

# Terrebonne Parish

## Flood Response Plan



Office of Homeland Security and Emergency Preparedness  
July 2019

## FOREWORD

Flood incidents can endanger human life, cause extensive property damage and result in significant harm to the environment. Efficient and coordinated responses to flood incidents demand a well-written emergency response plan. This flood plan was developed to assist Terrebonne Parish in dealing with flood hazards that exist locally. Flooding mainly is caused by excessive rainfall and storm surges from tropical storm events. This plan defines who does what, when, where, and how they do it. This flood plan should be utilized with the Terrebonne Parish Emergency Operations Plan during events.

Earl J. Eues, Jr., Director  
Terrebonne Parish Office of Homeland Security and Emergency Preparedness

## PURPOSE

The purpose of this plan is to specify methods for early recognition of floods and dissemination of warnings which are accurate, timely and reliable, and

To prevent injury and loss of life due to flooding and flood related causes, and

To reduce public and private property damages from flooding and flood related causes, and

To initiate and carry out post flood actions to maintain public health, return community services to normal at the earliest possible time and to provide aid and assistance in recovery, and

To develop community awareness and understanding of the flood hazard and to prepare for the accurate and timely provision of information during flood emergencies.

## LEGAL AUTHORITY FOR THE PLAN

### Federal

- Public Law 93 – 234, as amended The Flood Disaster Protection Act of 1973
- Public law 93-288, The Disaster Relief Act of 1974, as amended by Public Law 100-707, the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988.
- Title 44, the Code of Federal Regulations, Part 206.
- Federal Emergency Management Agency, FEMA-64, Emergency Action Planning Guidelines for Dams, 1985.
- Federal Emergency Management Agency, SLG 101 State and Local Guide.
- Federal Emergency Management Agency, SLG 101A State and Local Guide
- National Response Framework, 2008
- National Incident Management System, 2004 (2007 Revision in draft).
- All other Public Laws or Executive Orders enacted or to be enacted which pertain to emergencies/disasters.

### State

- The Louisiana Homeland Security and Emergency Assistance and Disaster Act of 1993 as amended.
- Act 111, Emergency Interim State Executive Succession Act of 1963.
- Act 112, Emergency Interim Judicial Succession Act of 1963.
- Act 113 as amended, Emergency Interim Legislative Succession of 1963.
- The Louisiana State Administrative Plan dated 1992, as amended.
- Louisiana Significant/High Hazard Dam Safety Plan 1989.
- State Executive Order included in the preface to this plan.

- Louisiana Disaster Recovery Manual dated January 2005, as amended.
- Other Acts, Executive Orders, Proclamations, Compacts, Agreements, and Plans pertaining to emergencies and/or disasters that has been or will be developed or enacted.

#### Local

- Ordinances or resolution enacted or to be enacted pursuant to requirements of the authorities cited in Paragraph A and B above as they pertain to emergencies/disasters.
- Act 114, Emergency Interim Local Executive Succession Act of 1963.
- Local Emergency Operations Plan.
- Mutual-Aid, Letters of Agreement, and/or Memorandums enacted or to be enacted.

#### Volunteer

- Louisiana Revised Statutes, Chapter 29:650, Civil Air Patrol.
- Act 58-4-1905, American Red Cross (ARC). Mennonite Disaster Services/ FEMA Agreement. Salvation Army Charter, May 12, 1974 and Memorandums of Understanding between Louisiana and the agencies above.
- Other directives as appropriate.

#### PLAN COORDINATION

**ESF Coordinator:** Public Works & Engineering

**Primary Agencies:** Public Works & Engineering

Terrebonne Levee & Conservation District

**Support Agencies:** Office of Homeland Security and Emergency Preparedness

Planning and Zoning Department

Utilities Department

Coastal Restoration Department

Consolidated Waterworks District #1

**COMMUNICATIONS RESPONSIBILITY CHART**

Agency support to the Terrebonne Parish Communications District	Authority / Policy	Coordination	EOC Operations	Analysis	Personnel	Fixed Sites	Mobile Sites
Office of Homeland Security and Emergency Preparedness	X	X	X	X	X	X	
Terrebonne Parish Sheriff's Office		X	X	X	X	X	X
Houma Police Department		X	X	X	X	X	
Finance Department - Information Technology		X	X	X	X		X
Houma Fire Department		X	X		X		X
Terrebonne Parish Fire Districts		X	X		X		X
Volunteer Organizations *		X	X	X	X	X	
* To include private relief organizations (i.e. American Red Cross, Salvation Army, Mennonite Disaster Service, etc.); private industry; professional associations and participants in mutual aid agreements, etc.							

## I. PLANNING FACTORS AND ASSUMPTIONS

**Planning Factors** – This section summarizes local conditions that influence the context of the Terrebonne Parish Flood Response Plan.

Terrebonne Parish has a population of approximately 112,749 people. Elevations in the Parish vary from below sea level to 10 to 15 feet above sea level. The highest elevations are located in the northern portion of the parish and along some of the bayou ridges and the lowest elevations are routinely found along the coastline.

The climate in Terrebonne Parish is typically subtropical. Moisture trailing in from the Gulf of Mexico routinely affects the Parish. The Parish is susceptible to periods of heavy rainfall that may cause substantial street flooding and overloading of the Parish’ drainage system. Average annual temperature is 69.4 degrees with an annual average of precipitation of 57.5 inches. Majority of flooding events in the Parish are the results of excessive rainfall or storm surge.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) have been used to identify flood prone areas within Terrebonne Parish. The Parish also has an active flood plan mitigation program, and 4 Certified Floodplain Managers on staff.

Majority of flooding events in the Parish are the results of excessive rainfall or storm surge. The elevation of the parish is relatively flat with a small slope from the North to the South. The Parish has numerous drainage systems with large pumps to help pump rainfall into bayous that predominantly flow to the coastline of Terrebonne Parish. Inundation of the Parish’s drainage system along with predominant winds from the South causes the Parish’s bayous to literally “fill up” and slow down drainage from the system. Minor flooding will result when the bayous become inundated with drainage flow and surge from southern winds.

There are only seven gauges installed in the Parish to facilitate measuring stream flow and precipitation that are operated by the USGS. These gauges are utilized to measure tides and not particularly for rising stream levels.

The Parish’s Public Works Department is responsible for the operations and maintenance of the drainage system. The Terrebonne Levee and Conservation District (TLCD) is responsible for the operations and maintenance of the floodgates and levees. TLCD maintains and operates approximately seventy-five miles of levees, eleven navigable floodgates, and approximately ninety flap or sluice gates at twenty-four locations.

Prevention of future problems and enforcement of established standards, as well as mitigation and correction of existing deficiencies are joint responsibilities of the public works, engineering, and planning and zoning departments within the Parish government.

The resources of industry, state and federal government, separately or in combination, may be required to cope with flooding situations.

A flooding incident could contaminate water supplies or inundate the sewerage systems. This may result in the release of untreated sewage with severe impact to health and the environment. Response to a major flooding incident will require a high degree of interagency cooperation and communication.

The drainage system in the Parish is designed to handle 25-year rainfall events. In spite of a series of drainage levees, rainfalls that exceed the 25-year rainfall will cause minor flooding in the Parish, dependent of other factors such as storm surge from tropical systems and elevated tides due to southern winds. In the event of a flooding event due to storm surge most residents will evacuate on their own, without official recommendation. Some will not heed official evacuation recommendations and will have to be rescued after a tropical storm system storm surge event. For rainfall flooding events, most residents will not evacuate until their homes become inundated with flood waters.

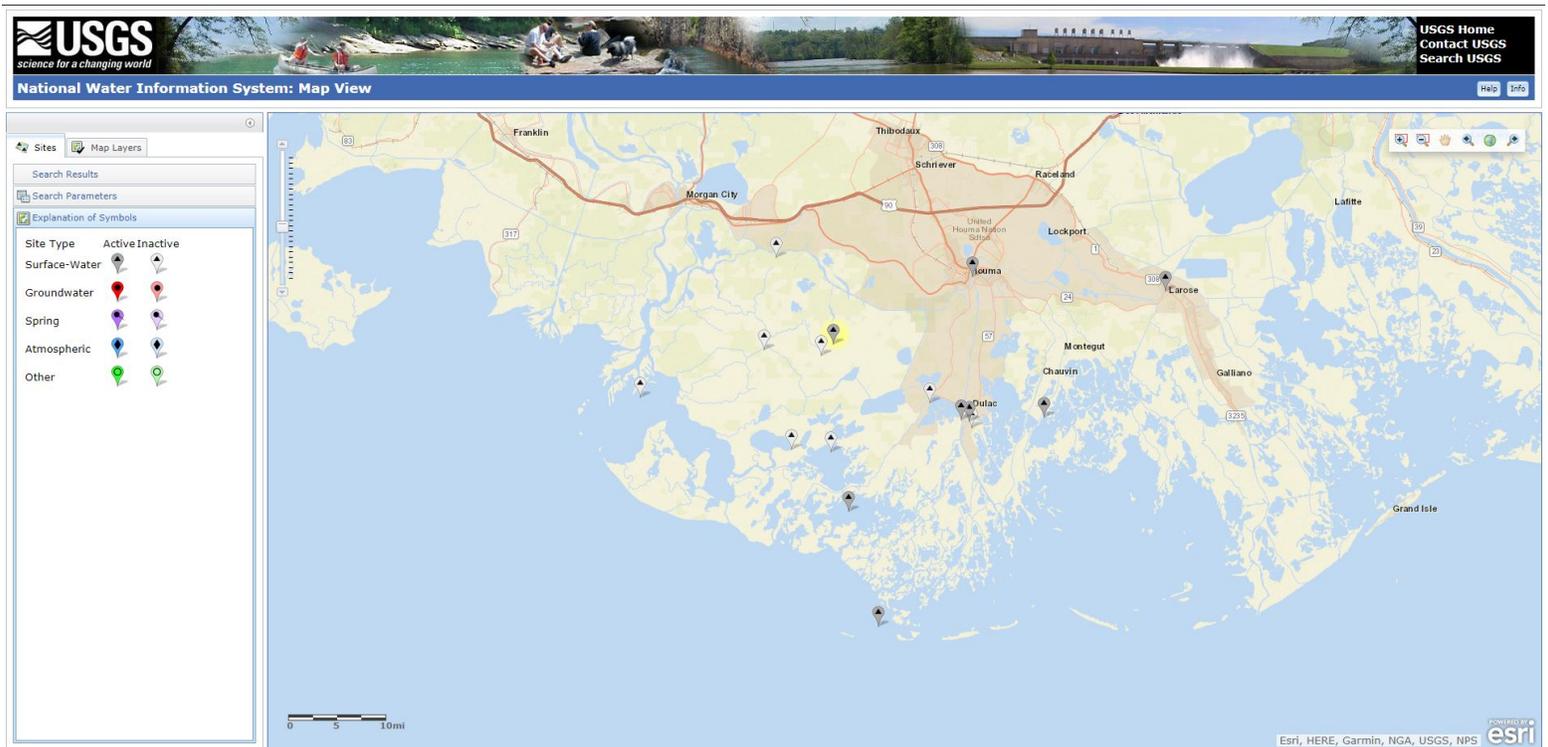
The Morganza to the Gulf Hurricane Protection Project is a Hurricane protection system for Terrebonne and Lafourche Parishes. The project purpose is to protect development and the remaining fragile marsh from hurricane storm surge. The completed system will have 98 miles of levees ranging from 9 to 15 feet, 22 floodgates, 23 environmental water control structures, 1 lock complex, 9 road gates, and 4 pump stations. All floodgates, control structures, and pumping stations are inspected on a weekly basis. All floodgates are operated through opening and closing procedures on a monthly basis during hurricane season and at a minimum quarterly December 1st through May 31st. Pump stations are checked as frequently as possible for maintenance purposes. Water control structures are checked on a quarterly basis for ease of operation. Normal maintenance activities concerning the levees include repairs to the levee crown and slopes, grass cutting, etc. Any defects are immediately reported to the Executive Director and the Operations Manager so that corrective action can be taken. TLCD's Operations Division has employees on call 24 hours a day, and frequently operates flood control structures due to high tides. The Parish utilizes both automated and manual flood threat recognition systems. Bayou Terrebonne and Boudreaux Canal have USGS gages, which send an alarm via telephone when water elevations reach 1.5 feet. The USGS gage map is on the following page. Bush Canal, the Houma Navigation Canal, and Bayou Grand Caillou floodgates have a parish electronic data system, which send photos every 6 minutes. Local fire departments manually read gages at other locations as needed. During a flood event, the Administrative Manager will send water levels to TLCD Administration, Parish Administration, EOC, and CPRA every 12 hours. The TLCD Administrative Manager uses a floodgate app called Floodgate Mate, as well as TLCD's website, Facebook, and email blasts in order to communicate these water levels to the public.

The current levee system is built to withstand a storm surge of between 9 and 15 feet, while the floodgates are built to withstand surge up to 18 feet. Past hurricane events have shown that the height of storm surge from a tropical system is dependent on many variables, and not just the category of the storm. Evacuation, sheltering-in-place, and sandbagging are the main public protection strategies for flooding in Terrebonne Parish.

The parish fills and stacks over 60,000 sandbags every hurricane season to be delivered to distribution points throughout the parish in preparation for storm events. The sandbags are stored on pallets in a large warehouse until needed.

There is no audible warning system in Terrebonne Parish. Public warning of flooding would occur through vehicle public address (PA), door-to-door, news broadcast, the Emergency Alert System through the National Weather Service and Everbridge, the Parish's emergency notification system, utilizing telephones, mobile phones, text messaging, and email. The Parish also utilizes social networking websites such as Twitter and Facebook for emergency notification and information broadcast. All households in Terrebonne Parish should be educated concerning flooding and should be encouraged to purchase NOAA Weather Alert radios. These radios should be kept in the bedroom so that they can provide warnings during the evening hours.

The Parish recognizes the need for additional flood protection for all areas of the Parish and are constantly upgrading drainage systems to control increase runoff caused by urban development as funding is available. Currently, Terrebonne Parish has some of the most stringent stormwater regulations in the state, and is an active participant in the Louisiana Governor's Watershed Initiative program.



## II. ANALYSIS OF TERREBONNE PARISH FLOOD HAZARDS

### *Flooding*

Flooding is the most prevalent and the most frequent hazard to the parish. According to NOAA data, flooding has a 63 percent probability in the parish. There are four types of flooding in the parish: riverine, backwater, storm water, and storm surge. In addition to damages from storm surge that would be expected near the coast, the parish experiences flooding in the northern communities that may be caused by poor drainage, road improvements, or subsidence.

### *Storm water*

Storm water excesses caused by large amounts of rainfall in a short period of time occur frequently in this coastal parish. Generally, the most damaging events were a function of tropical storms and hurricanes. Primarily low lying areas of the parish suffered damage from past events including Hurricane Juan in 1985 and Tropical Storm Allison in 2001.

### *Storm surge*

Storm surge caused by winds of hurricanes and tropical storms cause inundation of coastal floodplains and through coastal river and drainage systems. In the case of storm surge, southerly winds and high tides rise over and through bayous, canals and marshlands. Low lying coastal areas of Terrebonne Parish are vulnerable to this type of flooding due to its predominate marshland coast and its proximity to the Gulf of Mexico.

### *Riverine*

Riverine flooding, by definition, is river based. Despite the abundance of waterways located within the parish, there are no rivers that are subject to significant water level fluctuations and contribute to flooding. There are however, bayous, canals, and marshland that effectively drain the parish into the Gulf of Mexico in the absence of a strong southerly push created by wind. Riverine flooding is not considered a significant threat to Terrebonne Parish.

### *Backwater flooding*

Backwater flooding is normally associated with riverine flooding and connotes a lack of velocity. Low lying areas, particularly those outside of protection levees are at risk. A heavy rainfall event combined with a strong southerly wind hinders drainage outflow causing backwater flooding to the same areas susceptible to storm surge. This phenomenon generally results in the flooding of areas of the parish located south of the City of Houma. Historically, flooding is generally wide spread but shallow in these areas. Backwater flooding occurred when the storm surge flowed through the pump station outfall pipes inhibiting drainage as recently as Hurricanes Rita and Ike. In addition, areas in northwest Terrebonne (Gibson and Bayou Black) are sometimes threatened by backwater flooding from the Atchafalaya Basin. Previous occurrences of flood events are detailed in the table to follow. As shown in the table on the following page, the parish is susceptible to between 1 and 23 inches of rainfall.

Terrebonne Parish Flood Response Plan  
Emergency Support Function 3 – Appendix 4

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<b>Date</b>	<b>Type</b>	<b>Property Damage</b>	<b>Rainfall</b>
1/6/1998	Flash Flood	\$35,000	4-9"
6/26/1999	Flash Flood	\$500,000	3-10"
6/6/2001	Flash Flood	\$500,000	11-23"
6/6/2001	Flash Flood	\$75,000	11-23"
6/10/2001	Flash Flood	\$250,000	11-23"
10/9/2004	Flash Flood	\$50,000	N/A
10/22/2007	Flash Flood	N/A	3-10"
5/22/2008	Flash Flood	N/A	1-5"
8/17/2008	Flash Flood	N/A	1-3"
3/27/2009	Flash Flood	N/A	1-8"
12/14/2009	Flash Flood	N/A	1"
7/18/2011	Flash Flood	N/A	1-3"
9/4/2011	Flash Flood	\$25,000	1-4"
3/23/2012	Flash Flood	N/A	1-3"
7/20/2012	Flash Flood	\$10,000	1-4"
2/12/1997	Flood	N/A	N/A
9/10/1997	Flood	N/A	N/A
9/12/1998	Storm Surge/Tide	N/A	N/A
6/30/2003	Storm Surge/Tide	\$1,000,000	5-10"
9/15/2004	Storm Surge/Tide	\$5,000	N/A
9/22/2004	Storm Surge/Tide	\$5,000	N/A
10/9/2004	Storm Surge/Tide	\$18,00	N/A
9/23/2005	Storm Surge/Tide	\$138,240,000	1-2"
9/23/2005	Storm Surge/Tide	\$34,560,000	1-2"
8/3/2008	Storm Surge/Tide	N/A	1-4"
9/1/2008	Storm Surge/Tide	\$9,400,000	1-5"
9/11/2008	Storm Surge/Tide	\$100,000,000	1"
9/2/2011	Storm Surge/Tide	\$45,000	1-2"
8/28/2012	Storm Surge/Tide	\$10,000,000	<1"
8/28/2012	Storm Surge/Tide	\$1,000,000	<1"
10/5/1996	Coastal Flood	N/A	N/A
4/5/1997	Coastal Flood	N/A	N/A
10/16/2006	Coastal Flood	N/A	1-2"
5/1/2010	Coastal Flood	N/A	N/A
12/21/2006	Heavy Rain	N/A	1-6"

### **Hurricane and Tropical Storm Events**

Because of the proximity of the parish along the Gulf coast, the region is highly prone to hurricanes and tropical storms. The parish has a history of damage linked to hurricanes and tropical storms that have occurred in the past. Seventeen presidentially declared disasters associated with hurricanes and tropical storms have occurred in the parish since 1965. Hurricanes and tropical storms have a 66 percent probability in the parish. Based on previous storm events as well as Terrebonne Parish's location in coastal Louisiana, it is estimated that Terrebonne Parish could experience between 2.5 and 15 feet storm surges, and between 1- 23" of rain related specifically to hurricanes, tropical storms, and tropical depressions.

The design of the Morganza to the Gulf Hurricane Protection Levee in Terrebonne Parish does not provide protection for several communities, including: Grand Caillou, Cocodrie, Dulac, Isle de Jean Charles, and portions of Bayou Dularge and Point-au-Chenes. Located outside of the levee system, these areas could see more storm surge than those inside the system.

Numerous hurricanes and tropical storms have impacted the parish. The table on the following page lists disaster declarations in the parish from 1965 to 2013.

Year of Declaration Date	Title	Disaster Number
1965	HURRICANE BETSY	208
1971	HURRICANE EDITH	315
1973	SEVERE STORMS & FLOODING	374
1974	HURRICANE CARMEN	448
1980	SEVERE STORMS & FLOODING	616
1985	HURRICANE JUAN	752
1991	SEVERE STORMS & FLOODING	902
	SEVERE STORMS, TORNADOES & FLOODING	904
1992	HURRICANE ANDREW	956
1995	SEVERE STORMS AND FLOODING	1049
1998	HURRICANE GEORGES/T'S FRANCES	1246
2001	TROPICAL STORM ALLISON	1380
2002	HURRICANE LILI	1437
	TROPICAL STORM ISIDORE	1435
2003	LOSS OF SPACE SHUTTLE COLUMBIA	3172
2004	HURRICANE IVAN	1548
2005	HURRICANE KATRINA	1603
		3212
	HURRICANE RITA	3260
	HURRICANE RITA	1607
2008	HURRICANE GUSTAV	3289
	HURRICANE GUSTAV	1786
	HURRICANE IKE	1792
2011	FLOODING	3322
		4015
	TROPICAL STORM LEE	4041
2012	HURRICANE ISAAC	4080
	TROPICAL STORM ISAAC	3347
2016	FLOODING	3376
2017	TROPICAL STORM NATE	3392

### Vulnerability to Flooding

This section highlights those areas in Terrebonne Parish that have the greatest potential to be involved in a flooding incident.

- **Forced Drainage Areas** – Those areas of the Parish that utilize mechanical pumps (diesel or electric) to remove rainfall from the drainage ways into natural or manmade canals outside of the area. These areas are susceptible to rainfall events that exceed the engineered storage and pumping capacity of the drainage area, abnormal high tides caused by winds from the south and southeast, and from the inundation of water from storm surge.
- **Gravity Drainage Areas** – Those areas of the Parish that utilize a system of drainage canals that flow naturally or have been dredged to a slope that allows for water to flow without the use of

mechanical pumps. These areas are susceptible to rainfall events that exceed the engineered storage capacity of the drainage area, abnormal high tides caused by winds from the south and southeast, and from the inundation of water from storm surge.

- Natural and Manmade Waterways – Those areas that are adjacent to natural and manmade waterways that normally help facilitate drainage of the Parish from gravity and forced drainage systems. These systems usually accept drainage from surrounding Parishes during rainfall events along with drainage from the systems located in Terrebonne Parish. It is possible for these waterways to overflow their banks and cause flooding to public and private infrastructure along their banks. The introduction of storm surge during tropical storm events can cause water to enter these waterways from the south and cause flooding.
- Parishwide Flooding – Parishwide flooding could be caused by a large storm surge event from a tropical system. Communities located on the coastline of the Gulf of Mexico have experienced storm surges from major hurricanes in excess of 20 feet. SLOSH models have indicated that a Category 5 hurricane moving slowly to the NNE and making landfall approximately 30 miles to the West of Terrebonne Parish could inundate the entire Parish with flood waters.

The amount and extent of damage caused by any flood depends on several variables. These include: how much area is flooded, the height of flooding, the velocity of flow, the rate of rise, sediment and debris carried, the duration of flooding, and the effectiveness of flood reduction efforts. The potential for destruction from large floods is magnified because most people do not recognize and/or accept the potential hazard. Large floods are more frequent than most suspect. Ten and 50 year floods may sustain elevations that are only slightly less than the 100-year flood. Unforeseen debris blockages (trees, trash, etc.), mechanical failure or levee failure may cause unexpected flood levels from minor events. The 10, 50, 100, and 500 year floods have a 10%, 2%, 1%, and 0.2% chance respectively, of being equaled or exceeded during any year.

### III. STANDARD OPERATING GUIDELINES FOR FLOOD EVENTS

This section includes information on how the parish responds to flooding events.

#### **General Flooding**

The Terrebonne Parish Office of Homeland Security and Emergency Preparedness will serve as the 24-hour contact point for notification of all flooding incidents. Even though the office is not staffed on a 24-hour basis, the telephone system is forwarded to the Houma Police Department after hours. Upon notification of flooding, the Houma Police Department contacts the person on call for the Office of Homeland Security and Emergency Preparedness.

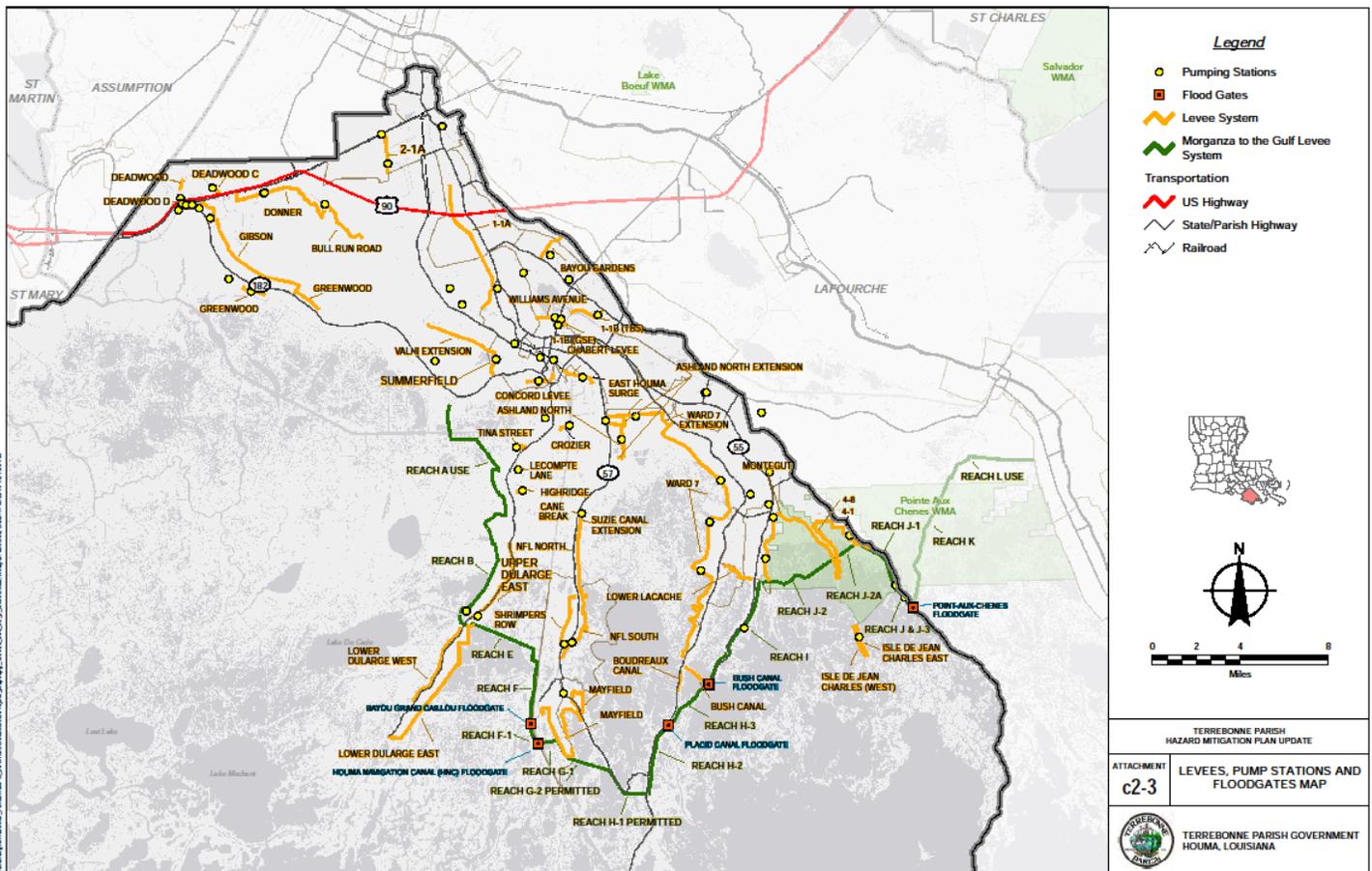
Upon the issuance of a severe weather statement for Terrebonne Parish, Office of Homeland Security and Emergency Preparedness personnel begin monitoring the National Weather Service - Slidell, LA web site for indications of flood advisories and to monitor rainfall rates.

The National Weather Service office in Slidell, LA issues coastal flood watches and warnings, urban flood watches and warnings, flash flood watches and flash flood warnings.

- Coastal Flood Watches – Issued when winds generated from tropical storms and hurricanes or intense offshore low pressure systems may drive coastal waters inland and cause minor or significant flooding
- Flash Flood or Flood Watch – Issued when flash flooding or flooding is possible within the designated watch area. Be alert
- Flash Flood or Flood Warning – Flash flooding or flooding has been reported or is imminent. Take necessary precautions immediately.
- Urban and Small Stream Advisory – Flooding of small streams, streets and low lying areas, such as railroad underpasses and urban storm drains is occurring.
- Flash Flood or Flood Statement – Follow-up information regarding a flash flood/flood event.
- Watches and Warnings – will be disseminated by the standard procedures: NOAA Weather Radio, NOAA Weather Wire and via email and text messaging by NOAA. As warnings and watches are issued by the NWS in Slidell via email, the warnings and watches are automatically emailed to local officials and Parish department heads via an email from the Parish's email server.

## Terrebonne Parish Flood Response Plan Emergency Support Function 3 – Appendix 4

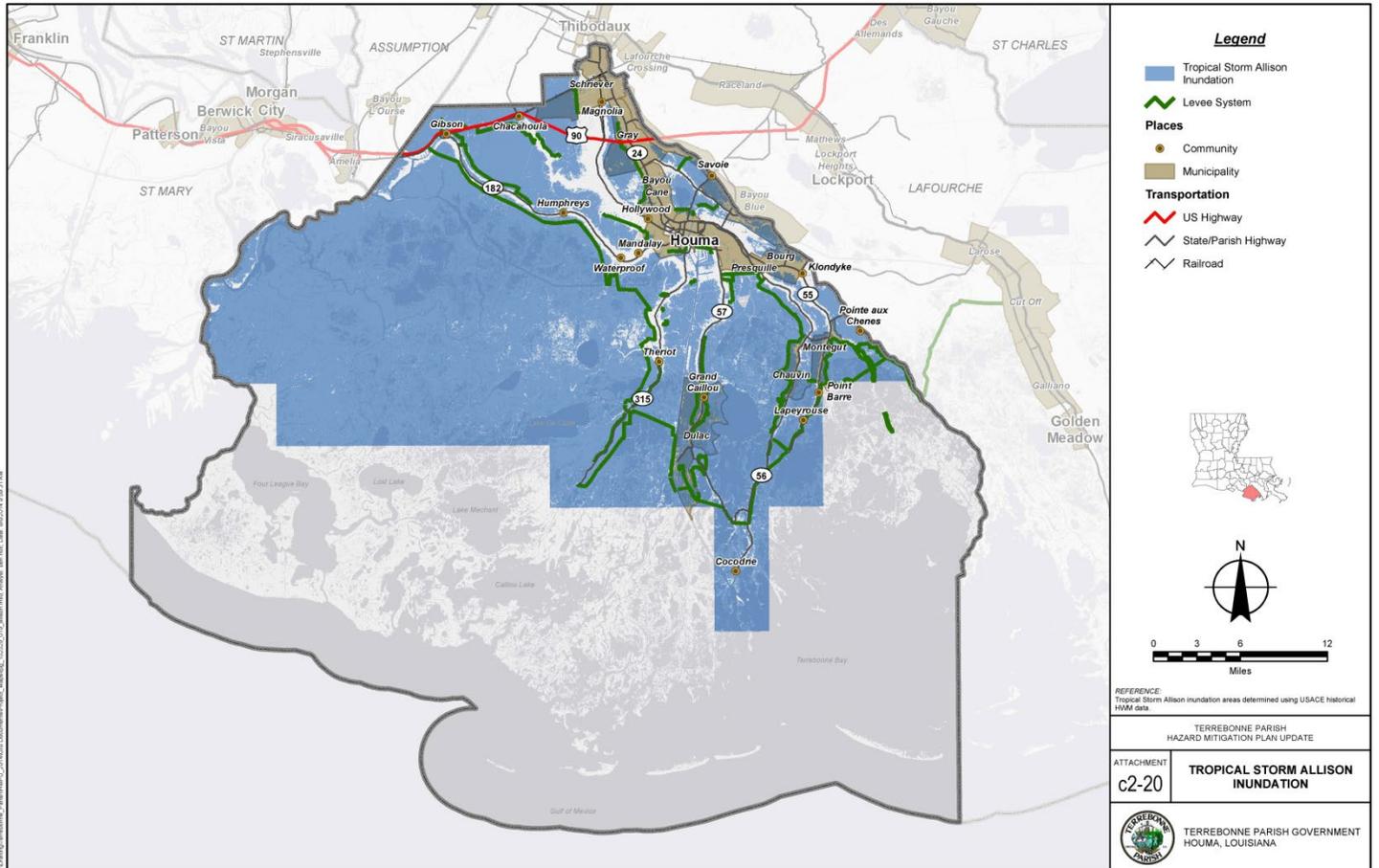
When the Terrebonne Parish Office of Homeland Security and Emergency Preparedness receive reports of flooding, the emergency operations center will be activated to the level required to respond to the flooding event. Activation of the emergency operations center may include the assembly of the required Emergency Support Function managers required to respond to the flooding event. The response to the flood event will correspond to one of two scenarios: extreme precipitation (historic storm: Tropical Storm Allison), and storm surge (historic storm: Hurricane Ike). There are 70 pump stations in the Parish, 27 of which have back up generators and telemetry data. Emergency officials use this data to monitor flood levels across the Parish. The pump stations are located in the upper part of the parish, in Gray, Schriever, and Bayou Cane, throughout the City of Houma, and down the 5 bayous out into the coast.



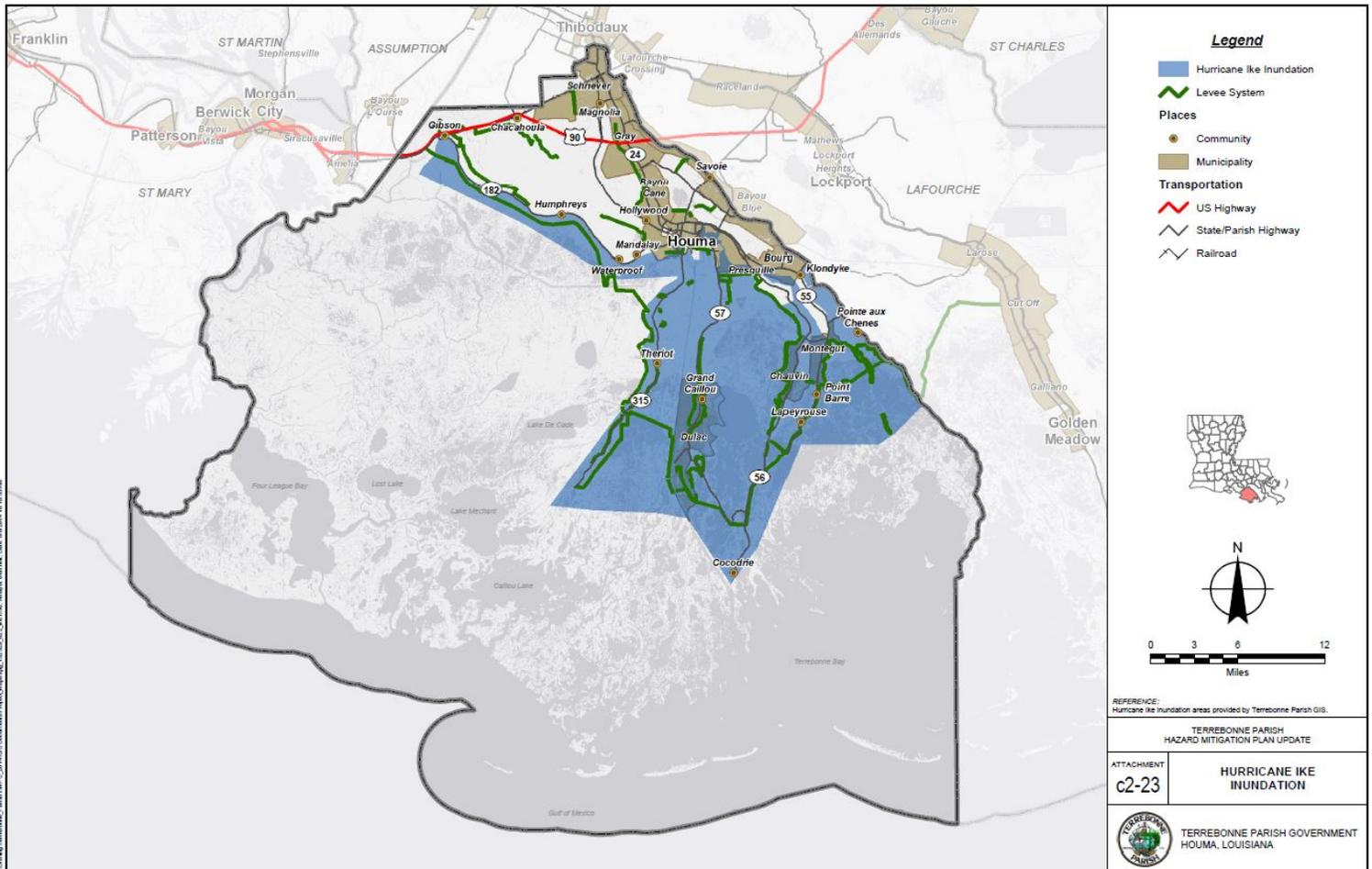
As Terrebonne Parish is coastal, this Flood Response Plan uses two scenarios for flood response planning. The first scenario is based upon historic flooding from Tropical Storm Allison, which was a storm with extreme precipitation, and therefore resulted in coastal tidal flooding. The second scenario references the historic storm surge caused by Hurricane Ike, which resulted in storm surge and flooding in much of the low lying areas of the parish.

Terrebonne Parish Flood Response Plan  
Emergency Support Function 3 – Appendix 4

Scenario 1– Extreme Precipitation (Tropical Storm Allison)



*Scenario 2 – Storm Surge (Hurricane Ike)*



IV. FLOOD RESPONSE

The Terrebonne Parish Emergency Operations Plan will be utilized upon activation of the emergency operations center. As stated in the plan, the Incident Command System (ICS) will be used in responding to flood events. The ICS is a management tool that provides a flexible structure for response to emergency situations. It allows local, state, federal and private entities to be integrated under a single command authority.

Flooding events occurring in the Parish that require the activation of the emergency operations center will be under the command of the Director of the Office of Homeland Security and Emergency Preparedness or his designee. The emergency operations center is located at 101 Government Street in Gray.

The first emergency responder at the scene is responsible for evaluating the situation and reporting to their respective dispatch center. This will most likely be personnel from the Terrebonne Parish Sheriff's Office or the Houma Police Department. Dispatchers at each agency will report findings to the person on call for the Terrebonne Parish Office of Homeland Security and Emergency Preparedness.

Based on the findings of the first emergency responder and other available information, a Declaration of Emergency may be declared in the Parish by the Parish President. Notification to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) will be conducted as soon as possible to advise of the present situation in the Parish

Upon notification of flooding, the Office of Homeland Security and Emergency Preparedness will notify the Parish's Public Works Department, Drainage and Road Division. The Public Works department will maintain essential facilities of sewerage and drainage structures. The Terrebonne Levee and Conservation District will maintain essential facilities of the Morganza to the Gulf levee system and all associated levees, gates, and water control structures.

Public warning may be accomplished through a variety of means. These include Emergency Alert System messages, NOAA Weather Radio, television and radio news services, emergency vehicles with PA systems or the Everbridge notification system. In some situations, door-to-door contacts may be made. The National Weather Service uses a multi-tier concept, including flood watches and warnings, to increase public awareness and promote a proper response.

The Parish, with the assistance of the American Red Cross, will establish shelters for evacuees, as required.

The Parish's Public Works Department will be the branch manager for operations of the flooding event. The incident commander will determine the extent of flooding and an estimated number of people affected with the assistance of the Parish's engineering department or utility department GIS coordinator.

The incident commander will establish a command post if the situation warrants. This command post may be a remote location such as a fire station or other public use building suitable for use as a command post. The command post will be identified by a green flashing light, a fluorescent orange flag or traffic cone. Other ICS features will be established as required.

All initial emergency communications will be conducted on the Parish's 700 MHz, Interoperability radio system on talk group: TP EVENT 1. TP EVENT 1 will be used to communicate between different agencies responding to the event. Specific department to department communications should be conducted on their respective talk groups or on TPGOV 1, TPGOV 2 or TPGOV 3. The emergency operations center will continuously monitor talk group OHSEP 1, which should be used by all responding agencies to contact the emergency operations center or the Office of Homeland Security and Emergency Preparedness. Specific flood emergency communications talk groups will be established at the time of the incident. All communications between organizational elements at an incident should be in plain English. No codes should be used and communications should be confined to essential messages.

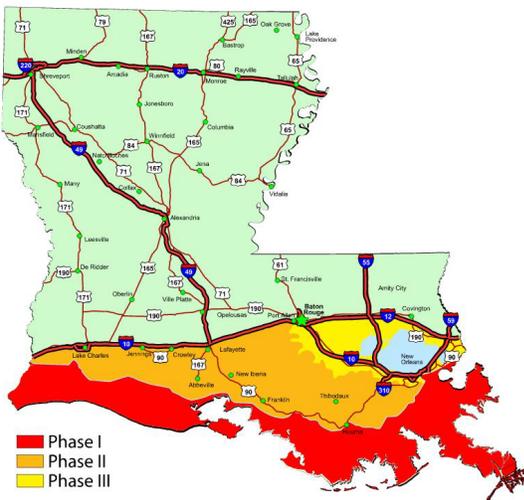
The National Weather Service will be the only official source for flood crest information and weather forecast. Officials from other agencies may be consulted concerning the role of their agency during a flood, but predicting or forecasting probabilities will be the sole responsibility of the NWS. Staff gauges located in Terrebonne Parish and operated by the USGS or the USCOE will be monitored to determine water levels in those waterways that have gauges.

Depending upon the extent of the incident, protection strategies may include evacuation, sheltering-in-place, sandbagging or flood proofing of structures, and protection of water or food supplies.

Evacuation will be managed by Emergency Support Function (ESF) 6 with the Parish’s Department of Housing and Human Services as the primary agency and all other agencies as listed in the Parish’s Emergency Operations Plan as secondary support agencies

## EVACUATION

During a threat of a hurricane, a phased evacuation will be based on geographic location and time in which tropical storm winds are forecasted to reach the affected areas.



### PHASE I

50 hours before onset of tropical storm winds. Includes areas south of the Intracoastal Waterway. These areas are outside any levee protection system and are vulnerable to Category 1 and 2 storms. During Phase I, there are no route restrictions.

### PHASE II

40 hours before onset of tropical storm winds. Includes areas south of the Mississippi River which are levee protected but remain vulnerable to Category 2 or higher storms. During Phase II, there are no route restrictions.

### PHASE III

30 hours before onset of tropical storm winds. Includes areas on the East Bank of the Mississippi River in the New Orleans Metropolitan Area which are within levee protection system but remain vulnerable to a slow-moving Category 3 or any Category 4 or 5 storm. During Phase III, certain routes will be directed and the Contraflow Plan implemented.

Terrebonne Parish has 6 evacuation zones. In the event of Scenario 1, or extreme precipitation, Zone 1 is evacuated to protect residents from tidal flooding. In the event of potential storm surge, Zones 1, 2 and 3 could be evacuated, depending on the predicted surge. TOHSEP stays in contact with the National Weather Service and GOHSEP during these events through twice daily updates, in order to understand the predicted impacts. The Parish also continuously monitors telemetry data from the 27 pump stations to make decisions on what areas to evacuate. In addition, the Department of Health and Hospitals keeps a list of special needs residents and will reach out to them in the event of an evacuation.



used are:

- LEVEL IV – Normal operations are ongoing. Terrebonne OHSEP staffing is in accordance with authorized agency manning levels.
- LEVEL III – Events involve a potential or actual threat to the safety and welfare of the people in a threatened area(s). The Parish Office of Homeland Security and Emergency Preparedness is actively monitoring the situation. The Parish EOC may be activated on a 12- hour or 24- hour basis with selected ESF's by functional branch (corresponds with the extreme rainfall event).
- LEVEL II – Events are in progress or have occurred which involve an imminent or actual major impact on the safety of the people in a stricken area(s). The EOC is activated for 24 hour operation and staffed by Terrebonne OHSEP personnel and may include selected staffing from the Parish, ESF's, state, federal and volunteer agencies. This status is maintained and the situation monitored closely until conditions escalate or de-escalate (corresponds with the potential storm surge event).
- LEVEL I – Events are in progress which continue previously declared action levels and require response activities. The EOC is fully activated for 24-hour operations. All parish, ESF's, state, federal and volunteer agencies report to the EOC as requested for 24-hour operations. This status will be maintained until the threat is over and the emergency is terminated. As imminent danger is reduced, operations will be initiated for the return of the stricken area(s) to pre-disaster status (corresponds with the potential storm surge event).

A public information officer (PIO) will provide emergency information to the media and the public. The Incident Commander and/or EOC staff will provide information to the PIO to facilitate the timely flow of news and to assist in rumor control. In response to a large flood event, a Joint Information Center (JIC) may be activated.

If the magnitude of the event exceeds local capabilities, request will be made to GOHSEP for additional resources. Existing mutual aid agreements with Parishes in Region 3 will also be utilized.

## V. METHODS FOR ALERTING THE PUBLIC

In the event of an emergency requiring mass notification to the public, the following means of communication may be used.

- National Weather Service
- NOAA Weather Radio
- Emergency Alert System (EAS)
- Television and Radio Media
- Cable Television Override
- Vehicles with PA Systems
- Door-to-Door
- Everbridge Notification System
- TPCG Web Page
- Social Networks – Facebook, Instagram, and Twitter

National Weather Service (NWS) – The NWS Weather Warning Program uses a multi-tier concept to increase public awareness and promote a proper response. The multi-tier concept use the following terms:

- **OUTLOOK** - Public statement issued by the NWS on either a seasonal basis, to indicate the potential for flooding from the Mississippi; or on an event basis, to alert the public that conditions are adequate for flooding. It is usually issued with greater than 36 hours lead-time.
- **WATCH** – Public statement issued by the NWS to indicate that there is a risk of a hazardous weather or hydrologic event occurring. The occurrence, location, and/or timing is not certain. It is intended to give enough lead-time so those who need to activate their plan have time to do so.
- **WARNING/ADVISORY** – These terms are issued when a hazardous event is occurring, is imminent, or has a very high probability of occurrence. A Warning is used for conditions posing a threat to life or property. Advisories are for less serious conditions that cause significant inconvenience and, if caution is not exercised, could lead to situations that may threaten life and/or property.
- The NWS can also issue a Civil Emergency Message for any emergency situation requiring public warning. Dissemination method of the NWS include: NOAA Weather Wire System, NOAA Weather Radio, and AP Wire Service.

### **Emergency Alert System (EAS)**

The Emergency Alert System exists to furnish an expedited means of providing real time communications to the public in the event of war; threat of war; or grave national, regional, or local crisis. An emergency system such as EAS is authorized by Title 47 U.S.C. 151.154 (I) and (o) and 303 (r); Chapter 1 Part 73 Subpart G, Federal Communications Commission Rules and Regulations, and pertains to day-to-day emergency operations. The EAS is tested annually during the Emergency Operations Plan evaluation.

**Purpose:** The purpose of EAS is to provide real time communication, information, direction and instruction in the event of an emergency requiring public action.

**Activation:** At the request of authorized public officials, EAS may be activated. Activation of the EAS by public officials within Terrebonne Parish should be through the Office of Homeland Security and Emergency Preparedness.

- **Television and Radio Media** – The television and radio media may be contacted directly and requested to air messages to alert the public of emergency situations.
- **Cable Television Override** – Charter and Comcast Cable systems in Terrebonne Parish both offer cable override to broadcast emergency messages over the cable system, which will be broadcasted on every cable subscriber's television.
- **Vehicles with PA Systems / Door-to-Door** – Law enforcement, fire, or other emergency personnel may warn the public by driving through the designated area in vehicles equipped with loudspeakers, or by going door-to-door, or by aircraft equipped with loudspeakers. In some cases members of Neighborhood Watch programs or Amateur Radio Operators may assist emergency

responders. The warning message delivered should include actions to be taken by the public, any special instructions, and how to obtain more information.

- Everbridge Notification System – This “reverse 911” system will notify residents by telephone, text messaging or email and deliver pertinent information regarding the event. The warning message delivered should include actions to be taken by the public, any special instructions, and how to obtain more information.
- TPCG Web Page – The Terrebonne Parish Consolidated Government’s Web Page will be utilized to supply pertinent information regarding flooding events and other emergencies.
- Social Networks – Facebook/Instagram/Twitter – Social networks on the internet will be utilized to send messages to computers, PDA’s and mobile phones.