5	2.6	2.7	G103 Lake Houston Dam Spillway
755	0.4	1.0	1.5	2.0	2.7	2.8	2.8	3.5	4.8	G103 San Jacinto River @ Kingwood Country Club
760	0.4	0.9	1.4	2.3	2.9	3.0	3.2	4.8	5.1	G103 San Jacinto River @ US 59
765	0.3	0.4	0.5	0.6	0.9	1.0	1.0	1.2	1.2	G103 San Jacinto @ SH 99
770	na	na	na	na	na	na	na	na	na	G103 San Jacinto @ SH 242
780	0.3	0.6	0.8	0.9	1.3	1.3	1.3	1.4	1.4	Caney Creek @ FM 2090
785	0.3	0.7	1.0	1.3	1.9	1.9	2.0	2.6	2.7	Peach Creek @ FM 2090
790	0.5	1.0	1.3	1.9	2.8	3.3	4.1	5.4	6.6	G103 East Fork San Jacinto @ FM 1485
795	0.4	1.2	2.1	3.6	4.7	5.0	5.5	6.2	6.9	G103 East Fork San Jacinto @ FM 2090
796	0.4	0.7	1.0	1.3	1.5	1.6	1.6	2.1	2.2	G103 East Fork San Jacinto @ SH 105

Hunting Bayou, H100										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
820	0.2	0.2	0.3	0.4	0.6	0.7	1.3	1.3	1.3	H100 Hunting Bayou @ I-10
830	0.1	0.2	0.2	0.2	0.3	0.4	0.7	0.8	0.8	H100 Hunting Bayou @ Loop 610 East
840	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.6	H100 Hunting Bayou @ Lockwood Drive

Vince Bayou, I100										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
920	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.7	0.8	I100 Vince Bayou @ West Ellaine Down Stream
940	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.6	0.6	I101 Little Vince Bayou @ Jackson Avenue
240	0.1	0.1	0.2	0.2	0.4	0.4	0.5	0.6	0.6	I101 Little Vince Bayou @ Burke Road

Spring Creek, J100										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1040	0.2	0.4	0.4	0.6	0.6	0.6	0.6	0.7	0.7	J100 Spring Creek @ FM 2978
1050	0.2	0.5	0.9	1.1	1.6	1.7	1.7	1.7	1.7	J100 Spring Creek @ I-45
1052	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.8	0.8	Mill Creek @ FM 149
1054	0.1	0.2	0.5	0.6	0.6	0.6	0.6	0.7	0.7	Mill Creek @ FM 1486
1055	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	Bear Branch @ Kuykendahl
1056	0.3	0.7	1.0	1.1	1.2	1.2	1.3	1.5	1.5	Mill Creek @ FM 1774
1060	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	J100 Spring Creek @ Kuykendahl Road
1070	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.6	J100 Spring Creek @ SH 249
1072	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5	Walnut Creek @ Nichols Sawmill
1074	0.1	0.2	0.4	0.6	0.6	0.6	0.6	0.7	0.7	Walnut Creek @ Joseph Road
1075	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.7	0.7	Tomball Repeater
1076	0.4	1.0	1.2	1.5	1.6	1.6	1.7	1.8	1.8	Birch Creek @ Riley Road
1080	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	J100 Spring Creek @ Cypress Rosehill
1084	0.2	0.4	0.8	1.0	1.0	1.0	1.1	1.1	1.1	Threemile Creek @ Joseph Road
1086	0.2	0.5	0.7	1.0	1.2	1.2	1.4	1.5	1.5	Threemile Creek @ FM 362
1090	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	J100 Spring Creek @ Hegar Road



**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

<b>Cypress Creek, K100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1110	0.3	0.7	1.2	1.8	2.2	2.3	2.3	4.4	4.6	K100 Cypress Creek @ Cypresswood Drive
1115	0.1	0.3	0.5	0.7	0.8	0.9	0.9	1.2	1.2	K600 Cypress Creek @ Inverness Forest
1120	0.2	0.4	0.5	0.8	1.1	1.2	1.2	1.3	1.4	K100 Cypress Creek @ I-45
1130	0.2	0.3	0.4	0.6	1.1	1.2	1.2	1.2	1.2	K100 Cypress Creek @ Kuykendahl Road
1140	0.2	0.6	0.9	1.2	1.4	1.5	1.5	1.6	1.6	K100 Cypress Creek @ Stuebner-Airline Road
1150	0.3	0.7	1.1	1.4	1.6	1.6	1.6	1.7	1.7	K100 Cypress Creek @ SH 249
1160	0.2	0.4	0.7	0.9	1.1	1.1	1.1	1.1	1.1	K100 Cypress Creek @ Grant Road
1165	0.2	0.4	0.6	0.9	1.0	1.0	1.0	1.0	1.0	K100 Cypress Creek @ Eldridge Parkway N.
1170	0.2	0.4	0.7	0.9	1.1	1.2	1.2	1.2	1.2	K100 Cypress Creek @ Huffmeister Road
1175	0.2	0.2	0.3	0.4	0.6	0.6	0.6	0.6	0.6	K100 Cypress Creek @ US 290
1180	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	K100 Cypress Creek @ Katy-Hockley Road
1185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	K100 Cypress creek @ Sharp Road
1186	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Live Oak Creek @ Penick Road
1190	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	K166 Little Mound Creek @ Mathis Road
1195	0.2	0.4	0.4	0.6	0.7	0.7	0.7	0.7	0.7	Mound Creek @ FM 362
1210	0.1	0.2	0.4	0.6	1.0	1.1	1.1	1.1	1.1	L100 Little Cypress Creek @ Kluge Road
1220	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	L100 Little Cypress Creek @ Cypress Rosehill Road
1230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	L100 Little Cypress Creek @ Becker Road

<b>Willow Creek, M100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1320	0.2	0.2	0.3	0.5	0.6	0.6	0.6	0.6	0.6	M100 Willow Creek @ Kuykendahl Road
1340	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.5	M100 Willow Creek @ SH 249

<b>Carpenters Bayou, N100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1420	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	N100 Carpenters Bayou @ I-10
1440	0.1	0.2	0.2	0.4	0.6	0.8	0.9	1.0	1.0	N100 Carpenters Bayou @ Wallisville Road
1460	0.2	0.2	0.2	0.4	0.7	0.8	1.0	1.2	1.2	N100 Carpenters Bayou @ US 90

<b>Goose Creek, O100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1520	na	na	na	na	na	na	na	na	na	O100 Goose Creek @ SH 146
1540	0.3	0.8	1.3	1.6	1.9	1.9	2.7	2.8	2.8	O100 Goose Creek @ Baker Road

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

<b>Greens Bayou, P100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1600	0.1	0.2	0.3	0.3	0.4	0.4	0.8	0.9	1.1	P100 Greens Bayou @ Mount Houston Parkway
1610	0.2	0.2	0.3	0.4	0.6	0.7	1.1	1.2	1.3	P100 Greens Bayou @ Normandy Street
1620	0.2	0.4	0.5	0.6	0.9	1.0	1.3	1.4	1.5	P100 Greens Bayou @ Ley Road
1630	0.2	0.5	0.6	0.8	1.2	1.2	1.4	1.8	2.3	P130 Garners Bayou @ Beltway 8
1640	0.4	0.6	1.2	1.6	2.2	2.3	2.5	2.9	3.1	P100 Greens Bayou @ US 59
1645	0.4	1.0	1.7	2.8	3.8	4.1	4.1	6.2	6.3	P100 Greens Bayou @ Beltway 8
1650	0.5	1.1	1.6	2.3	3.3	3.5	3.6	4.1	4.4	P130 Garners Bayou @ Rankin Road
1655	0.2	0.4	0.8	1.2	1.4	1.4	1.5	1.9	2.0	P145 North Fork Greens Bayou @ Ella
1660	0.4	1.2	2.0	2.9	3.3	3.4	3.5	4.0	4.2	P100 Greens Bayou @ Knobcrest Drive
1665	0.1	0.3	0.6	0.8	1.2	1.3	1.4	1.4	1.4	P100 Greens Bayou @ Bammel N Houston Road
1670	0.2	0.2	0.4	0.6	1.1	1.2	1.2	1.2	1.2	P100 Greens Bayou @ Cutten Road
1685	0.2	0.4	0.6	0.7	0.9	1.0	1.3	1.4	1.5	P100 Greens Bayou @ Tidwell Road
1695	0.3	0.8	1.4	2.2	3.0	3.2	3.2	4.2	4.3	P138 @ Aldine Westfield Road

<b>Halls Bayou, P118</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1675	0.1	0.2	0.4	0.4	0.6	0.6	0.8	0.8	1.0	P118 Halls Bayou @ Tidwell Road
1680	0.1	0.2	0.4	0.5	0.8	0.8	1.0	1.2	1.4	P118 Halls Bayou @ Jensen Drive
1690	0.4	0.9	1.6	2.7	3.5	3.7	3.8	5.7	5.8	P118 Halls Bayou @ Airline Drive

<b>Cedar Bayou, Q100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1720	0.2	0.4	0.6	0.7	0.7	0.7	1.0	1.1	1.1	Q100 Cedar Bayou @ SH 146
1725	0.3	0.4	0.6	0.8	0.8	0.8	1.2	1.4	1.4	Smith Gully @ SH 146
1730	0.5	0.9	1.7	2.1	2.4	2.5	3.4	3.5	3.5	Q100 Cedar Bayou @ FM 1942
1740	0.3	0.8	1.0	1.1	1.2	1.3	1.6	1.6	1.6	Q100 Cedar Bayou @ US 90
1745	0.5	0.8	1.0	1.5	1.9	2.9	3.6	3.8	5.0	Q100 Cedar Bayou @ FM 1960

<b>Jackson Bayou, R100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1840	0.1	0.2	0.3	0.4	0.6	0.9	1.0	1.1	1.1	R102 Gum Gully @ Diamond Head Boulevard

<b>Luce Bayou, S100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1930	0.3	0.8	1.0	1.6	2.2	2.8	3.6	4.1	5.4	Huffman Repeater
1940	0.4	0.8	1.4	2.2	2.7	2.8	3.1	3.8	6.4	S100 Luce Bayou @ FM 2100
1960	0.5	1.0	1.6	2.5	3.1	4.5	5.7	6.0	8.5	S100 Luce Bayou @ SH 321
1975	0.8	1.4	2.0	2.4	2.9	3.0	3.1	3.6	4.0	Tarkington Bayou @ SH 105

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**

<b>Barker Reservoir, T100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
2010	0.5	1.1	1.9	2.7	3.0	3.1	3.1	3.1	3.1	Barker Dam
2015	0.5	1.0	1.5	2.3	2.8	3.0	3.0	3.1	3.1	Clodine Ditch @ Grand Mission
2020	0.2	0.4	0.8	1.2	1.7	1.7	1.7	1.8	1.8	T101 Mason Creek @ Prince Creek Drive
2025	0.2	0.5	0.7	1.2	1.7	1.7	1.7	1.7	1.8	T100 Buffalo Bayou @ Peek Road
2030	0.3	0.5	0.7	0.8	1.0	1.0	1.0	1.0	1.0	T100 Buffalo Bayou @ Greenbusch Road
2040	0.1	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	T100 Buffalo Bayou @ US 90
2050	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	Cane Island Branch @ Clay Road
2060	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Willow Fork Creek @ Pederson Road
2090	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	Brookshire Katy Drainage District @ Morrison Road

<b>Addicks Reservoir, U100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
2110	0.4	0.9	1.4	2.2	2.5	2.6	2.7	2.7	2.7	Addicks Dam
2115	0.2	0.6	0.8	1.0	1.3	1.3	1.4	1.4	1.4	U100 Langham Creek @ Clay Rd
2120	0.4	0.6	0.8	1.2	1.4	1.4	1.4	1.4	1.4	U100 Langham Creek @ West Little York Road
2130	0.2	0.6	0.8	1.1	1.4	1.4	1.4	1.4	1.4	U106 Horsepen @ Trailside Drive
2140	0.2	0.5	0.8	1.0	1.1	1.1	1.1	1.1	1.1	U100 Langham Creek @ Longenbaugh Road
2150	0.3	0.4	0.8	1.2	1.6	1.6	1.6	1.6	1.6	U101 South Mayde @ Greenhouse Road
2160	0.3	0.4	0.6	0.9	1.2	1.2	1.2	1.2	1.2	U102 Bear Creek @ Clay Road
2170	0.4	0.6	0.9	1.0	1.2	1.2	1.2	1.3	1.3	U101 South Mayde @ Morton Road
2180	0.1	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	U102 Bear Creek @ FM 529
2185	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.6	0.6	John Paul Landing
2190	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	U101 South Mayde Creek @ Peek Road

<b>Buffalo Bayou, W100</b>										
Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	Site
1000	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.7	0.8	Houston Transtar
2210	0.1	0.2	0.2	0.2	0.4	0.4	0.6	0.7	0.7	W100 Buffalo Bayou @ Turning Basin
2220	0.0	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.4	W100 Buffalo Bayou @ Milam Street
2240	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	W100 Buffalo Bayou @ Shepherd Drive
2245	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.7	W100 Buffalo Bayou @ Woodway Drive
2250	0.6	1.3	2.1	3.2	4.2	4.3	4.3	5.5	5.6	W140 Spring Branch @ Bingle Road
2253	0.4	0.9	1.6	3.1	4.2	4.6	4.8	5.4	5.5	W140-06 Buttermilk Creek @ Moorberry Lane
2255	0.5	1.2	2.1	3.1	4.0	4.1	4.2	5.0	5.1	W140-01 Briar Branch @ Campbell Road
2260	0.2	0.2	0.4	0.4	0.6	0.6	0.6	1.3	1.4	W100 Buffalo Bayou @ San Felipe Drive
2265	0.3	0.5	0.5	0.7	1.0	1.1	1.1	1.8	1.8	W100 Buffalo Bayou @ Piney Point Rd
2270	0.5	1.2	1.7	2.9	3.7	3.8	4.0	4.8	4.8	W100 Buffalo Bayou @ West Beltway 8
2280	0.5	1.1	2.0	3.7	4.8	5.2	5.3	5.6	5.7	W156 Rummel Creek @ Brittmoore Road
2290	0.4	1.1	2.0	3.5	4.3	4.6	4.8	5.1	5.1	W100 Buffalo Bayou @ Dairy Ashford Road

**Rainfall Intensity Report**  
**5AM 1-8-22 thru 5AM 1-9-22**




Region 1--Addicks, Barker, Cypress, Spring, and Willow									
Period	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day
2-year	0.6	1.1	1.6	2.2	2.7	3.0	3.6	4.2	4.8
5-year	0.7	1.4	2.0	2.7	3.4	3.9	4.7	5.6	6.5
10-year	0.8	1.6	2.3	3.1	4.0	4.7	5.8	7.0	8.2
25-year	1.0	1.9	2.7	3.6	4.9	5.9	7.5	9.1	10.9
50-year	1.1	2.1	3.0	4.1	5.7	6.8	8.9	11.1	13.4
100-year	1.2	2.4	3.3	4.5	6.5	8.0	10.7	13.4	16.3
500-year	1.5	3.0	4.2	5.9	9.0	11.5	15.9	20.1	24.2

Region 2--Brays, Buffalo, Greens, Hunting, Luce, West Fork San Jacinto, and White Oak									
Period	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day
2-year	0.6	1.2	1.7	2.2	2.8	3.1	3.8	4.4	5.1
5-year	0.7	1.5	2.1	2.8	3.6	4.1	5.0	5.9	6.9
10-year	0.9	1.7	2.4	3.2	4.3	4.9	6.2	7.4	8.7
25-year	1.0	2.0	2.8	3.8	5.2	6.2	7.9	9.7	11.5
50-year	1.1	2.3	3.2	4.3	6.0	7.3	9.5	11.7	14.0
100-year	1.3	2.5	3.5	4.8	6.9	8.5	11.3	14.0	16.9
500-year	1.6	3.1	4.4	6.2	9.6	12.2	16.7	20.9	25.0

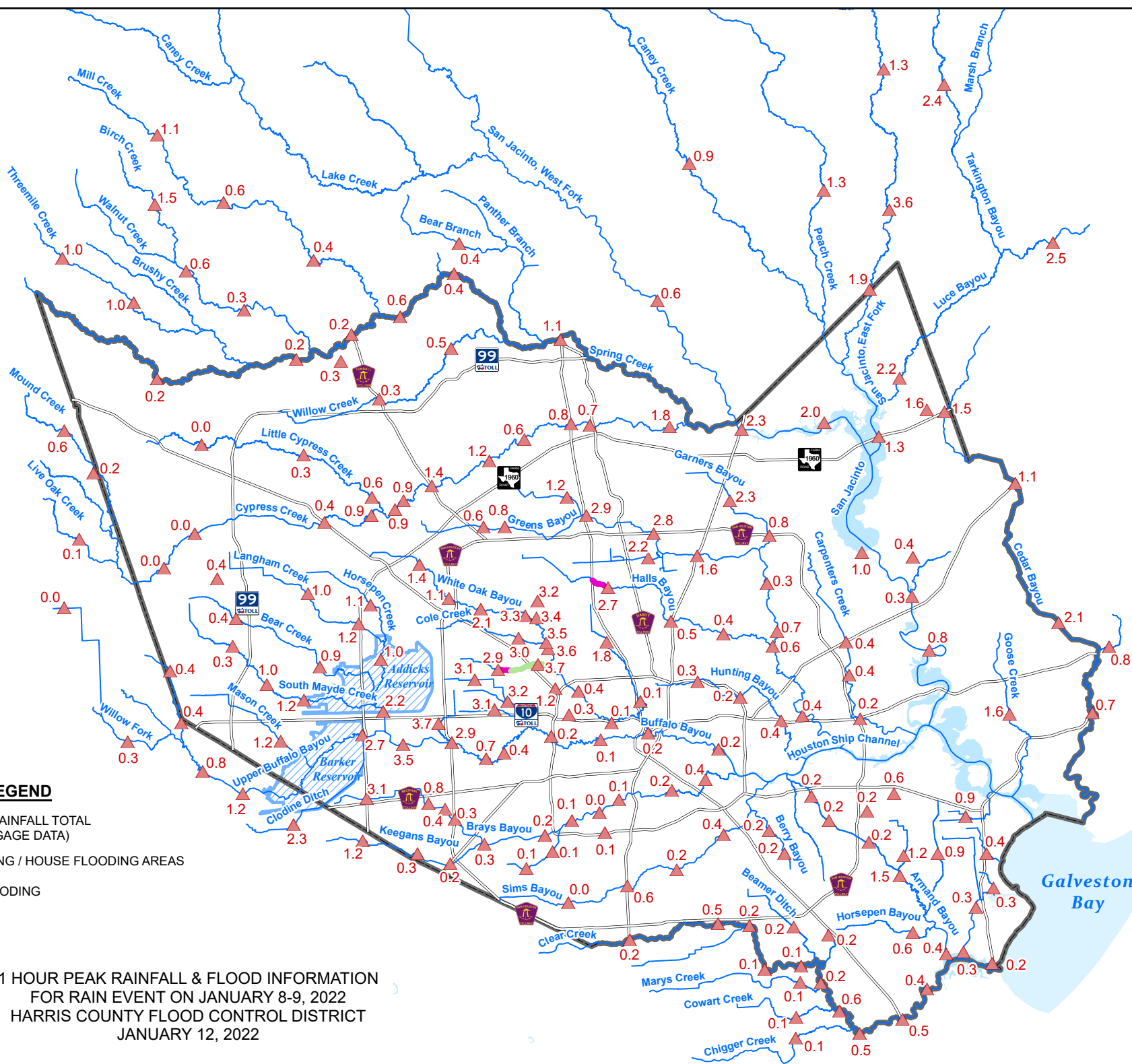
Region 3--Armand, Carpenters, Cedar, Clear, Galveston Bay, Goose, Jackson, Lower San Jacinto River, Sims, Ship Channel and Vince									
Period	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day
2-year	0.6	1.2	1.7	2.3	2.9	3.2	3.9	4.6	5.3
5-year	0.8	1.5	2.1	2.9	3.7	4.3	5.2	6.2	7.3
10-year	0.9	1.8	2.5	3.4	4.5	5.2	6.6	7.9	9.3
25-year	1.1	2.1	3.0	4.1	5.6	6.7	8.6	10.4	12.3
50-year	1.2	2.4	3.4	4.7	6.6	8.0	10.4	12.6	15.0
100-year	1.4	2.7	3.8	5.3	7.6	9.4	12.5	15.2	18.0
500-year	1.8	3.5	5.0	7.0	10.6	13.4	18.2	22.8	27.2



**LEGEND**




-  PEAK 1 HOUR RAINFALL TOTAL  
(FROM HCFCG GAGE DATA)
-  MAJOR FLOODING / HOUSE FLOODING AREAS
-  OVERBANK FLOODING

1 HOUR PEAK RAINFALL & FLOOD INFORMATION  
FOR RAIN EVENT ON JANUARY 8-9, 2022  
HARRIS COUNTY FLOOD CONTROL DISTRICT  
JANUARY 12, 2022

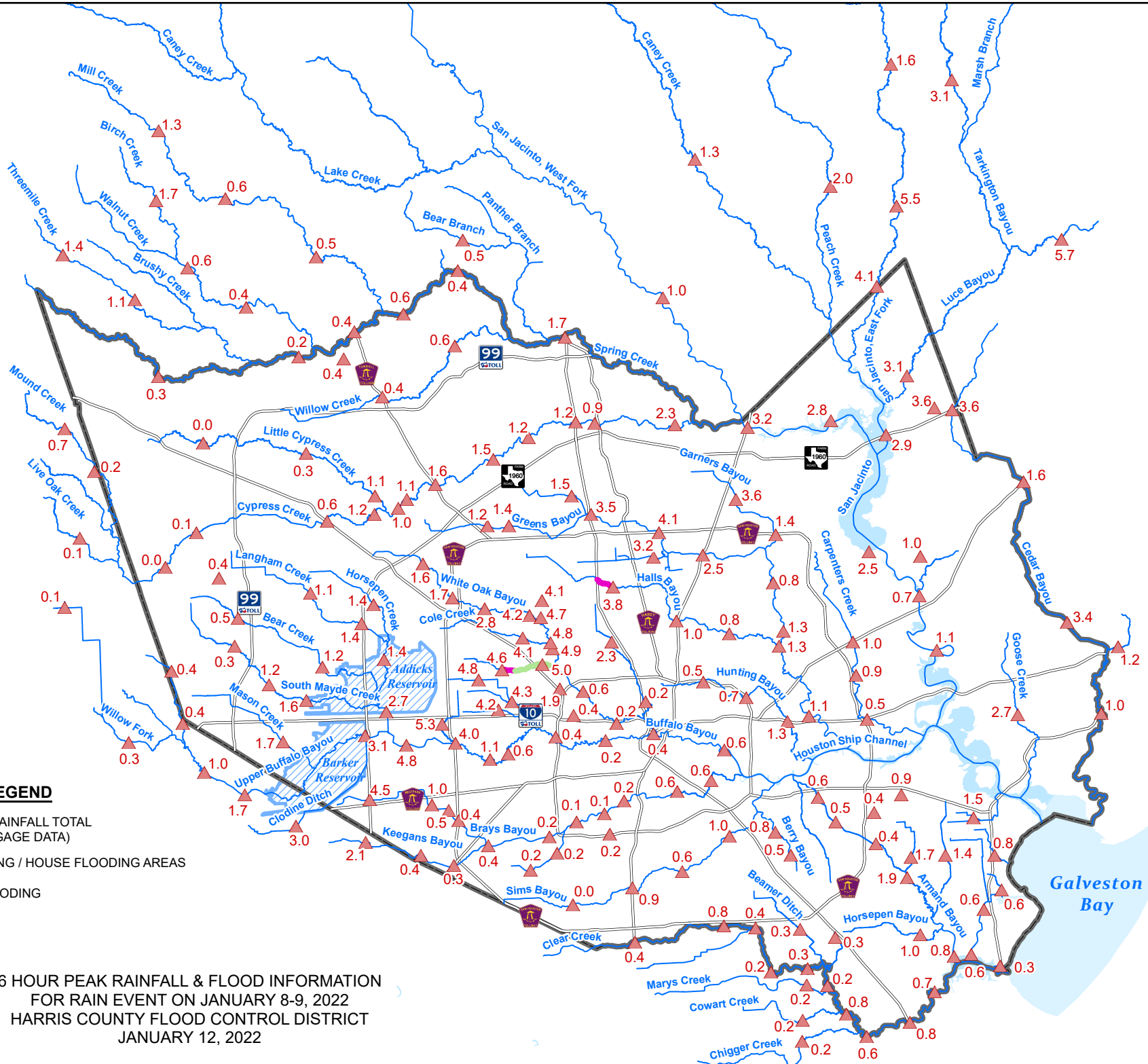




**LEGEND**

-  PEAK 6 HOUR RAINFALL TOTAL  
(FROM HCFCF GAGE DATA)
-  MAJOR FLOODING / HOUSE FLOODING AREAS
-  OVERBANK FLOODING




6 HOUR PEAK RAINFALL & FLOOD INFORMATION  
FOR RAIN EVENT ON JANUARY 8-9, 2022  
HARRIS COUNTY FLOOD CONTROL DISTRICT  
JANUARY 12, 2022



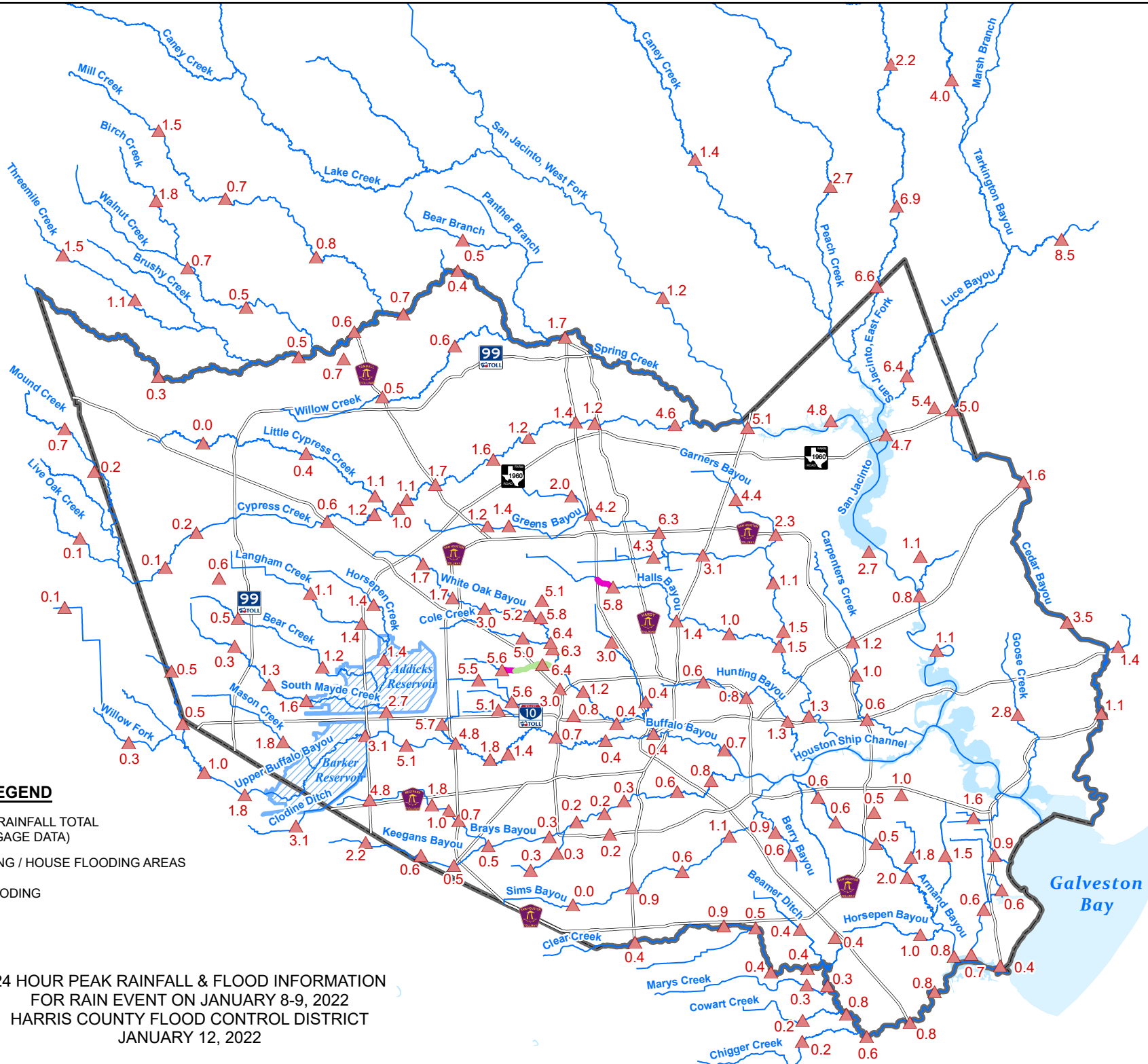




**LEGEND**

-  PEAK 24 HOUR RAINFALL TOTAL  
(FROM HCFCG GAGE DATA)
-  MAJOR FLOODING / HOUSE FLOODING AREAS
-  OVERBANK FLOODING

24 HOUR PEAK RAINFALL & FLOOD INFORMATION  
FOR RAIN EVENT ON JANUARY 8-9, 2022  
HARRIS COUNTY FLOOD CONTROL DISTRICT  
JANUARY 12, 2022



## SUMMARY SHEET - HCFCD HIGH WATER MARKS

9/27/2020

WHITE OAK BAYOU Tributaries E100-00-00 Page 3 of 3

ROAD NAME	STAGE GAGE	BRIDGE BM ELEV	78 TO '01 ADJUST	10.0%	2.0%	1.0%	0.2%	STORM EVENTS																
								3/20/72	ALLISON 6/9/01	10/29/02	11/17/03	12/14/05	6/19/06	10/16/06	5/10/07	IKE 9/13/08	4/28/09	5/26/15	10/25/15	4/18/16	8/8/17	HARVEY 8/27/17	IMELDA 9/19/19	1/9/22
<b>E101: LT WHITE OAK</b>																								
E101 @ N MAIN		33.73		35.4	38.4	39.1	41.6											39.4				40.0	38.7	
E101 @ COTTAGE	560	48.22	-1.3	38.0	40.7	41.4	44.0			29.3	35.8		32.1 <sup>1</sup>			41.3		42.9		38.5		44.1	42.5	
E101 @ PATTON		40.35		39.8	42.4	43.2	46.0											43.8				45.6	45.9	
E101 @ CAVALCADE		47.24		44.5	47.5	48.3	50.0											48.8				53.7	48.6	
E101 @ CROSSTIMBERS		N/A		56.2	58.2	58.8	60.2											54.8				57.3	56.7	
E101 @ WERNER		63.42		63.7	64.0	64.3	64.9											63.5				63.7	63.6	
E101 @ TIDWELL	570	64.38	-1.9	65.2	65.9	66.1	67.0		70.1	64.2	62.5					67.1		65.6		61.6		65.4	66.1	
<b>E115 BRICKHOUSE</b>																								
E115 @ WATONGA		62.15		62.7	64.9	65.8	68.8																56.0	57.1
E115 @ MANGUM		N/A	N/A	61.1	62.5	63.2	65.6								60.2	59.8	N/A	60.2		60.5	58.2	64.3	61.2	60.9
E115 @ COSTA RICA	580	64.38		63.9	65.5	66.4	70.4		68.9	63.7	56.3		58.2	57.3	64.7	64.6	63.3	65.5		63.8	63.2	66.7	64.5	64.5
E115 @ ANTOINE		65.72	-2.8	65.4	66.0	66.5	71.1								65.7	65.6	65.3	66.2		65.7	65.5	67.9	66.6	65.7
E115 @ US 290		72.38	N/A	67.4	67.9	68.2	71.5								68.3	66.8	67.2	68.0		68.3	68.2	68.4	68.0	
E115 @ BOLIN		70.26	-2.8	69.4	71.3	71.8	73.6								69.7	66.4	69.4	70.2		70.0	69.4	70.4	70.1	69.2
E115 @ LANG		74.25	-3.0	70.5	71.9	72.2	73.5								70.4	69.1	70.2	71.8		71.1	70.3	72.5	71.7	70.2
E115 @ BINGLE		74.22															74.3	74.2			73.5	74.6	75.8	73.7
E115 @ HOLLISTER	582	80.85															77.0	77.6			75.8	76.4	76.7	75.8
<b>E117 COLE CREEK</b>																								
E117 @ DEIHL	590	80.94	-3.0	75.8	79.0	80.2	81.4	73.7		73.8	73.2	73.4	71.6			74.0				74.7		74.6		
<b>E121 VOGEL CREEK</b>																								
VICTORY	585	75.11	-1.6	74.7	75.2	75.6	76.0			77.1	73.7	72.6	73.3			69.1			67.3	73.1		75.0		
MAPLE TREE		78.79		77.6	78.2	78.5	78.9						77.1						67.9	73.6		74.9		
GULF BANK	595	78.97	-3.4	79.7	80.4	80.7	81.3			81.0	80.4	77.6	78.0			74.2			72.6	77.3		77.8		
RAMONA		98.39		98.7	99.3	99.5	99.9						99.1			98.4			95.0	97.6		98.6		

NOTE: ELEVATIONS ARE ON 1988 NAVD; 2001 ADJ

<sup>1</sup> = Suspect elevation, low confidence in field

Exceedance probability elevations are from the June 9th, 2006 TSARP Flood Insurance Study.  
High water marks are approximate. HCFCD assumes no responsibility for their accuracy.



## SUMMARY SHEET - HCFCD HIGH WATER MARKS

9/27/2020

**HALLS BAYOU P118-00-00 (PAGE 2 of 2)**  
**GARNERS BAYOU P130-00-00**

ROAD NAME	STAGE GAGE	BRIDGE BM ELEV	78 TO '01 ADJUST	10.0%	2.0%	1.0%	0.2%	STORM EVENTS													
								12/14/05	6/19/06	10/16/06	IKE 9/13/08	10/31/15	4/18/16	8/8/17	HARVEY 8/27/17	IMELDA 9/19/19	1/9/22				
HALLS BAYOU																					
MESA		39.96	-1.1	31.1	33.8	34.9	37.6	25.5	32.3	34.6	36.1	33.9	28.4	24.2	39.8	36.9					
TIDWELL	1675	46.85	-0.9	39.2	41.6	42.3	44.4	34.0	36.2	37.3	39.9	37.5	32.9	30.4	45.4	41.1					
WAYSIDE		48.34	-0.9	39.4	41.9	42.7	44.8	35.8	36.1	37.3	40.3	36.4	32.3	31.0	45.2	41.5					
HOMESTEAD RD		47.11	-1.2	44.5	47.0	47.5	49.7	37.2	41.7	38.7	44.0	41.7	36.7	34.4	46.3	44.8					
PARKER RD		48.86	-1.1	47.1	49.5	50.0	52.1	39.8	40.8	42.6	45.9	46.3	38.2	37.7	50.0	46.8					
HIRSH RD		56.82	-1.3	52.6	54.2	54.7	56.1	44.8	48.3	47.3	51.4	52.5	43.9	43.4	53.2	51.7					
US 59		60.79	-1.6	56.3	57.2	57.6	59.2	50.3	54.3	53.3	56.1	52.3	49.8	48.2	57.2	54.4	46.8				
JENSEN DR	1680	57.47	-1.6	56.9	57.9	58.3	59.7	50.8	54.4	53.5	55.5	53.3	51.1	49.2	57.5	55.4	47.7				
LITTLE YORK		61.24	-1.3	58.3	59.2	59.5	60.6	53.1	56.4	55.9	57.8	54.0	53.7	51.5	58.8	57.1	51.6				
HOPPER RD		60.00	-1.6	59.8	60.4	60.8	61.6	55.4	57.7	57.4	58.9	55.4	55.5	54.2	60.2	60.0	53.9				
BERTRAND RD		63.09	-1.7	61.3	62.3	62.8	63.6	56.4	59.2	58.6	60.3	57.1	56.4	56.0	62.3	61.1	56.4				
ALDINE WEST FIELD		68.14	-1.4	65.5	66.8	67.2	68.3	60.0	62.9	62.3	64.4	60.9	61.0	60.5	66.9	64.0	60.8				
HARDY TOLL RD		77.39	-1.0	69.4	70.3	70.7	71.5	66.2	67.9	68.0	69.5	67.7	68.1	65.8	71.0	69.4	66.8				
AIRLINE DR	1690	77.73	-1.4	75.2	76.1	76.5	77.4	72.1	73.6	74.4	76.0	72.0	75.3	74.5	77.0	75.7	74.3				
SWEETWATER		77.11	-2.7	78.0	78.7	79.0	79.5	75.1	77.2	76.8	77.1	75.9	76.5	77.2	79.3	77.7	77.4				
W. MOUNT HOUSTON		77.13	-2.8	78.3	78.9	79.2	79.8	75.8	77.3	77.2	78.5	75.9	76.8	77.5	79.9	78.3	77.5				
IH 45		80.16	-2.8	78.7	79.3	79.7	80.3	75.6	77.4	77.6	78.4	76.6	77.1	78.3	80.3	78.5	77.9				
TURNERY		78.02	-2.8	79.1	80.0	80.3	81.1	75.7	77.3	77.3	78.4	76.7	77.5	77.8	80.4	78.6	78.0				
SUNNYWOOD		79.45	-3.0	80.2	80.7	81.0	81.6	76.6	77.7	78.1	79.6	80.2	78.4	78.9	81.0	78.8	78.7				
DEER TRAIL		81.91	-2.8	81.5	81.9	82.1	82.6	78.5	80.5	79.9	81.3	78.7	79.1	80.6	82.3	81.0	81.0				
VETERANS MEMORIAL		89.85	-1.8	83.0	83.8	84.0	84.6	79.1	80.4	80.1	82.2	79.8	79.2	81.3	83.4	81.8	81.5				

**GARNERS P130-00-00**

BELTWAY 8	1630	56.88	-1.2	54.9	55.8	56.5	57.7	51.1	48.7	52.2	53.9	51.8	51.8		58.0	56.5					
RANKIN	1650	69.07	-0.9	66.6	68.1	68.5	69.8		61.0	62.6	63.3	63.0	64.0		68.7	66.4					
US 59		79.02	-0.7	74.1	75.9	76.5	78.1	71.2	68.0	72.0	73.4	71.6	72.4		77.8	75.5					

NOTE: BRIDGE AND HIGH WATER ELEVATIONS ARE ON 1988 NAVD; 2001 ADJ

Exceedance probability elevations are from the June 9th, 2006 TSARP Flood Insurance Study.  
 High water marks are approximate. HCFCD assumes no responsibility for their accuracy.

## SUMMARY SHEET - HCFCD HIGH WATER MARKS

9/27/2020

## BUFFALO BAYOU W100-00-00

ROAD NAME	STAGE GAGE	BRIDGE BM ELEV	78 TO '01 ADJUST	10.0%	2.0%	1.0%	0.2%	STORM EVENTS																		
								5/31/29	12/9/35	8/1/54	6/27/60	8/31/81	ALICIA 8/18/83	9/19/83	5/19/89	3/4/92	FRANCES 9/11/98	ALLISON 6/9/01	11/17/03	IKE 9/13/08	4/28/09	5/26/15	4/18/16	HARVEY 8/27/17	1/9/22	
TURNING BASIN	2210	17.08		6.0*	10.5*	12.2*	16.1*													15.0			6.8	12.1		
MCKEE ST		43.29		21.4	26.8	29.4	34.4													23.4	17.5	23.4	22.5	30.1		
SAN JACINTO ST		37.83		23.9	29.2	31.8	37.4													25.7	21.0	29.4	27.2	37.2		
MILAM	2220	26.35	-0.8	27.1	32.6	35.6	41.3										30.4	35.9	22.7	27.8	21.6	31.3	28.7	37.8		
SABINE ST		40.07		30.1	33.8	37.0	42.8													21.6	23.3	32.1	29.9	39.9		
SHEPHERD	2240	40.80	-1.2	30.8	34.7	38.0	43.9	43.5	49.0	18.5	26.2	22.7	22.5	23.3	27.2	31.6	33.9	40.5	25.4	31.0	28.0	33.8	31.8	41.4		
LOOP 610 FRONTAGE		49.68	-1.5	33.6	38.4	41.3	47.6			30.7	33.7	33.9		34.0	36.7	40.9	38.4	42.6	35.5	36.8	38.7	42.4	35.7	46.5		
WOODWAY	2245	45.35	-1.5	35.6	40.5	43.3	49.1						35.3			38.5		42.8		36.5	38.2	41.0	44.2	42.0	48.6	
FARTHER POINT		53.43	-1.9	40.6	46.0	48.8	54.0										47.3		40.9	42.7	45.1	47.9	46.0	54.7		
VOSS		58.80	-1.6	44.4	49.6	52.2	57.1				47.8	43.9	40.5			48.0	46.8	47.1 (?)	46.2	45.7	50.3	53.3	50.7	58.0		
SAN FELIPE	2260	57.28	-1.6	47.5	52.8	55.3	60.0						46.9			49.2		51.8		48.3	46.0	53.0	54.5	53.0	60.3	
PINEY POINT RD	2265	64.10	-1.7	51.8	56.4	58.6	63.3			50.0			52.9		51.9	53.3	57.7	56.1		53.7	51.7	57.5	57.9	57.7	63.7	
GESSNER		65.65	-1.5	56.0	60.7	62.8	66.7						58.3	53.4	55.2	56.8	61.7	60.0		56.4	52.6	64.9	60.6	61.5	66.9	
WEST BELT	2270	70.12	-1.9	58.5	63.2	65.3	69.2						60.2			60.1	64.5			59.8	59.1	65.4	62.9	65.3	71.6	
N. WILCREST		71.62	-1.6	62.3	66.8	68.6	71.8						62.3		60.4	61.4	67.4	64.5		62.8	64.4	67.5	65.5	64.6	73.3	
DAIRY ASHFORD	2290	76.75	-1.7	65.8	70.0	71.8	74.7				68.8	67.9	65.4	63.1	66.3	71.8	68.3			68.9	65.2	70.5	69.1	70.7	76.9	
HWY 6		79.79	-1.8	70.7	75.4	77.1	80.1						63.5				76.5	71.3		71.6	69.4	75.8	72.4	75.9	81.1	
W140-06-00 @ MOOREBERRY LN	2253	86.41	-3.3																						86.7	
W140-00-00 @ BINGLE	2250	71.55	-2.5	61.5	63.5	64.5	66.6													64.3	66.8	65.0	65.2	63.3	63.6	63.3
W140-01-00 @ CAMPBELL	2255	73.07	-2.6	69.6	71.3	72.0	73.2																72.1	71.6	71.9	
W156-00-00 @ BRITTMORE	2280	76.00	-2.0	73.3	75.9	76.8	79.0															73.6	72.9	74.4	71.0	

NOTE: BRIDGE AND HIGH WATER ELEVATIONS ARE ON 1988 NAVD; 2001 ADJ

(?) = Survey Dept research needed to confirm elevation

\* = Combined Probability (includes storm surge and rainfall)

Buttermilk Creek @ Mooreberry Ln installed on 7/17/18

Exceedance probability elevations are from the June 9th, 2006 TSARP Flood Insurance Study.  
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