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# GLOSSARY

**Backup Generators:** Emergency power systems designed to provide power during outages to keep critical facilities and services operating.

**Buyout Programs:** Government-funded programs that purchase properties or assets from owners to reduce future flood risk.

**CodeRED:** A mass notification system used to send emergency alerts and important information to residents.

**Critical Infrastructure:** Essential facilities and systems that are vital to public safety such as hospitals, roads and fire departments.

**Dams:** Structures that are built across rivers or streams to store and control water.

**Debris Removal Contracts:** Agreements made proactively or post-disaster by local, state, or federal entities (such as FEMA) with contractors to clear public rights-of-way, vegetative storm waste, and wreckage after hurricanes, floods, or tornadoes.

**Disaster Events Records:** Historical documentation and data of past disasters or emergency incidents that have affected the county.

**Drainage Districts:** Special-purpose districts established to own and maintain drainage infrastructure within their jurisdictions. After flood disasters, districts may remove debris and sediment within channels to restore conveyance.

**DPS –** Texas Department of Public Safety

**EAP (Emergency Action Plan):** A written plan that outlines procedures and responsibilities for responding to emergencies.

**EMS:** Emergency medical services and emergency responders who provide rapid pre-hospital medical care and transport for people with critical injuries and illnesses.

**EOC (Emergency Operations Center):** A central location where emergency officials coordinate response and recovery activities during disasters.

**Evacuation Orders:** Official instructions from the government directing residents to leave an area due to a threat to life or property.

**FIP (Flood Insurance Program):** Programs that provide flood insurance coverage to property owners, typically through the National Flood Insurance Program (NFIP).

**First Aid Distribution:** The delivery or distribution of medical supplies and resources to affected populations after or during a disaster.

**Flood Damage Assessment:** The evaluation of flood-impacted homes, businesses, and public facilities to determine losses and recovery needs.

**Flood Damage Assessment Teams:** Teams employed by government agencies to perform specific post-disaster roles and responsibilities. These teams are trained to deploy following emergency events.

**Flood Mitigation:** The implementation of actions, including both structural and non-structural solutions, to reduce flood risk and protect against the loss of life and property.

**Flood Preparedness:** Actions, aside from mitigation, that are taken before flood events to prepare for flood activities.

**Flood Preparation Team:** A team employed by government agencies to perform specific roles and responsibilities before and during a flood emergency, including monitoring conditions, clearing drainage systems, staging resources, and supporting emergency response coordination.

**Flood Recovery:** Actions taken after a flood event involving repairs or other actions necessary to return to pre-event conditions.

**Flood Response:** Actions taken during and in the immediate aftermath of a flood event.

**Flood Shelters:** Temporary housing facilities that provide resources for individuals displaced by disasters.

**Food Distribution:** The process of providing food supplies to affected residents during and after a disaster.

**H-GAC:** The Houston-Galveston Area Council is a regional organization that supports coordination among local governments, primarily cities and counties, and provides cooperative planning, coordination, and technical assistance on issues of mutual concern across jurisdictional lines.

**High Flood Areas:** Locations that have a higher likelihood of flooding due to low elevation, proximity to water bodies or poor drainage.

**High Water Vehicles:** Specialized vehicles designed to travel through deep or flooded water and assist with evacuations and rescues during flooding.

**HMP (Hazard Mitigation Plan):** A plan that identifies hazards and risks in an area and outlines actions to reduce future damage from disasters.

**Housing Solutions:** Temporary or permanent housing assistance programs for residents displaced by disasters.

**Levees:** Raised structures built along waterways to help prevent floodwater from reaching developed areas.

**Public Hotline:** A dedicated phone number that the public can call to receive information or request assistance during an emergency or disaster.

**Road Closure:** The temporary or permanent restriction of traffic on a road due to flooding, accidents, construction, severe weather, or other hazards.

**Scripted Alerts:** Pre-made emergency messages designed to warn and inform residents about an emergency.

**TDEM:** The Texas Division of Emergency Management is the state agency charged with coordinating state and local responses to natural disasters and other emergencies in Texas.

**TWDB:** Texas Water Development Board

# CHAPTER 7. FLOOD RESPONSE INFORMATION AND ACTIVITIES

The overarching goal of all RFPs must be "to protect against the loss of life and property" as set forth in the Guidance Principles, 31 TAC §362.3. This includes the need to:

1. Identify and reduce the risk and impact to life and property that already exists, and
2. Avoid increasing or creating new flood risk by addressing future development within the areas known to have existing or future flood risk.

The San Jacinto Regional Flood Planning Group was tasked with summarizing existing flood response and recovery activities within the region. FEMA defines four phases of emergency management: mitigation, preparedness, response, and recovery. This chapter will only consider and summarize the last three flood activities. Research on this subset of activities focused on publicly available information and expanded efforts of Chapter 7 of the first cycle of the Region 6 San Jacinto Regional Flood Plan.

Several types of flooding impact residents and communities within the San Jacinto Region, ranging from tropical storms that make landfall from the Gulf of Mexico to frontal thunderstorms.

- Coastal flooding may occur due to an occurrence such as waves, tide, storm surge, or heavy rainfall from tropical storms. Coastal flooding tends to be the most extreme when the storm surge is high. Storm surge is an abnormal rise of water generated by the pressure and wind of a large storm, over and above the predicted astronomical tides. Coastal flooding may also occur due to higher than average (king) tides or tsunamis. Notable coastal events in recent years include Tropical Storm Allison (2001), Hurricane Ike (2008), Hurricane Harvey (2017), Tropical Storm Imelda (2019), and Hurricane Beryl (2024).
- Riverine flooding occurs when excess rainfall within a watershed causes a riverbank to overtop. This rainfall can be caused by both frontal thunderstorms and coastal storm effects. Overtopping then allows water to spread onto floodplains.
- Urban or pluvial flooding occurs independently of river flooding when excessive rainfall overwhelms internal drainage systems, such as storm sewers, ditches, or overland sheet flow paths. A common example occurs when the drainage system is overwhelmed and excess water floods streets.
- Compound flooding occurs when multiple types of flooding occur at the same time.

Emergency preparedness is necessary for each of these flooding scenarios to assist communities and people in disaster response. There are four phases in emergency management as shown in **Figure 7-1**.


FIGURE 7-1: THE FOUR PHASES OF EMERGENCY MANAGEMENT

- **Flood Mitigation:** The implementation of both structural and non-structural solutions, to reduce flood risk and protect against the loss of life and property.

- **Flood Preparedness:** Actions, aside from mitigation, that are taken before flood events to prepare for flood response.
- **Flood Response:** Actions taken during and in the immediate aftermath of a flood event.
- **Flood Recovery:** Actions taken after a flood event involving repairs or other actions necessary to return to pre-event conditions.

Flood preparedness, response, and recovery require coordination among multiple community, state, and federal agencies. At the local level, cities and municipalities are responsible for emergency preparedness, immediate flood response, and later disaster recovery. At the county level, counties are expected to provide the public with critical information and perform flood response activities for their constituents.

Flood mitigation is the most important step in flood plan development, and efforts to identify potential flood mitigation strategies, evaluations, and projects for the San Jacinto region are described in Chapters 4 and 5. When implemented, these studies and projects will reduce flood risk for the region and, depending on the project, may also improve communication of the risk to the public. Flood preparedness, response, and recovery are the focus of this chapter.

The San Jacinto Region includes all or portions of 11 counties: Brazoria, Chambers, Fort Bend, Galveston, Grimes, Harris, Liberty, Montgomery, San Jacinto, Walker, and Waller. Research for this chapter and its subsequent sections was conducted at the county level using publicly available information. In several instances, counties did not have publicly available information regarding specific emergency response activities. However, this does not indicate that emergency response measures are not in place; rather, it indicates that the information was not publicly available. Data consolidated within this report is representative of readily accessible and published information on emergency management phases.

## Chapter 7.A. Flood Preparedness

FEMA defines flood preparedness as actions, aside from mitigation, that are taken before flood events to prepare for flood response activities. Preparation may occur minutes, days, or years prior to an event and range from emergency plan development to public education.

Entities throughout the region have differing approaches to emergency response based on their existing capabilities and responsibilities as well as individual community needs. Each entity has methods of communicating flood preparedness awareness to the public, responding to flood emergencies, and coordinating recovery activities.

The following actions or activities were considered key to the flood preparedness category: *Hazard Mitigation Plans, Emergency Action Plans, National Flood Insurance Program (NFIP) participation, Emergency Alerts, Evacuation Routes, Identified High Flood Risk Areas, Flood Gage Locations, Backup Generators, Critical Structures Lists, Dams and Levees Lists, and Flood Preparation Teams*. A glossary of these terms and their definitions is provided at the beginning of this chapter.

## 7.A.1. Flood Preparedness in the San Jacinto Region

Research found that flood preparedness activities were consistently available across nearly all counties. One of the primary drivers of flood preparedness is developing emergency management or hazard mitigation plans. Hazard Mitigation Plans examine the risk and impact of natural disasters and provide strategies for reducing impacts to people and property. Hazard Mitigation Plans are required by FEMA to be updated every five years to be eligible for federal disaster funds. In addition, entities often perform tabletop exercises which are informal discussion-based sessions where teams practice roles and responsibilities during an emergency by walking through example scenarios. Many agencies conduct flood response scenarios with various departments present annually. Available Hazard Mitigation Plans for each county were compiled into **Table 7-1**.

TABLE 7-1: COUNTY HAZARD MITIGATION PLANS

| County | Does the County have an Active Hazard Mitigation Plan? | Year HMP was Last Updated | Web link to Hazard Mitigation Plans |
|---|---|---|---|
| **Brazoria** | Yes | 2023 | Brazoria County Hazard Mitigation Plan |
| **Chambers** | Yes | 2024 | Chambers County 2024 Hazard Mitigation Plan Update |
| **Fort Bend** | Yes | 2023 | Fort Bend County Hazard Mitigation Action Plan 2023 |
| **Galveston** | Yes | -- | Not publicly listed |
| **Grimes** | Yes | 2023 | Hazard Mitigation Action Plan |
| **Harris** | Yes | 2020 | Harris County Multi-Hazard Mitigation Action Plan |
| **Liberty** | Yes | 2025 | Liberty County Hazard Mitigation Plan |
| **Montgomery** | Yes | -- | Not publicly listed |
| **San Jacinto** | Yes | -- | Not publicly listed |
| **Walker** | Yes | 2024 | Walker County Hazard Mitigation Plan |
| **Waller** | Yes | 2025 | Waller County Hazard Mitigation Action Plan Update |

Counties will often create emergency action plans that provide the process for responding to flooding events. An Emergency Management Plan is a course of action developed to mitigate the damage of potential events that could endanger an organization's ability to function. Such a plan includes measures that provide for the safety of the public, entity personnel and, if possible, property and facilities. These plans specify relevant roles and responsibilities as well as action items for agency personnel. They may also include action plans for high hazard or private dams. Some emergency plans are protected by law

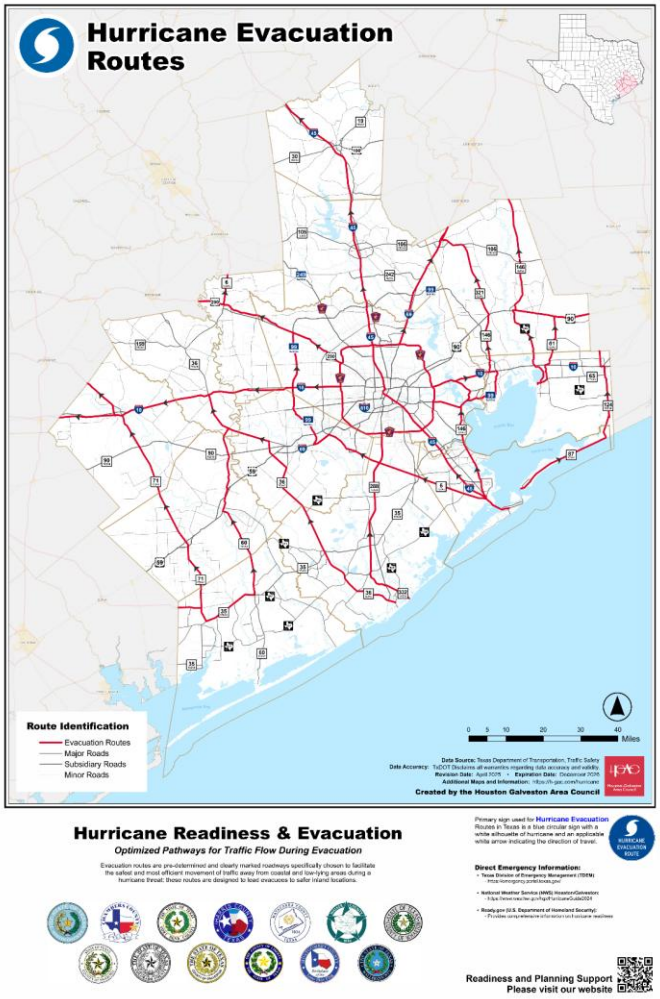
and are not available to the public. Of the eleven counties in the region, only Brazoria County had a publicly available emergency action plan.

Another indicator of flood preparedness is participation in the National Flood Insurance Program (NFIP). FEMA requires flood control measures and flood prevention standards to be included in local regulations and development codes for program participation. By doing so, residents qualify for federal flood insurance programs. As determined in Chapter 3, all eleven counties participate in the program.

In order to keep the public abreast of emergency situations, flood preparedness may include emergency notification systems. These systems may include CodeRED, Genasys, Regroup, AlertMCTX, or similar platforms. During an emergency, government agencies can send notifications to their residents regarding evacuation or shelter in place orders. All eleven counties offer emergency alert systems to their residents.

All counties provide public access to evacuation route information through county websites, regional hurricane evacuation maps, or preparedness guides. Many of these evacuation maps are available through the Houston-Galveston Area Council (HGAC), which covers much of the San Jacinto Region. The hurricane evacuation map for the 2026 season is shown in **Figure 7-2**.

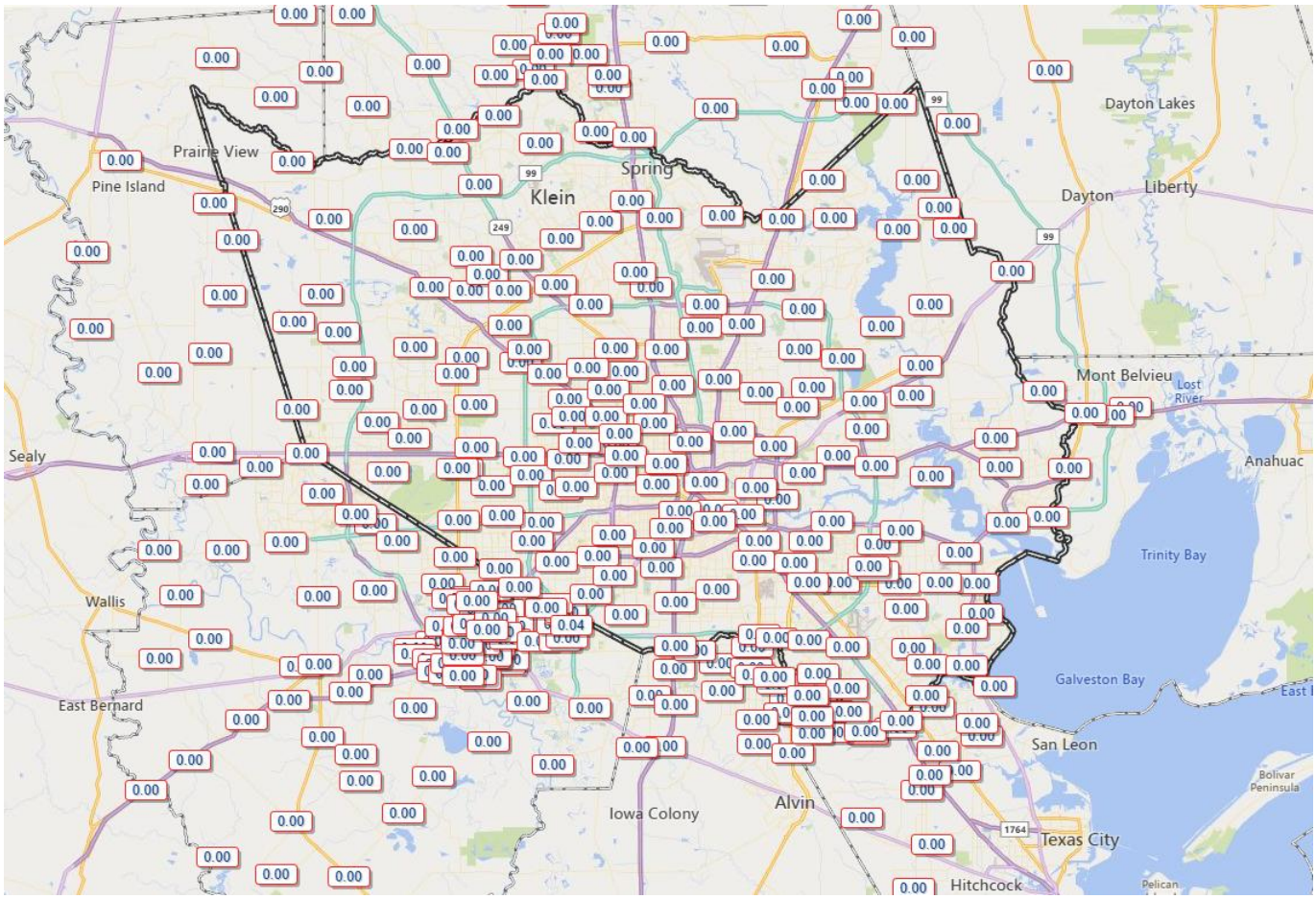
FIGURE 7-2: HGAC HURRICANE EVACUATION MAP (2026)



In an effort to be prepared for storm events, many counties will create a list of areas known to be at high flood risk. These areas tend to include areas such as low water crossings and areas of low elevation that are known to collect water during significant rain events. Of the eleven counties, six had publicly identified facing high flood risk areas (Brazoria, Fort Bend, Galveston, Grimes, Harris, and Montgomery). Other counties may have this information available internally. However, through the efforts detailed in Chapter 2, high flood risk areas were identified throughout the San Jacinto Region.

Likewise, most counties maintain a level of publicly accessible flood monitoring information through stream gauges, river gauges, or flood warning systems. Most of the counties in the San Jacinto Region (eight out of eleven) have flood gage websites where the public can monitor river levels. Harris County Flood Control District has the most extensive network of gages, some of which extend into neighboring counties, as shown in **Figure 7-3**. However, other entities, such as the United States Geological Survey, also provide gage networks that can be checked by both the public and government entities in an emergency.

FIGURE 7-3: HARRIS COUNTY FLOOD WARNING SYSTEM




Many counties will run programs for their residents to obtain backup generators for their homes in case of an emergency. These generators are often provided at low cost to qualifying residents. Fort Bend, Grimes, and Harris Counties all run such programs for their residents. Other counties may provide these programs as well, but public information was not available at the time of this report.

Counties often maintain inventories of critical structures and dams and levees. These areas are often areas of focus during a storm event. The Texas Water Development Board provided entities with ArcGIS locations of critical structures, dams, and levees in their region, which is available for both public and government use at: https://twdb-flood-planning-resources-twdb.hub.arcgis.com/.

During a storm event, many counties will send out Flood Preparation Teams. These teams will complete activities such as clearing ditches and clogged storm inlets, removing debris, and, if possible, draining basins and lakes in preparation for an increase in water levels. No county publicly identified dedicated flood preparation teams, suggesting that such functions may be managed internally by emergency management departments without public documentation.

When local communities do not have published plans, emergency preparedness data gaps can be supplemented at the state or federal level through other government agencies. The regional organization H-GAC serves as a resource to local governments, including cities and counties. H-GAC provides flood data, flood planning resources, and flood management information. At the state level, the Texas Division of Emergency Management (TDEM) and TWDB provide planning assistance before, during, and after flood disasters. TDEM has six regions; the San Jacinto Region is located in Region 2. These regions assist with emergency preparedness activities and emergency response operations. Preparedness roles include assisting local officials with emergency planning, training, and exercises that develop emergency teams and support emergency facilities.

## 7.A.2. Flood Preparedness Summary

In summary, the review indicates that the counties have generally strong public-facing flood preparedness programs, particularly in the areas of emergency notification, evacuation planning, flood insurance participation, hazard mitigation planning, and flood monitoring. However, there is limited public availability of Emergency Action Plans, flood preparation team information, and certain operational preparedness resources. A summary of preparedness in the Region is presented in **Table 7-2**.

TABLE 7-2: FLOOD PREPAREDNESS SUMMARY

| County | Emergency Action Plan | Emergency Alerts Signup | Evacuation Routes | High Flood Risk Area List | Gage Data List | Back-up Generators |
|---|---|---|---|---|---|---|
| **Brazoria** | https://www.brazoriacountytx.gov/departments/emergency-management/downloadable-documents/emergency-action-plans | https://www.cityofbrazoria.org/202/Notifications#CivicReady | https://1537475.fs1.hubspotusercontent-na1.net/hubfs/1537475/About/Emergency%20Information/2025%20Disaster%20Guide.pdf | https://arcgis-web.brazoriacountytx.gov/portal/apps/webappviewer/index.html?id=de1e15797dac42e5941f888ea9198cc5 | https://www.brazoriacountytx.gov/departments/engineering/stream-gauges | Not publicly listed |

| County | Emergency Action Plan | Emergency Alerts Signup | Evacuation Routes | High Flood Risk Area List | Gage Data List | Back-up Generators |
|---|---|---|---|---|---|---|
| **Chambers** | Not publicly listed | https://www.co.chambers.tx.us/203/Emergency-Notification | https://chamberscountytx.gov/DocumentCenter/View/718/Evacuation-Routes-PDF | Not publicly listed | https://www.chamberscountytx.gov/520/Flood-Protection-Information | Not publicly listed |
| **Fort Bend** | Not publicly listed | https://www.fortbendcountytx.gov/government/departments/homeland-security-emergency-management/alerts-warnings | https://www.fortbendcountytx.gov/government/departments/homeland-security-emergency-management/hurricane-informationevacuation | https://www.fortbendcountytx.gov/government/departments/county-services/drainage-district/floodplain-map | https://www.fortbendcountytx.gov/government/departments/county-services/drainage-district/river-levels-rainfall-releases/river-level-gauges | 2025-03-19_Fort_Bend_County_And_Centerpoint_Energy_Strengthen_Disaster_Resiliency_With_Generator_Donation.pdf |
| **Galveston** | Not publicly listed | https://www.gcoem.org/library/stay-informed/notifications | https://www.galvestontx.gov/496/Hurricane-Evacuation | https://www.galvestontx.gov/925/Flood-Protection-Information | https://www.galvestontx.gov/925/Flood-Protection-Information | Not publicly listed |
| **Grimes** | Not publicly listed | https://grimescountytx.genasys.com/portal/en/register | https://www.txdot.gov/safety/severe-weather/hurricane-preparation.html | https://grimescountytexas.gov/floodplain_administrator | Not publicly listed | grimescountytexas.gov/admin/dm/public/DownloadFile/?fileid=23711 |
| **Harris** | Not publicly listed | https://www.readyharris.org/ | https://www.h-gac.com/getmedia/17fdf7eb-3c6d-41c1-9647-b4665e2e588a/2026-H-GAC-Hurricane-Evacuation-Map-Zip-Zones-Large | https://www.arcgis.com/home/item.html?id=da4cb5c49827404eb71e9bda218b6cb2#overview | https://www.hariscountyfws.org | All News Releases |

| County | Emergency Action Plan | Emergency Alerts Signup | Evacuation Routes | High Flood Risk Area List | Gage Data List | Back-up Generators |
|---|---|---|---|---|---|---|
| **Montgomery** | Not publicly listed | https://www.mctx.org/departments/departments_q_-_z/recover/alert_mctx.php | https://www.txdot.gov/content/dam/docs/division/trf/hurricane-preparation/houston.pdf | https://www.mctx.org/departments/departments_q_-_z/recover/the_area_and_risk.php | Not publicly listed | Not publicly listed |
| **San Jacinto** | Not publicly listed | https://sanjacinto.genasys.com/portal/en | https://www.txdot.gov/content/dam/docs/division/trf/hurricane-preparation/houston.pdf | Not publicly listed | https://water.noaa.gov/gauges/hmmt2 | Not publicly listed |
| **Walker** | Not publicly listed | https://walkerleader.com/2025/10/03/codered-helps-walker-county-residents-stay-alert/ | https://www.txdot.gov/content/dam/docs/division/trf/hurricane-preparation/houston.pdf | Not publicly listed | Not publicly listed | Not publicly listed |
| **Waller** | Not publicly listed | https://www.co.waller.tx.us/page/CodeRED | https://www.co.waller.tx.us/upload/page/0254/docs/2025-H-GAC-Hurricane-Preparedness-Guide.pdf | Not publicly listed | https://www.harriscountyfws.org/GageDetail/Index/43304?From=10/27/2025,%203:12%20PM&span=24%20Hours&r=14&v=undefined&selIdx=0 | Not publicly listed |

## Chapter 7.B. Flood Response

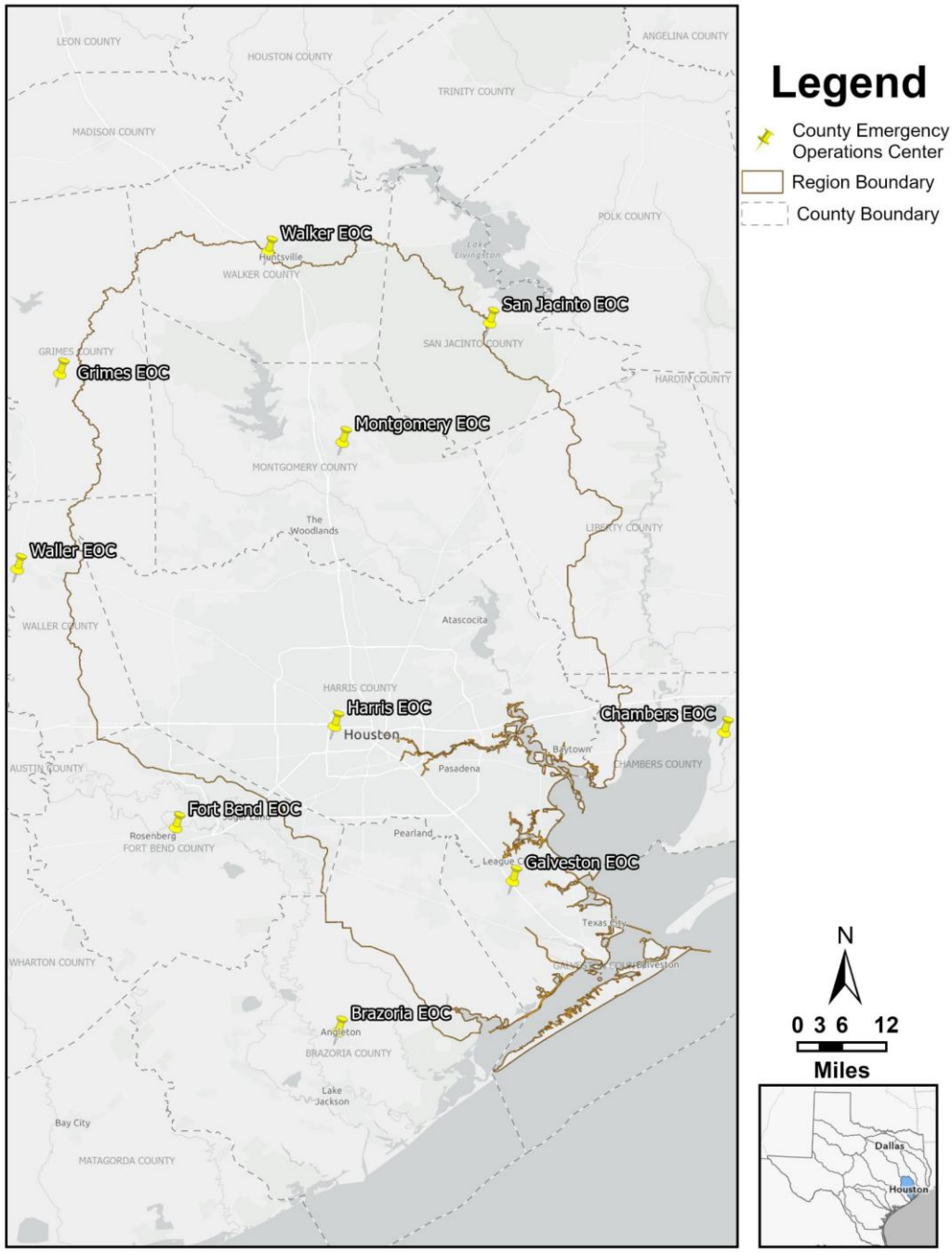
FEMA defines flood response as actions taken during and in the immediate aftermath of a flood event. Flood response actions occur during and after a storm event as floodwater rises and falls within the region. Response actions require cooperation among various agencies and residents of the region for successful coordination. Actions include public and interagency communication, alerts, and agency response.

The following actions or activities were considered key to the flood response category: *Emergency Operations Centers (EOCs), Evacuation Orders, Road Closure Data, High Water Vehicles, Flood Shelters, and Reverse 911 Notifications*. A glossary of these terms and their definitions is provided at the beginning of this chapter.

## 7.B.1. Flood Response in the San Jacinto Region

Research indicates that all counties maintain some level of publicly accessible flood response capability. One of the critical facilities required in an emergency is an emergency operations center (EOC). These facilities are locations where emergency personnel can be stationed and determine immediate responses in the aftermath of an event, whether it is flooding or otherwise. The facilities are often used during non-emergency times to practice emergency responses to various hazards. A map of EOCs in the region is provided in **Figure 7-4**.

FIGURE 7-4: EMERGENCY OPERATIONS CENTERS



Information regarding evacuation orders was widely available through county emergency management websites and public notification systems. These orders are often sent out during an emergency to notify the public when evacuations or shelter in place orders are warranted. Often, these notifications are sent to the public using a Reverse 911 notification system, as described in the Flood Preparedness discussion. Notifications are often also posted on municipality websites, social media pages, and broadcast over radio and news networks. All counties were determined to have websites that included information on evacuation orders.

In addition, all counties provide access to road closure information either through county GIS applications and dashboards or through the statewide platform maintained by the Texas Department of Transportation (https://drivetexas.org). Larger metropolitan counties such as Harris, Fort Bend, and Brazoria maintain dedicated online road closure and traffic monitoring systems that provide more localized information.

During flood emergencies, counties may use high-water vehicles for rescues. The availability of high-water rescue resources was moderately high. Publicly available information identified specialized flood rescue capabilities in several counties, including Brazoria County Rescue Team resources, Harris County Precinct 8 High Water Rescue, Galveston Fire Department high-water vehicles, Fort Bend County fire department assets, Montgomery County emergency response vehicles, and Grimes County rescue apparatus. Although the existence of these resources could be verified, detailed inventories, deployment capacities, and personnel training records were generally not publicly available. Counties such as Chambers, San Jacinto, and Walker did not publicly list dedicated high-water rescue vehicles, although local emergency responders may coordinate flood rescue operations when needed.

Information was reviewed for publicly available flood shelter resources. None of the counties maintained publicly available lists of designated flood shelters as standing resources. Shelter locations are typically activated and announced during specific disaster events through county emergency management agencies, the American Red Cross, or state emergency management partners. As a result, permanent shelter inventories were generally not available for review. Similarly, comprehensive information regarding the number and location of resource distribution centers, emergency supplies, and shelter capacities was not publicly available.

## 7.B.2. Flood Response Summary

In summary, the assessment found strong availability of public-facing flood response resources related to emergency communications, EOC operations, evacuation orders, and road closure notifications. Information regarding specialized rescue equipment and backup power systems was available for several counties but was not consistently documented across the region. The largest data gaps were associated with flood shelter locations, shelter capacities, and detailed inventories of high-water rescue assets and emergency response equipment. These findings suggest that while flood response coordination capabilities are well established throughout the region, much of the operational response information remains managed internally by local jurisdictions and is not routinely published for public access. A summary of flood response in the Region is presented in **Table 7-3**.

TABLE 7-3: FLOOD RESPONSE SUMMARY

| County | Emergency Operation Centers | Evacuation Orders | Road Closure Information | High Water Vehicles |
|---|---|---|---|---|
| **Brazoria** | Contact Us \| Brazoria County, TX | https://www.brazoriacountytx.gov/home/showpublisheddocument/15468/638955114512930000 | Brazoria County Road Closures | •Flood Rescue Unit \| bcrt<br>•https://gulfcoastrescuesquad.org/about-us |
| **Chambers** | Emergency Management \| Chambers County, TX | https://www.chamberscountytx.gov/203/Emergency-Notification | https://drivetexas.org/ | Not publicly listed |
| **Fort Bend** | Homeland Security & Emergency Management \| Fort Bend County | https://www.fortbendcountytx.gov/government/departments/homeland-security-emergency-management/alerts-warnings | https://gisportal.fortbendcountytx.gov/portal/apps/dashboards/c53fd5becf2a4a8a90be1761bf273a58 | Apparatus – Northeast Fort Bend County Fire Department |
| **Galveston** | Galveston County, TX \| Home Emergency Management | NOTIFICATIONS \| Galveston County, TX | https://www.galvestontx.gov/1183/Upcoming-Closures | Galveston Fire Department high-water vehicle video |
| **Grimes** | Emergency Management - Grimes County, TX | Register \| Registration Portal | https://drivetexas.org/ | GRIMES COUNTY GETS SWAT/RESCUE VEHICLE \| montgomery county police reporter |
| **Harris** | Emergency Management | Emergency Notification System sign up - Greater Harris County 9-1-1 Emergency Network | https://traffic.houstontranstar.org/layers/ | •Precinct 8 High Water Rescue<br>•https://www.constablepct4.com/high-water-rescue-section.html |
| **Montgomery** | Montgomery County Office of Homeland Security & Emergency Management - TGCRVOAD | Alert MCTX - Montgomery County Emergency Communication District | https://drivetexas.org/ | Station 91 - Montgomery County ESD1 |
| **San Jacinto** | San Jacinto County, Texas | San Jacinto County, Texas | https://drivetexas.org/ | Not publicly listed |

| County | Emergency Operation Centers | Evacuation Orders | Road Closure Information | High Water Vehicles |
|---|---|---|---|---|
| **Walker** | Walker County Office of Emergency Management / Walker County, TX | CodeRED Helps Walker County Residents Stay Alert - The Walker Leader | https://drivetexas.org/ | Not publicly listed |
| **Waller** | Emergency Management \| Waller, TX | CodeRed \| Waller County TX | https://drivetexas.org/ | Katy-area governments invest in emergency readiness 2 years after Hurricane Harvey |

# Chapter 7.C. Flood Recovery

FEMA defines flood recovery as actions taken after a flood event involving repairs or other actions necessary to return to pre-event conditions. Recovery from flood events can be a long process as homes, roads, and facilities are repaired and rebuilt. Recovery includes local agencies conducting damage assessments for both private and public structures, coordination with federal disaster relief agencies, and assistance to victims via temporary housing and information regarding recovery efforts.

The following actions or activities were considered key to the flood recovery category: *Flood Damage Assessment Teams, Debris Removal, Housing Solutions, Clothing Distribution Locations, First Aid Distribution Locations, Buyout Programs, and Disaster Event Records*. A glossary of these terms and their definitions is provided at the beginning of this chapter.

## 7.C.1. Flood Recovery in the San Jacinto Region

Data availability for flood recovery activities was considerably more limited than for flood preparedness and response activities. Publicly available information was generally concentrated on large-scale recovery programs and historical disaster documentation, while information regarding localized recovery assistance and assessment operations was largely absent.

Following a flood or other disaster, municipalities (often in partnership with state or federal agencies) will send teams out to conduct damage assessments for private and public structures. These teams will identify unsafe structures and roadways, as well as collect information for future planning efforts (such as high-water marks). No publicly available information identifying dedicated flood damage assessment teams was found for any of the counties reviewed. While post-disaster damage assessments are routinely conducted to support disaster declarations and recovery funding requests, the personnel, organizational structure, and operational procedures associated with these assessments are generally managed internally by local governments and are not publicly documented. This lack of publicly available information was consistent across all counties evaluated.

Following a disaster, municipalities will contract with companies for debris removal. Debris types can vary widely based on the disaster event and its impacts, but may include trees and brush, sediment, and

possibly housing materials if structures were impacted. Several counties, including Brazoria, Fort Bend, Galveston, Harris, and Waller, maintain publicly accessible procurement records, awarded contracts, or debris management plans that document debris removal operations following disaster events. These datasets are typically associated with federally funded recovery activities and therefore benefit from higher levels of public reporting and documentation.

As residents recover from the effects of a storm, they may require shelter, first aid, and distribution of food, clothing, and basic necessities. Research indicated that the availability of housing recovery programs was relatively limited. Publicly available housing assistance resources were identified primarily in Brazoria County through the Texas General Land Office Homeowner Assistance Program and in Harris and Fort Bend Counties through local disaster recovery and housing rehabilitation programs. No county in the San Jacinto Region had a publicly available database of aid distribution sites following a disaster. These recovery functions are often managed by nonprofit organizations, faith-based groups, volunteer organizations, and disaster relief agencies such as the American Red Cross, rather than through county-operated programs. As a result, these resources are rarely documented in a centralized or publicly accessible format and are typically established on an event-specific basis following a disaster.

Following a flood event, many communities offer buy-out programs to structures that are identified as Repetitive Loss (RL) or Severe Repetitive Loss (SRL). The process of identifying these structures and offering buyouts often takes a long time, but it does offer homeowners the opportunity to vacate a property that is likely to flood again. Due to the sensitivity of these programs, information was generally not publicly available at the county level. It should be noted that floodplain buyouts are a common long-term mitigation and recovery strategy in Texas. The absence of publicly accessible county-level buyout inventories limits the ability to assess the extent of voluntary property acquisition programs across the region.

Counties will also record disaster events as part of public record. These records are often contained within a County's Hazard Mitigation Plan. They can serve as a record of past events so that future preparations can be made in advance of another flood disaster. All of the counties have identified disaster event records which either live on their county website or within the Hazard Mitigation Plans.

## 7.C.2. Flood Recovery Summary

Flood recovery data availability is strongest for activities associated with federally funded recovery programs, including debris management, disaster declarations, and housing assistance initiatives. In contrast, information related to localized recovery operations, emergency relief distribution, and damage assessment activities is largely unavailable to the public. The absence of publicly accessible information regarding Flood Damage Assessment Teams, clothing assistance, and first aid distribution locations highlights a significant gap in centralized and transparent reporting of recovery resources. These findings suggest that while recovery activities are occurring at the local level, much of the operational and community assistance information remains decentralized among government agencies, nonprofit organizations, and volunteer groups, making comprehensive regional recovery assessments challenging. A summary of flood recovery in the Region is presented in **Table 7-4**.

TABLE 7-4: FLOOD RECOVERY SUMMARY

| County | Debris Removal Contracts | Housing Solutions | Disaster Event Records |
|---|---|---|---|
| **Brazoria** | Awarded Contracts \| Brazoria County, TX | Texas General Land Office (GLO) Homeowner Assistance Program (HAP) - Brazoria County Long Term Recovery | Microsoft Word - Brazoria County Impact Report - Final |
| **Chambers** | Not publicly listed | Not publicly listed | Located in the HMP |
| **Fort Bend** | 2025 Bid/RFP/RFQ Tabulations \| Fort Bend County | Housing Rehabilitation Program \| Fort Bend County | Fort Bend County, TX: 28 FEMA Disasters, incl. Hurricane |
| **Galveston** | DEBRIS MANAGEMENT AWARD | Not publicly listed | Galveston County, Texas FEMA Disaster History \| DisasterLookup.com |
| **Grimes** | Not publicly listed | Not publicly listed | Located in the HMP |
| **Harris** | Office of the County Engineer > Divisions > Disaster Recovery > Debris Management | Disaster Recovery \| Housing & Community Development | TS-Imelda-Flood-Report-Final.pdf Hurricane Ike 2008 |
| **Montgomery** | Not publicly listed | Not publicly listed | Past Declarations for Montgomery County |
| **San Jacinto** | Not publicly listed | Not publicly listed | San Jacinto County, Texas FEMA Disaster Declarations and Mitigation History |
| **Walker** | Not publicly listed | Not publicly listed | Located in the HMP |
| **Waller** | 071524 PUBLIC Packet.pdf | Not publicly listed | Located in the HMP |

# Chapter 7.D. Relevant Entities in the Region

Preparedness, response, and recovery involve a multitude of local communities, as well as state and federal agencies, each with different roles and responsibilities. Described below are the various contributing entities and partners.

## 7.D.1. Local Communities

Cities, or municipalities, are generally responsible for local response, recovery, and preparedness for flood disaster events. Response for cities includes emergency responders such as fire, police, and health/safety for alert and rescue during events. Public works departments manage utilities including operating back-up generators for water supply and sewerage treatment plants and their associated infrastructure, among other tasks. Road and maintenance crews monitor road conditions and close roadways to prevent vehicles from entering high water. City officials also update their citizens through social media posts and public alerts before, during and after events.

County governments provide public safety and justice services, facilitate elections for every level of government, build and maintain roads, bridges, and, in some cases, county airports, provide emergency management and health and safety services, collect property taxes for the county and sometimes for other taxing entities, issue vehicle registrations and transfers, and register voters. During flood events, counties provide the public with critical information, close flooded roadways, perform high-water rescues, and coordinate emergency operations.

The Houston-Galveston Area Council (H-GAC) is a regional organization that supports coordination among local governments, primarily cities and counties, and provides cooperative planning, coordination, and technical assistance on issues of mutual concern that cross jurisdictional lines. H-GAC serves as a resource for flood data, flood planning, and flood management information.

The Harris County Flood Control District is a special-purpose district created by the Texas Legislature and governed by the Harris County Commissioners Court. It is a government agency established to reduce the effects of flooding through capital improvement projects, channel maintenance, flood mapping, communication, regulations, and outreach. The District mobilizes the Flood Watch team during flood events. District personnel monitor the District's extensive network of rainfall and streamflow gauges to provide accurate information to local officials and the public. Personnel conduct visual surveys and collect physical streamflow data during flood events, when possible, to verify gauge information. District personnel also participate in the Harris County Emergency Operations Center, providing timely information to emergency management officials, the media, and the public. After flood events, the District is active in debris removal, emergency repairs, maintenance activities, and many other tasks.

Drainage districts are special-purpose districts established to own and maintain drainage infrastructure within their jurisdiction. Districts construct, improve, and maintain infrastructure as well as regulate development that discharges to their systems. After flood disasters, districts may remove debris and sediment within channels to restore conveyance.

Dams and levees are owned and operated by individuals, private and public organizations, and governmental entities. The responsibility for maintaining a safe dam or levee rests with the owner. Failure resulting in an uncontrolled release can have devastating effects on persons and property. Dam and levee owners are a critical part of the flood planning process to ensure a collaborative and cohesive plan.

## 7.D.2. State Agencies

The Texas Water Development Board (TWDB) leads the state's efforts in ensuring a secure water future for Texas and its citizens. The TWDB provides to the region planning assistance, data collection and dissemination, technical assistance, and financial assistance services before, during, and after flood disasters.

The Texas Division of Emergency Management (TDEM), a division of the Texas Department of Public Safety (DPS), is charged with coordinating state and local responses to natural disasters and other emergencies in Texas. TDEM is intended to ensure that the state and local governments respond to and recover from emergencies and disasters and implement plans and programs to help prevent or lessen the impact of emergencies and disasters. There are six TDEM regions within Texas, each with Assistant Chiefs and District Coordinators. They serve as the Division's field response personnel stationed

throughout the state. They have a dual role as they carry out emergency preparedness activities and coordinate emergency response operations. In their preparedness role, they assist local officials in emergency planning, training, and exercises, and developing emergency teams and facilities. They also teach a wide variety of emergency management courses. In their response role, they deploy to incident sites to assess damages, identify urgent needs, advise local officials regarding state assistance, and coordinate the deployment of state emergency resources to assist local emergency responders. The San Jacinto region is in TDEM Region 2.

The Texas Department of Transportation (TxDOT) is the state's primary transportation agency. Though the public face of the agency is generally associated with the construction and maintenance of the immense state highway system, the agency is also responsible for overseeing aviation, rail, and public transportation systems in the state. TxDOT can perform road closures and provide real-time road closure and low water crossing information during and after a flood event.

River authorities are public agencies established by the state legislature and given authority to develop and manage the waters of the state within their jurisdictions. The San Jacinto region includes the San Jacinto River Authority which has the power to conserve, store, control, preserve, utilize, and distribute the waters of a designated geographic region for the benefit of the public.

Agriculture (Ag) Extension Agents are employed by land-grant universities and serve citizens as experts or teachers on the topic of agriculture. Ag Extension Agents provide valuable information specific to agricultural entities on preparation for and recovery from flood events. The San Jacinto region has a significant agricultural footprint including farming, forestry, and ranching, which makes working closely with Agriculture Extension Agents crucial to preventing flood losses.

The Texas A&M Engineering Extension Service (TEEX) is a state extension agency that offers training programs and provides technical assistance to public safety workers.

### 7.D.3. Federal Agencies

The Federal Emergency Management Agency (FEMA), initially created in 1977, is an agency of the United States Department of Homeland Security (DHS). While on-the-ground support of disaster recovery efforts is a major part of FEMA's charter, the agency provides state and local governments with experts in specialized fields, funding for rebuilding efforts, and relief funds for infrastructure by directing individuals to access low-interest loans and grants, sometimes in conjunction with the Small Business Administration. In addition, FEMA provides funds for the training of response personnel throughout the United States and its territories as part of the agency's preparedness effort.

The National Oceanic and Atmospheric Administration (NOAA) is an American scientific and regulatory agency within the United States Department of Commerce that forecasts weather, monitors oceanic and atmospheric conditions, charts the seas, conducts deep-sea exploration, and manages fishing and protection of marine mammals and endangered species in the U.S. exclusive economic zone. In addition to forecasting potential storm events, NOAA's National Center for Environmental Information (NCEI) provides historical data that can help communities determine their future probability of flood events and is key in the planning and mitigation process.

The U.S. Army Corps of Engineers (USACE) is an important part of the nation's military. The agency is responsible for a wide range of efforts in the United States, including addressing safety issues related to

waterways, dams, and canals, as well as environmental protection, emergency relief, hydroelectric power, and other activities. USACE is composed of several divisions; the San Jacinto Region is within the Southwestern Division and the Galveston and Fort Worth Districts.

The National Weather Service (NWS) provides weather data, water, and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy. NWS provides flash flood indicators through watches, warnings, and emergency notices. Daily river forecasts are issued by the NWS West Gulf River Forecast Center using hydrologic models based on rainfall, soil characteristics, precipitation forecasts, and several other variables. These forecasts benefit a wide range of users, including those in agriculture, hydroelectric dam operation, and water supply sectors. The forecasts provide essential information on river levels and conditions.

The U.S. Geological Survey (USGS) is the sole science agency for the U.S. Department of the Interior that collects, monitors, and analyzes information regarding natural resource conditions. Within the San Jacinto River Basin, the USGS has a network of gages that monitor and measure streamflow, stage, and water quality information for streams. The USGS also performs high-water mark surveys after events to document the extent of flooding and support future flood evaluations. This information is used by emergency managers to understand current stream conditions and assist in future predictions of where streams may overtop their banks.

## Chapter 7.E. Summary

Chapter 7 provides an assessment of publicly available flood preparedness, response, and recovery information across the San Jacinto Regional Flood Planning Area. The analysis covered the eleven counties within the region and evaluated the availability of flood-related emergency management resources using FEMA's emergency management framework of preparedness, response, and recovery. Information was collected through publicly available sources and organized by county to identify existing capabilities and potential data gaps. Furthermore, the findings indicate that counties within the San Jacinto Region have established flood preparedness, response, and recovery activities, supported by local governments, regional organizations, state agencies and federal agencies. Publicly available information is strongest for planning, notification, monitoring, and emergency response coordination activities. However, significant gaps exist in the availability of operational and recovery-related information, particularly regarding emergency action plans, damage assessment procedures, sheltering resources, and post-disaster assistance programs. These gaps do not necessarily indicate a lack of capability but rather reflect limitations in publicly accessible documentation. The results provide a regional baseline for understanding flood management activities and identifying opportunities to improve transparency, coordination, and public access to flood-related information.