



## SECTION 9. JURISDICTIONAL ANNEXES

### 9.16 City of Sugar Land

This section presents the jurisdictional annex for the City of Sugar Land that provides resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions to reduce or eliminate damage to property and people that can be implemented prior to a disaster. Information presented includes a general overview of the municipality, the City of Sugar Land representatives who participated in the planning process, an assessment of the City of Sugar Land's risk and vulnerability, the different capabilities used in the City of Sugar Land, and an action plan that will be implemented to achieve a more resilient community.

#### 9.16.1 Hazard Mitigation Planning Team

The City of Sugar Land identified primary and alternate points of contact and developed this plan over the course of several months with input from many City of Sugar Land departments, including Office of Emergency Management. The Emergency Management Administrator represented the community on the Fort Bend County Hazard Mitigation Plan (HMP) Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

The following table summarizes municipal officials that participated in the development of the annex and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Volume 1, Section 2 (Planning Process) and Appendix C (Meeting Documentation).

**Table 9.16-1. Hazard Mitigation Planning Team**

Primary Point of Contact		Alternate Point of Contact	
Name/Title:	Caroline Egan/Interim Emergency Management Coordinator	Name/Title:	Jarred Thomas, EMC
Address:	2700 Town Center Blvd N, Sugar Land TX 77479	Address:	2700 Town Center Blvd North Sugar Land, TX 77479
Phone Number:	281-690-8812	Phone Number:	346-626-0154
Email:	cegan@SugarLandtx.gov	Email:	jthomas@sugarlandtx.gov
NFIP Floodplain Administrator			
Name/Title:	City Code Department		
Address:	2700 Town Center Blvd N, Sugar Land TX 77479		
Phone Number:	-		
Email:	-		
Additional Contributors:			
Name/Title:	Gabe Lavine/EMC		
Method of Participation:	Provided input in the planning process		
Name/Title:	Robert Wilson/CFM		
Method of Participation:	Provided input in the planning process		
Name/Title:	Caroline Egan		
Method of Participation:	Provided input in the planning process		



### 9.16.2 Municipal Profile

The City of Sugar Land is the largest city in Fort Bend County and is located in the southwestern part of the Houston-The Woodlands-Sugar Land metropolitan area. Sugar Land is a populous suburban municipality centered around Texas State Highway 6 and Interstate 69. Sugar Land got its name by being home to a large sugar plantation near the Brazos River. Sugar Land covers a total of 42.90 square miles, 2.44 of which are water.

According to the American Community Survey, the 2021 population for the City of Sugar Land was 110,272, a 40 percent increase from the 2010 Census. Data from the 2021 American Community Survey indicates that 4.4 percent of the population is 5 years of age or younger and 16.5 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### 9.16.3 Jurisdictional Capability Assessment and Integration

The City of Sugar Land performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Volume 1, Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. The jurisdictional assessment includes the following analyses:

- An assessment of legal and regulatory capabilities
- Development and permitting capabilities
- An assessment of administrative and technical capabilities
- An assessment of fiscal capabilities
- An assessment of education and outreach capabilities
- Classification under various community mitigation programs
- The community's adaptive capacity to withstand hazard events

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of the hazard mitigation analysis, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress toward plan integration. The updated mitigation strategy provided an opportunity for the City of Sugar Land to identify opportunities for integration of mitigation concepts that can be incorporated into municipal procedures.

#### *Planning, Legal, and Regulatory Capability and Integration*

The table below summarizes the regulatory tools that are available to the City of Sugar Land. The comment field provides information as to how the capability integrates hazard mitigation and risk reduction.

**Table 9.16-2. Planning, Legal, and Regulatory Capability and Integration**

	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
<b>Codes, Ordinances, &amp; Regulations</b>				
<b>Building Code</b>	Yes	Chapter 7 – Building Regulations	Local	City Code Department
<b>How does this reduce risk?</b> City of Sugar Land, Texas Land Development Code, Chapter 7 – Building Regulations amended by Ordinance No. 2027, effective 9/2015, which adopted by reference the 2015 International Codes and 2014 National Electrical Code.				



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
<b>Zoning/Land Use Code</b>	Yes	Chapter 2 – Zoning Regulations	Local	City Code Department
<b>How does this reduce risk?</b> City of Sugar Land, Texas Land Development Code, Chapter 2 – Zoning Regulations; amended by Ordinance No. 2149, effective 10/2018. Sugar Land is adopting the Atlas 14 rainfall frequency estimates for Texas. This will result in modifications to the City's Development Code and Design Standards. Expected changes include higher finish floor elevations and new road standards				
<b>Subdivision Ordinance</b>	Yes	Chapter 5 – Subdivision Regulations	Local	City Code Department
<b>How does this reduce risk?</b> Article V Section 5-36 provides design standards to mitigate flood damage to buildings through the subdivision review process. Sugar Land recently adopted the Atlas 14 rainfall frequency estimates for Texas. This will result in modifications to the City-adopted guidelines for the review of requests to alter or develop new property within the City. Recent changes include new drainage standards and design standards that elevate buildings 2' above the 500-year floodplain.				
<b>Site Plan Ordinance</b>	Yes	Chapter 2- Zoning Regulations, Article 1 Part 1 Section 2-7	Local	City Code Department
<b>How does this reduce risk?</b> Multimodal connections are recommended by Comprehensive Plan to be required in site plans as a tool to limit the amount of automobile traffic and thereby limit amount of greenhouse gas emissions produced within the City of Sugar Land.				
<b>Stormwater Management Ordinance</b>	Yes	Chapter 11- Stormwater Quality Management and Discharge control	Local	City Code Department
<b>How does this reduce risk?</b> The purpose of this Chapter is to ensure the health, safety, and general welfare of the City's citizens and to protect and enhance the water quality of watercourses and water bodies in the City pursuant to and consistent with the City's TPDES General Permit issued by the TCEQ. The objectives of this Chapter include: <ol style="list-style-type: none"> <li>1. Establishing methods to prevent and reduce the introduction of pollutants into the municipal separate storm sewer system;</li> <li>2. Prohibiting illicit connections and discharges to the municipal separate storm sewer system;</li> <li>3. Facilitating compliance with federal and State laws, rules and regulations by owners and operators of construction sites and commercial and industrial facilities within the City; and</li> <li>4. Establishing legal authority to carry out inspections, surveillance, monitoring, and enforcement necessary to ensure compliance with this Article.</li> </ol>				
<b>Post-Disaster Recovery/ Reconstruction Ordinance</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Real Estate Disclosure</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Growth Management</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Environmental Protection Ordinance</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Flood Damage Prevention Ordinance</b>	Yes	Chapter 8 – Flood Damage reduction Regulations	Local	City Code Department
<b>How does this reduce risk?</b> It is the purpose of this Chapter to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:				



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
<ol style="list-style-type: none"> <li>1. Protect human life and health;</li> <li>2. Minimize expenditures of public money for costly flood control projects;</li> <li>3. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;</li> <li>4. Minimize prolonged business interruptions;</li> <li>5. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;</li> <li>6. Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas;</li> <li>7. Ensure that potential buyers are notified that property is in a flood area;</li> <li>8. Require new development and construction to result in no adverse impact to surrounding or nearby properties, which prohibits the action of 1 property owner from adversely impacting the rights of other property owners, as measured by increased flood peaks, flood stage, flood velocity, and erosion and sedimentation; and</li> <li>9. Ensure that all new construction and substantial improvements must be elevated sufficiently so that the minimum finished floor elevation is at least 2 feet above the BFE as established by Atlas 14, Vol. 11, Texas, 1.5 feet above adjacent natural ground, or 1 foot above top of curb, whichever is the higher elevation. Provided, however: <ol style="list-style-type: none"> <li>a. If the Atlas 14, Vol. 11, Texas Base Flood Elevation is not available, the minimum elevation will be 2 feet above the effective 500-year floodplain elevation provided in the then effective FEMA Flood Insurance Study (FIS) or best available data; and</li> <li>b. For new construction and substantial improvements located inside Levee protected areas (i.e., levee improvement districts), the minimum finished floor elevation is at least 2 feet above maximum ponding elevations (established using Atlas 14, Vol. 11, Texas), 1.5 feet above adjacent natural ground, or 1 foot above top of curb, whichever is the higher elevation</li> </ol> </li> </ol>				
<b>Wellhead Protection</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Emergency Management Ordinance</b>	Yes	Chapter 3 – Health and Safety, Article III – Emergency Management	Local	City Code Department
<b>How does this reduce risk?</b> City of Sugar Land, Texas Code of Ordinances Chapter 3 Article III- Emergency Management enacted by Ordinance 1371 10/2002 and Ordinance 1577 8/2006 grants the City Manager authority to appoint one or more persons to administer the City's Emergency Management Plan (required by state law) and stipulates duties. The City of Sugar Land Emergency Management Division is an integral part of the multi-agency emergency operations organization described in the Emergency Management Plan and is the lead department for developing this hazard mitigation plan				
<b>Climate Change Ordinance</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Other</b>	No	-	-	-
<b>Planning Documents</b>				
<b>Comprehensive/Master Plan</b>	Yes	Sugar Land Comprehensive Plan	Local	City Council
<b>How does this reduce risk?</b> Consists of a framework last adopted in 2012 and 11 City-wide elements. Related goals in the Comprehensive Plan focus on safety, hazard preparation and post-disaster recovery, water quality, and stormwater management/drainage to enhance quality of surface water and protect neighborhoods. Specific hazards referenced in the plan include dwindling groundwater resources and plans to diversify drinking water sources in the near future, as well as flooding along Brazos River, Oyster Creek, and Ditch "H" (Bullhead Slough). Nine levee improvement districts (LIDs) exist in Sugar Land provide flood protection and storm water management services.  Based on directives from the plan's Goal A: Safe Community Objective 5, the City will fully integrate this mitigation plan by preparing for all hazards, disaster and post-disaster recovery including coordination with local, regional and state resources. The City has secured contracts to shift from ground water to surface water through the Plan's Groundwater Reduction strategy, thereby reducing hazards associated with drought.				





	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
<b>Capital Improvement Plan</b>	Yes	Capital Improvement Plan	Local	City Council
<b>How does this reduce risk?</b> Recent capital improvement program projects that relate to hazard mitigation include Oyster Creek Maintenance Bridge Replacement, US90A Drainage improvement for Airport Taxiway, Covington Woods Drainage Improvements – Jess Pirtle Side Streets, Covington Woods Drainage Improvements – Sugar Land MS/Sugar Mill, Outfall Structure Improvements with FBC LID No. 2, Riverbend Weir Structure Modifications at Dulles Ave., Riverbend Inlets and Pipes Replacement (2019 GO), Settlers Park Drainage Improvements, Emergency Generators, Emergency Operations Center/Public Safety Dispatch Building (2019 GO), Brazos River Park PH II (Mid-Lake), Wastewater Treatment Plants Improvements, Lift Station Assessment, Oyster Creek Siphon Replacement, Easement Acquisition - FM from North WWTP to West WWTP, Lift Station Rehabilitation, Utility Security - PH III, Distribution System Water Main Rehabilitation Program, Well Rehabilitation, Distribution System Water Main Rehabilitation Program, Ground Storage Tank Rehabilitation, Ground Water Plant Rehabilitation, SH99 and US90A Waterline Relocation and other Capital Improvement Program Projects.  City of Sugar Land Capital Improvement Program has estimated prior funding of \$61.5 million worth of projects completed through 2019. New funding (\$263.8 million) for projects are on schedule to be completed by 2024. Future projects are categorized by project type: airport, drainage, municipal, parks, streets, surface water, traffic, wastewater, and water. Specific project types that relate to hazard mitigation include drainage improvements, emergency generators and other emergency equipment, and surface water conversion infrastructure.  In the development of the action plan for this planning process, the City reviewed its capital improvement plan to identify actions that are eligible for FEMA grant funding. All future revisions to the City's capital improvement plans will look to this plan to potentially leverage FEMA grant funding for implementation.				
<b>Disaster Debris Management Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Floodplain Management or Watershed Plan</b>	Yes	Floodplain Management Plan	Local	City Council
<b>How does this reduce risk?</b> City of Sugar Land Flood Management Plan works with Levee Improvement Districts (LID) located within the City and neighboring communities to improve flood response capabilities. The document includes response and operation plans for flooding events, identifying areas of concern, identifying critical river elevations, and utilizing the National Management System (NIMS). Within the NIMS System, the City of Sugar Land enforces their own incident command system (ICS) for each LID, so that in an event of flooding, the City can work to return normal operating conditions and preserve property and business operations. When the Brazos River United States Geological Survey (USGS) Richmond gauge is at 48 feet or above, patrolling of levees commences and continues throughout the course of flood events.  Throughout the course of flood events, the City of Sugar Land Public Works and Engineering provides local organization, operations, responsibilities, and procedures to coordinate activities during flooding events.				
<b>Stormwater Management Plan</b>	Yes	Master Drainage Plan	Local	City Council
<b>How does this reduce risk?</b> The 2015 Master Drainage Plan (MDP) is one of the City's eight official master plans and is a component of the Comprehensive Plan. The Master Drainage Plan identifies a work plan to achieve drainage-related goals and objectives identified in the Comprehensive Plan. Projects are prioritized by annual, high priority (1-2 years), medium priority (3-5 years), and low priority (6-10 years).				
<b>Open Space Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Urban Water Management Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Habitat Conservation Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
<b>Economic Development Plan</b>	Yes	Economic Development Plan	Local	City Council
<b>How does this reduce risk?</b> The 2011 Economic Development Plan 5-Year Strategic Road Map serves to strengthen Sugar Land as a business center of excellence through the attraction and expansion of targeted businesses that provide high quality jobs for residents.				
<b>Shoreline Management Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Community Wildfire Protection Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Community Forest Management Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Transportation Plan</b>	Yes	Sugar Land Major Thoroughfare Plan	Local	Engineering Department
<b>How does this reduce risk?</b> The Thoroughfare Plan identifies an ultimate roadway network to accommodate future growth and expansion of the City and its extraterritorial jurisdiction (ETJ). The Major Roadway Plan map is a component of the Thoroughfare Master Plan and identifies all existing and future roadways within the City. The Thoroughfare Plan identifies an ultimate roadway network to accommodate future growth and expansion of the City and its ETJ. As a separate but concurrent effort to the update, analyses and recommendations of implementing Complete Streets policies are included.				
<b>Agriculture Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Climate Action/ Resiliency/Sustainability Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Tourism Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Business/ Development Plan</b>	No	-	-	-
<b>How does this reduce risk?</b>				
<b>Other</b>	No	-	-	-
<b>Response/Recovery Planning</b>				
<b>Comprehensive Emergency Management Plan</b>	Yes	Emergency Operations Plan	Local	Planning & Response Department
<b>How does this reduce risk?</b> In partnership with the Texas Division of Emergency Management, the Emergency Operations Plan provides general guidance for Emergency Management activities and an overview of methods of mitigation, preparedness, response, and recovery. This plan describes emergency response organization and assigns responsibilities for various emergency tasks. This plan is intended to provide a framework for more specific functional responses. This plan applies to all local officials, departments, and agencies.				
<b>Continuity of Operations Plan</b>	Yes	Sugar Land Continuity of Operations Basic Plan	Local	Planning & Response Department
<b>How does this reduce risk?</b> The purpose of the City of Sugar Land COOP Basic Plan (Basic Plan) is to provide the framework for departments within the City to restore mission essential functions to their employees and citizens in the event of an emergency that affects their operations. It also				



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
provides policy and guidance to implement actions to continue mission essential functions within the recovery priority time frames established by the COOP steering committee and establishes procedures that City leadership can use to strategically minimize risk to its employees, operations, and facilities. This COOP plan will facilitate the department's ability to perform its essential functions despite incidents that may impact operations, including IT system outages, reduced staffing, or any incident that requires the department to relocate.				
<b>Strategic Recovery Planning Report</b>	No	-	-	-
<i>How does this reduce risk?</i>				
<b>Threat &amp; Hazard Identification &amp; Risk Assessment (THIRA)</b>	Yes	-	State, Federal	-
<i>How does this reduce risk?</i> The City of Sugar Land is profiled in the 2015 FEMA Lower Brazos Watershed Flood Risk Report (FRR). This summary presents flood risk data for the City of Sugar Land, which host the First Colony LID, the Fort Bend LID #2, and the Fort Bend LID #7. Special Flood Hazard Area (SFHA) boundaries within the Lower Brazos Watershed were updated due to new engineering analysis performed within the Flood Risk Project; however new or revised modeling was not completed for streams within this community. The FRR is not intended to be regulatory or the final authoritative source of all flood risk data in the project area. Rather, it should be used in conjunction with other data sources to provide a comprehensive picture of flood risk within the project area.				
<b>Post-Disaster Recovery Plan</b>	Yes	Emergency Operations Plan – Annex J	Local	Planning & Response
<i>How does this reduce risk?</i> The purpose of this annex within the Emergency Operations Plan is to define the operational concepts, organizational arrangements, responsibilities, and procedures to accomplish the tasks required for the local government and its citizens and businesses to recover from a major emergency or disaster				
<b>Public Health Plan</b>	Yes	Disease Control and Response Annex	Local	Planning & Response
<i>How does this reduce risk?</i> This recently updated (December 2018) plan features security sensitive information that is confidential in nature and restricted from public access in accordance with the provisions of the Texas Government Code, Chapter 418 Emergency Management (Sections §418.177 and §418.181). It serves to outline methods to prevent and/or control the spread of infectious disease through the community. It identifies the facilities, personnel, and defines the procedures necessary to successfully distribute services to the general population. It also examines the use of isolation and quarantine measures to prevent or control the spread of disease. This plan was developed in a partnership between Fort Bend County Department of Health and Human Services (HHS), Texas Department of State Health Services (DSHS).				
<b>Other</b>	No	-	-	-
<i>How does this reduce risk?</i>				

### Development and Permitting Capability

The table below summarizes the capabilities of the City of Sugar Land to oversee and track development.

**Table 9.16-3. Development and Permitting Capability**

Indicate if your jurisdiction implements the following	Yes/No	Comment:
Do you issue development permits? • If yes, what department is responsible?	Yes	Building Safety Department



Indicate if your jurisdiction implements the following	Yes/No	Comment:
If you do not issue development permits, what is your process for tracking new development?	N/A	
Are permits tracked by hazard area? (For example, floodplain development permits.)	Yes	Flood Hazard Area
Do you have a buildable land inventory? • If yes, please describe	Yes	Development Permits are reviewed through Site Plan review
Describe the level of build-out in your jurisdiction.	N/A	

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the City of Sugar Land and their current responsibilities that contribute to hazard mitigation.

**Table 9.16-4. Administrative and Technical Capabilities**

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, support of hazard mitigation)
<b>Administrative Capability</b>		
Planning Board	Yes	Planning and Zoning Commission – the purpose of this commission is to make recommendations to City Council concerning the use of land and other planning functions pursuant to state law and to promote orderly development; to serve as advisory concerning master plans and changes to the zoning plan; and to protect the general welfare and interest of the people concerning physical changes in the City and in the extraterritorial jurisdiction.
Zoning Board of Adjustment	Yes	The Zoning Board of Adjustments is a five-member board that is responsible for the decision of appeals from administrative decisions, hear and decide special exceptions and variances, and to interpret the intent of the zoning district ordinance.
Planning Department	Yes	The Planning Department is responsible for development planning, long-range planning, transit services.
Mitigation Planning Committee	No	-
Environmental Board/Commission	Yes	Parks, Art, Recreation, Culture, and Streetscapes (PARCS) Board – provides input, feedback and advice on projects and programs to enrich the visual and aesthetic environment of the City and to advise on other matters relating to long-term goals and objectives for parks, recreation and cultural activities, streetscape and urban forestry programs, to ensure an environment where all citizens could share and enjoy the full diversity and vitality.
Open Space Board/Committee	Yes	See Environmental Board/committee
Economic Development Commission/Committee	Yes	<p>The Sugar Land Development Corporation is a “Type A” economic development corporation governed by a Board of Directors and authorized under Texas law to levy an economic development sales tax to promote, assist and enhance economic development activities for the benefit of the City. As part of these responsibilities, the Board of Directors is charged with overseeing the SLDC’s Direct Incentive policy and program, as well as making recommendations on the City Economic Development Strategic Plan. The corporation utilized a .25 cent sales tax approved by voters for the purpose of funding economic development activities.</p> <p>Sugar Land 4B Corporation is managed by a Board of Directors responsible for developing and preparing an Economic Development Plan in accordance with policies or directives established by the City Council. The plan, which is submitted to City Council for approval, includes short- and long-term objectives of the corporation and guidelines on the use of sales tax funds</p>



		received, which may include municipal facilities, parks, museums, stadiums, parking facilities, and other facilities both private and public.
Public Works/Highway Department	Yes	The Public Works Department is responsible for Ensuring efficient operation and maintenance of the City's public streets, traffic control devices, sidewalks, bridges, and drainage system.
Construction/Building/Code Enforcement Department	Yes	Department of Building Safety is responsible for Permits and Inspections aids with all issues relating to permitting of construction and building code compliance.
Emergency Management/Public Safety Department	Yes	The Department of Emergency Management is responsible for the Coordination of preparedness, response and recovery efforts between City departments, citizens and surrounding communities.
Warning Systems / Services (mass notification system, outdoor warning signals, etc.)	No	-
Maintenance programs to reduce risk (stormwater maintenance, tree trimming, etc.)	Yes	Office of Intergovernmental Relations
Mutual aid agreements	No	-
Human Resources Manual	Yes	Human Resources Department
Other	No	-
<b>Technical/Staffing Capability</b>		
Planners or engineers with knowledge of land development and land management practices	Yes	Planning Department, Engineering Department, Environmental and Neighborhood Services, Public Works Department, Fire-EMS Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works Department, Engineering Department, Environmental and Neighborhood Services, Building Safety Department,
Planners or engineers with an understanding of natural hazards	Yes	Department of Public Works, Engineering Department, Environmental and Neighborhood Services, Fire- Emergency Management Services Department
Staff with expertise or training in benefit/cost analysis	Yes	Finance Department
Professionals trained in conducting damage assessments	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	GIS Division of Information Technology; Engineering Department, Public Works Department, Fire Department, Planning Department
Environmental scientist familiar with natural hazards	Yes	Engineering Department and hired consultants
Surveyor(s)	No	-
Emergency Manager	Yes	Fire- Emergency Management Services Department; Emergency Management Coordinator
Grant writer(s)	Yes	Public Works; Grants Officer
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	No	-
<b>How do your administrative/technical capabilities contribute to risk reduction in your community?</b>		

**Fiscal Capability**

The table below summarizes financial resources available to the City of Sugar Land.

**Table 9.16-5. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	No
Other federal or state funding programs	Yes
Open space acquisition funding programs	No
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	No

**Education and Outreach Capability**

The table below summarizes the education and outreach resources available to the City of Sugar Land.

**Table 9.16-6. Education and Outreach Capabilities**

Outreach Resources	Available? (Yes/No)	Comment:
Public information officer or communications office	Yes	The City has a Communications and Community Engagement Office
Personnel skilled or trained in website development	Yes	Human Resources
Hazard mitigation information available on your website	Yes	The City has information on the website about area hazards, planning and response to hazards, and hazard mitigation plan updates.
Social media for hazard mitigation education and outreach	Yes	The City uses Facebook, Twitter, NextDoor, YouTube, LinkedIn, and Instagram for social media updates.
Citizen boards or commissions that address issues related to hazard mitigation	Yes	Resident boards or commissions that address issues relating to hazard mitigation include the Planning and Zoning Commission, Building Standards Commission, the City/Home Owner Associations (HOA) Maintenance Responsibilities Citizens Task Force, and the Zoning Board of Adjustment.
Warning systems for hazard events	Yes	Through a partnership with Harris County, the City participates in a Flood Warning System, which sends out alerts via email or text for specific waterbodies.
Natural disaster/safety programs in place for schools	No	-
Does the jurisdiction have any public outreach mechanisms / programs in place to inform citizens on natural hazards, risk, and ways to protect themselves during such events? • If yes, please describe.	No	-

**Community Classifications**

The table below summarizes classifications for community programs available to the City of Sugar Land.





Table 9.16-7. Community Classifications

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Yes	Class 7	November, 2019
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	Class 3 (commercial), Class 4 (residential)	July, 2018
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Rating 2	November 01, 2013
Storm Ready Certification	Yes	StormReady Site	FY2020
Firewise Communities classification	No	-	-
Other	No	-	-

**Adaptive Capacity**

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). Each jurisdiction has a unique combination of capabilities to adjust to, protect from, and withstand a future hazard event, future conditions, and changing risk. The table below summarizes the adaptive capacity for each identified hazard of concern and the jurisdiction’s capability to address related actions using the following classifications:

- Strong: Capacity exists and is in use.
- Moderate: Capacity might exist; but is not used or could use some improvement.
- Weak: Capacity does not exist or could use substantial improvement.

Table 9.16-8. Adaptive Capacity

Hazard	Adaptive Capacity – Strong/Moderate/Weak
Dam/Levee Failure	Moderate
Disease Outbreak	Moderate
Drought	Moderate
Extreme Temperature	Moderate
Flood	Moderate
Geologic Hazards	Moderate
Hurricane/Tropical Storm	Moderate
Severe Weather	Moderate
Tornado	Moderate
Wildfire	Moderate
Winter Weather	Moderate

**9.16.4 National Flood Insurance Program (NFIP) Compliance**

This section provides specific information on the management and regulation of the regulatory floodplain, including current and future compliance with the NFIP. The Floodplain Administrator is responsible for maintaining this information and is listed in the Hazard Mitigation Planning Team table at the beginning of this annex.

**NFIP Summary**

The following table summarizes the NFIP statistics for the City of Sugar Land.



Table 9.16-9. NFIP Summary

Municipality	Policies in Force <sup>a</sup>	Number of Paid Claims <sup>a</sup>	Amount of Paid Claims <sup>a</sup>	Number of NFIP RL Properties <sup>b</sup>	Number of NFIP SRL Properties <sup>b</sup>
Sugar Land (C)	3440	296	\$3,008,495.48	20***	0***

Sources: a BureauNet 2022 (<https://nfipservices.floodsmart.gov/reports-flood-insurance-data>)

b 2018 Fort Bend County HMP

Notes: Due to a contractual agreement with FEMA, detailed information at the municipal level was not available to incorporate into the 2023 HMP Update. The information presented here was collected from data provided by the State of Texas and from FEMA's HUDEX Report.

\*Number of RL and SRL properties provided by the State of Texas

\*\*Total policies in force and paid claims collected from FEMA's OpenFEMA Dataset: FIMA NFIP Redacted Claims

\*\*\*From the Sugar Land Plan 2021

RL Repetitive Loss

SRL Severe Repetitive Loss

### Flood Vulnerability Summary

The following table provides a summary of the NFIP program in the City of Sugar Land.

Table 9.16-10. NFIP Summary

NFIP Topic	Comments
<b>Flood Vulnerability Summary</b>	
Describe areas prone to flooding in your jurisdiction. <ul style="list-style-type: none"> <li>Do you maintain a list of properties that have been damaged by flooding?</li> </ul>	See attached HMP Flooding along the Brazos River
<ul style="list-style-type: none"> <li>Do you maintain a list of property owners interested in flood mitigation?</li> <li>How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)?</li> </ul>	No, desire to maintain tax base makes buy outs prohibitive.
Are any RiskMAP projects currently underway in your jurisdiction? <ul style="list-style-type: none"> <li>If so, state what projects are underway.</li> </ul>	Enhancements to City flood predictive model to include integration with river levels, LID response activities, and out of area rainfall accumulations.
<ul style="list-style-type: none"> <li>How do you make Substantial Damage determinations?</li> <li>How many were declared for recent flood events in your jurisdiction?</li> </ul>	City damage assessment teams using FEMA PDA criteria and data collection tools. Zero added in the last 5 years. Current list has 19.
How many properties have been mitigated (elevation or acquisition) in your jurisdiction? <ul style="list-style-type: none"> <li>If there are mitigated properties, how were the projects funded?</li> </ul>	None
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <ul style="list-style-type: none"> <li>If not, state why.</li> </ul>	Yes
<b>NFIP Compliance</b>	
What local department is responsible for floodplain management?	Engineering
Are any certified floodplain managers on staff in your jurisdiction?	Yes
Do you have access to resources to determine possible future flooding conditions from climate change?	No, we need additional resources to better model and understanding impacts based on changes in redevelopment.
Does your floodplain management staff need any assistance or training to support its floodplain management program? <ul style="list-style-type: none"> <li>If so, what type of assistance/training is needed?</li> </ul>	Regular CE and industry updates.
Provide an explanation of NFIP administration services you provide (e.g. permit review, GIS, education/outreach, inspections, engineering capability)	Quarterly outreach and educational opportunities for the public. All new and remodel construction requires permit review and elevation certificates. GIS services and mapping. Permit inspections and building inspections. Full engineering



NFIP Topic	Comments
	department with active flood plain management division actively working to improve CRS designations.
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	50% of value or more added to the structure based on permit submittal. Due to state restriction on valuation requests this is difficult to identify and would require legislative changes at the state level to change from voluntary to mandatory. Require any additions to meet new building codes and elevation requirements.
What are the barriers to running an effective NFIP program in the community, if any?	Time and personnel to increase efficiency.
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, state the violations.	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	October 2022
• What is the local law number or municipal code of your flood damage prevention ordinance? • What is the date that your flood damage prevention ordinance was last amended?	2192 Adopted April 2019 and Amended in 2021
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds, CRS class 6
Are there other local ordinances, plans or programs (e.g. site plan review) that support floodplain management and meeting the NFIP requirements? For instance, does the planning board or zoning board consider efforts to reduce flood risk when reviewing variances such as height restrictions?	Building Permit Review, Site Plan Review, Planning and Zoning Board Reviews
Does your community plan to join the CRS program or is your community interested in improving your CRS classification?	We are members of the CRS program and have a one year plan to improve our class 6 designator to class 5.

### 9.16.5 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to appreciating a jurisdiction's overall risk to its hazards of concern. The table below summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development.

**Table 9.16-11. Number of Building Permits for New Construction**

Type of Development	2018		2019		2020		2021		2022	
Number of Building Permits for New Construction Issued Since the previous HMP* (total/within regulatory floodplain)										
	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA
Single Family	-	0	-	0	-	0	-	0	-	0
Multi-Family	-	0	-	0	-	0	-	0	-	0
Other (commercial, mixed-use, etc.)	-	0	-	0	-	0	-	0	-	0
Total Permits Issued	-	0	-	0	-	0	-	0	-	0

SFHA Special Flood Hazard Area (1% annual chance flood event)

\* Only location-specific hazard zones or vulnerabilities identified.



Table 9.16-12. Recent and Expected Future Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address and Parcel ID	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Major Development from 2018 to Present</b>					
None Identified					
<b>Known or Anticipated Major Development in the Next Five (5) Years</b>					
None Identified					

### 9.16.6 Jurisdictional Risk Assessment

The hazard profiles in Volume 1, Section 4 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. Section 4.1 (Methodology and Tools) and Section 4.4 (Hazard Ranking) provide detailed summaries for the City of Sugar Land's risk assessment results and data used to determine the hazard ranking discussed later in this section.

Hazard area extent and location maps provided below illustrate the probable areas impacted within the jurisdiction based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps were generated only for those hazards that can be identified clearly using mapping techniques and technologies and for which the City of Sugar Land has significant exposure. The maps also show the location of potential new development, where available.





Figure 9.16-1. City of Sugar Land Hazard Area Extent and Location Map- Dam Inundation

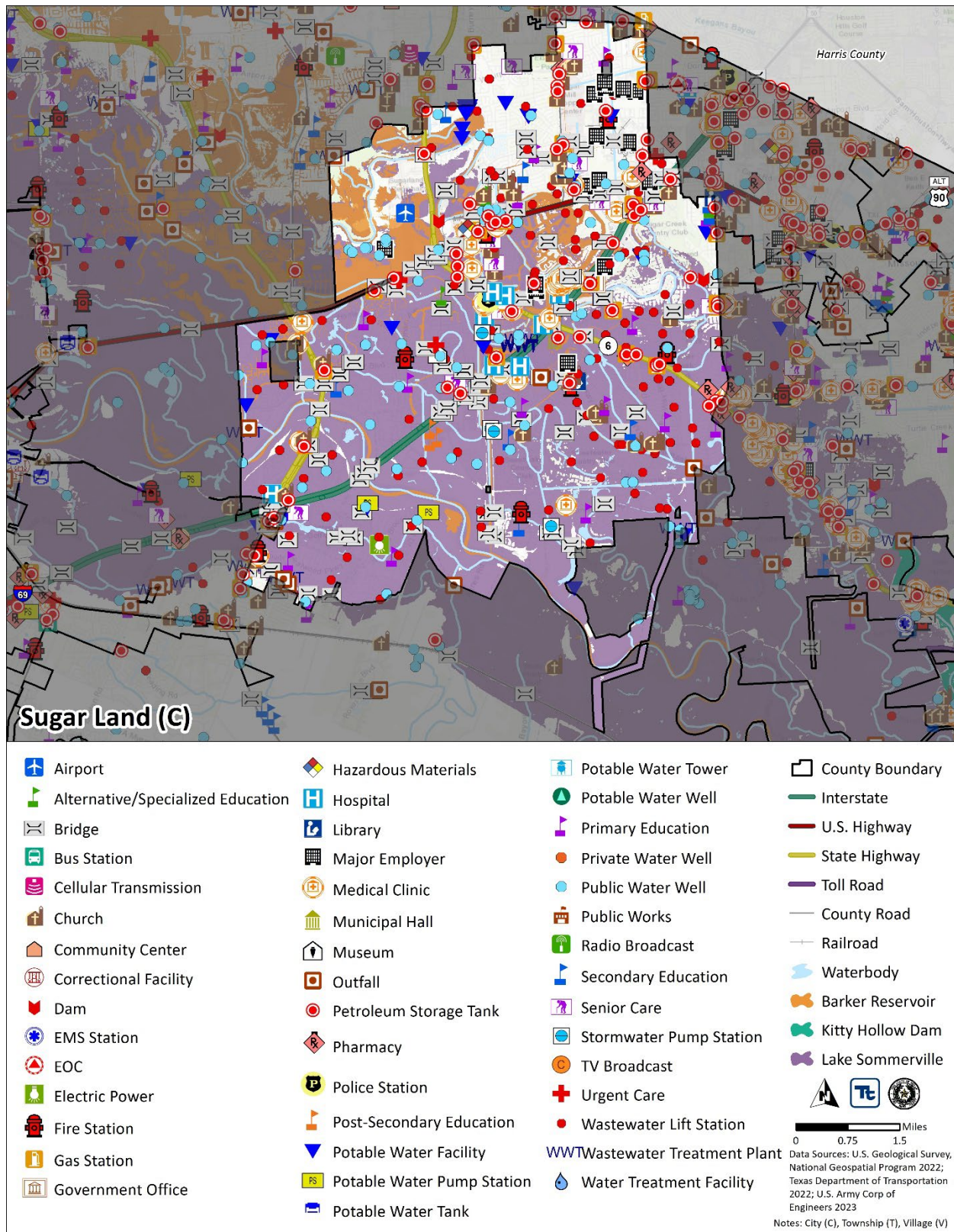






Figure 9.16-2. City of Sugar Land Hazard Area Extent and Location Map- Expansive Soils

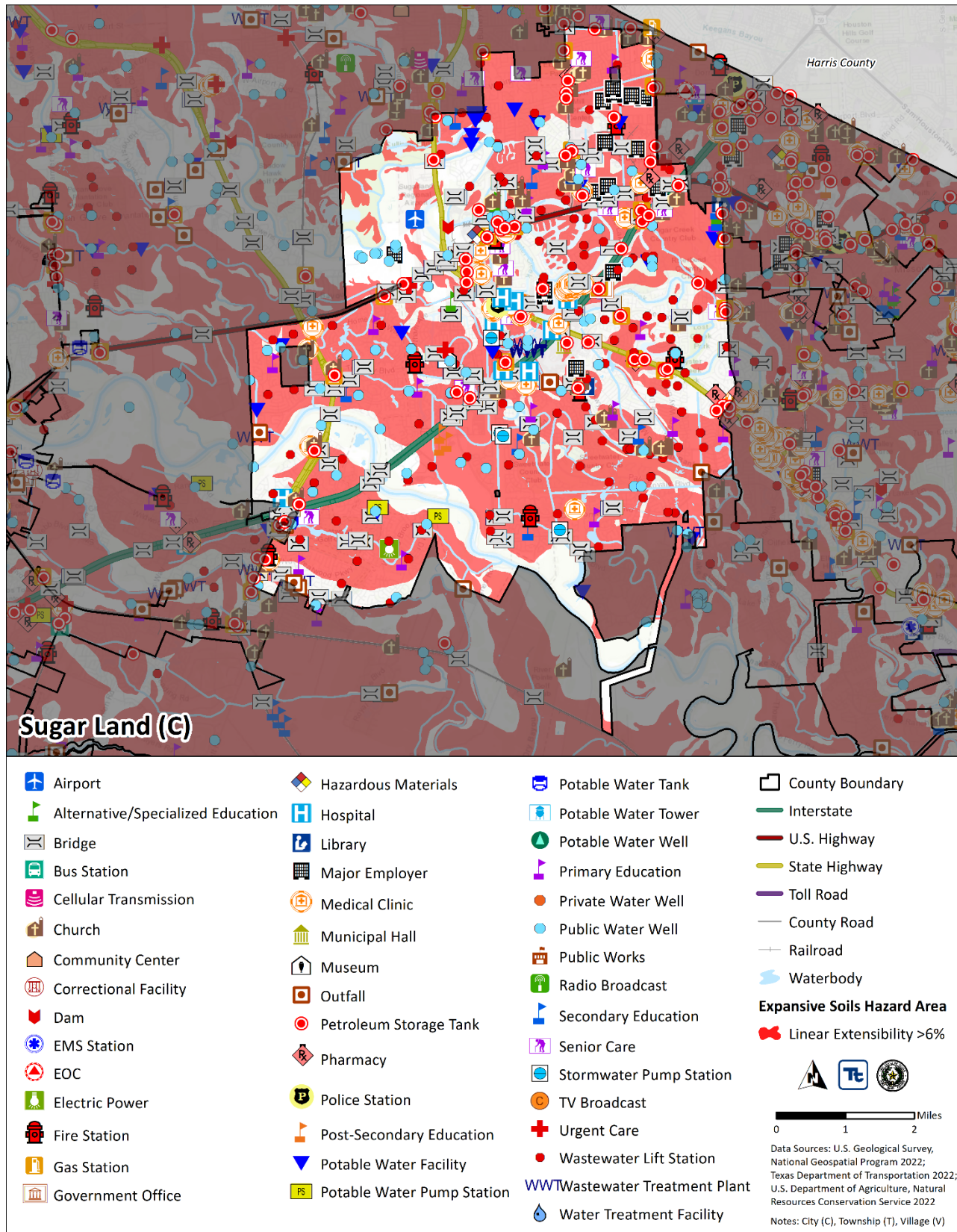






Figure 9.16-3. City of Sugar Land Hazard Area Extent and Location Map- Flood

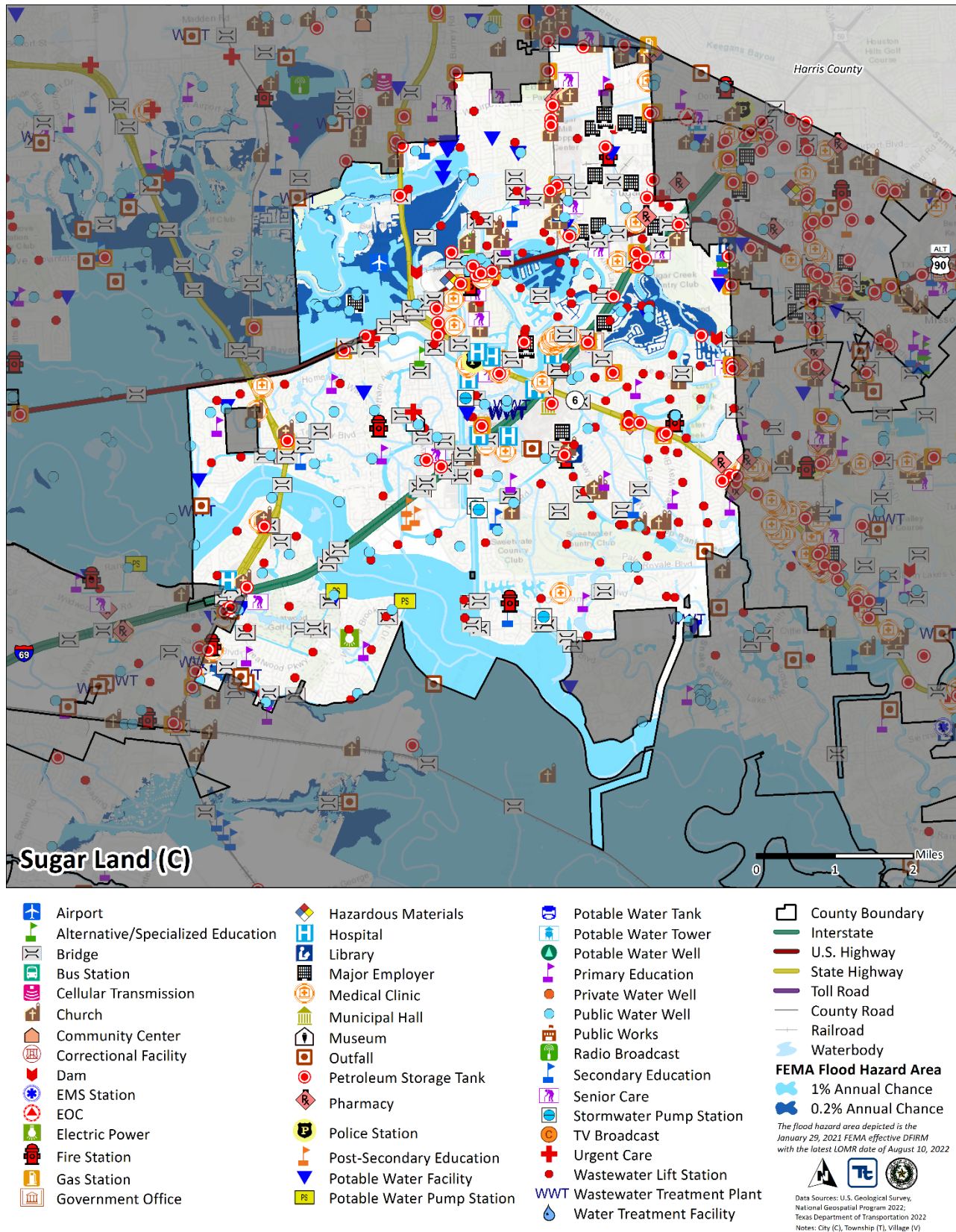




Figure 9.16-4. City of Sugar Land Hazard Area Extent and Location Map- Inland Erosion

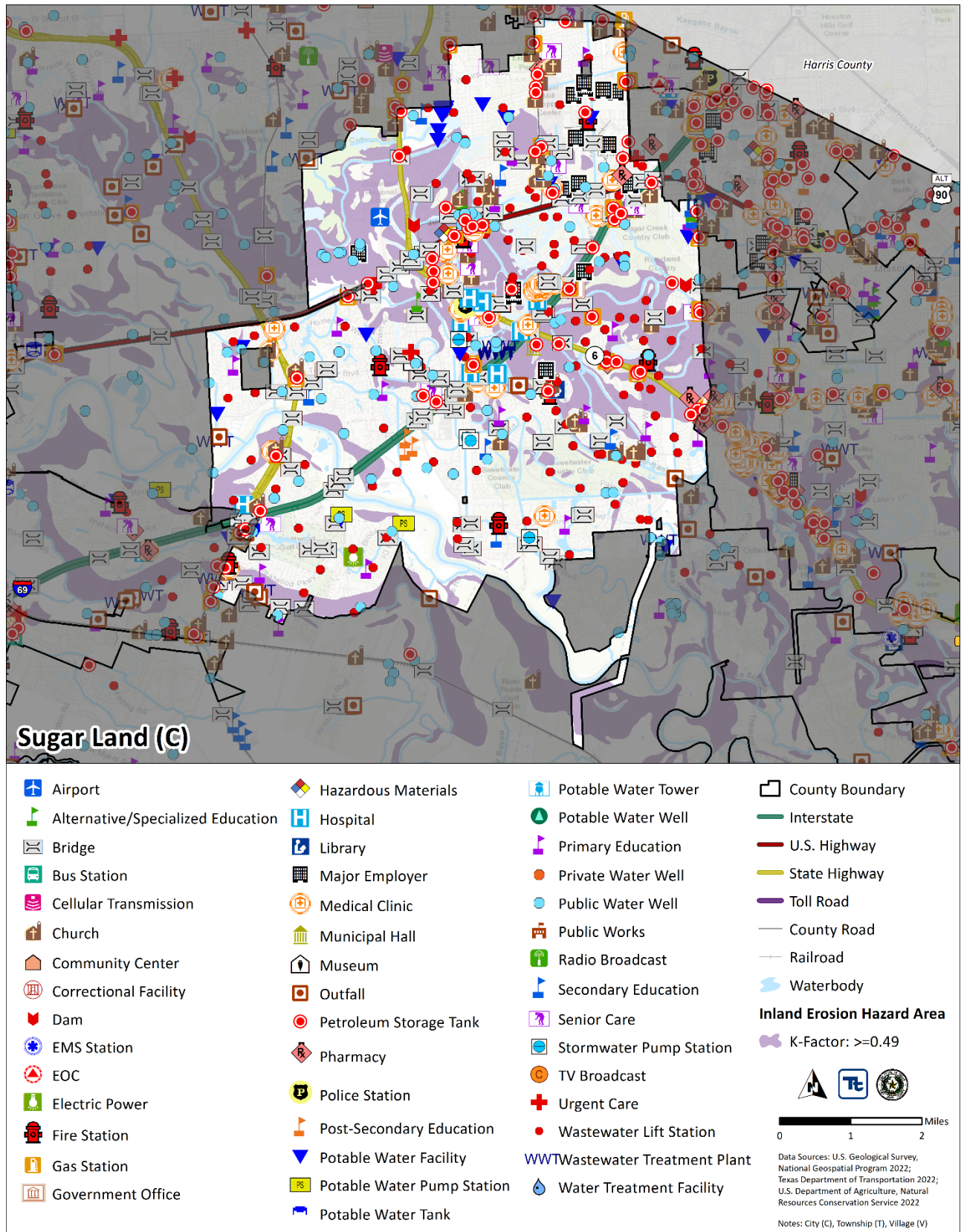
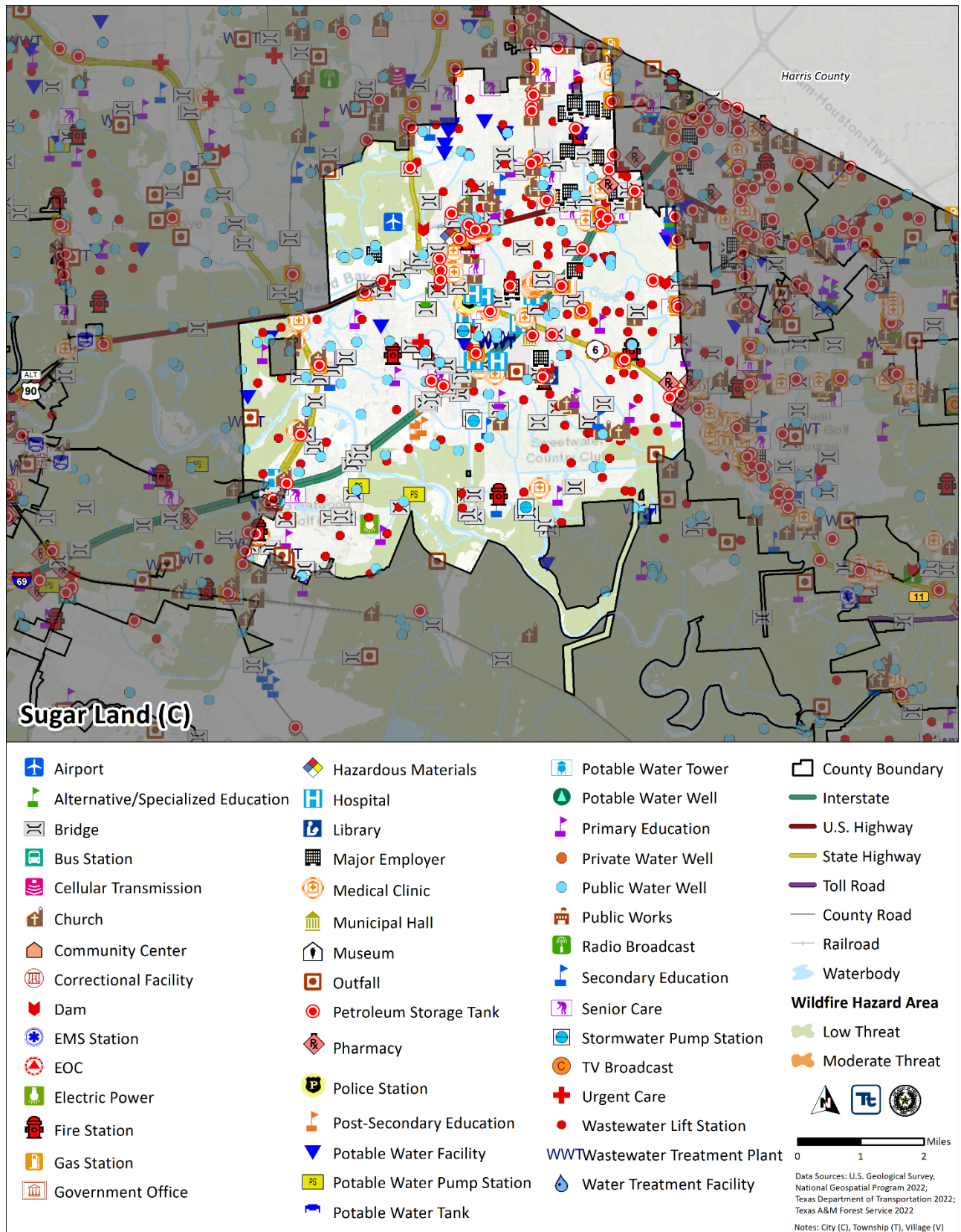






Figure 9.16-5. City of Sugar Land Hazard Area Extent and Location Map- Wildfire





### Hazard Event History

Fort Bend County has a history of natural and non-natural hazard events, as detailed in Volume I, Section 4 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities.

The City of Sugar Land's history of federally declared (as presented by FEMA) and significant hazard events [as presented in NOAA-National Centers for Environmental Information (NCEI)] is consistent with that of the County. The table below provides details regarding municipal-specific loss and damages the City of Sugar Land experienced during hazard events since the last hazard mitigation plan update. Information provided in the table below is based on reference material or local sources.

**Table 9.16-13. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
01/20/2020 – continuing	EM-3458 – Covid-19	Yes	Covid-19	Economic impacts to local business and revenue/sales tax losses. Increased response costs related to 25% increase in EMS calls for service and EOC / City staff response and coordination of protective measures.
01/20/2020 – continuing	DR-4485 – Covid-19 Pandemic	Yes	Covid-19 pandemic declared	Economic impacts to local business and revenue/sales tax losses. Increased response costs related to 25% increase in EMS calls for service and EOC / City staff response and coordination of protective measures.
07/25/2020 – 07/31/2020	EM-3530 – Hurricane Hanna	Yes	Hurricane force winds resulted in significant number of downed trees and utility lines.	Minor wind damage.
08/23/2020 – 08/27/2020	EM-3540 – Tropical Storms Marco and Laura	Yes	Hurricane Marco and Laura	Minor wind damage and localized ponding.
02/11/2021 – 02/21/2021	EM-3554 – Severe Winter Storm	Yes	Severe Winter Storm	Infrastructure damage, and EOC activation for protective measures.
02/11/2021 – 02/21/2021	DR-4586 – Severe Winter Storms	Yes	Winter Storm Uri distributed a record amount of snow throughout Texas. Snow, ice, and ultra-low temperatures caused widespread road closures.	Infrastructure damage, significant debris management required.

Source: FEMA 2023; NOAA 2023

### Hazard Ranking and Vulnerabilities

The hazard profiles in Volume 1, Section 4 (Risk Assessment) have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the City of Sugar Land's risk assessment results and data used to determine the hazard ranking.

#### Hazard Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Volume 1, Section 4 (Risk Assessment). The



ranking process involves an assessment of the likelihood of occurrence for each hazard; the potential impacts of the hazard on people, property, and the economy; and community capabilities to address the hazard and changing future climate conditions. Mitigation action development uses the inputs from the evaluation to target those hazards with highest level of concern.

As discussed in Volume 1, Section 4.4 (Hazard Ranking), each participating jurisdiction has differing degrees of risk exposure and vulnerability compared with the County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the City of Sugar Land. The City of Sugar Land reviewed the County hazard risk/vulnerability risk ranking table and individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the City of Sugar Land indicated the following:

- Changed disease outbreak from Low to High because the City continues to see subsequent disease outbreaks in the region that are increasing in frequency and severity over the last decade coupled with the national assessment that naturally occurring, unintentional, and intentional biological pathogen releases being a high risk.
- Changed Flood from Low to High because the City continues to see an increase in frequency and severity of flood events in the county and believe this should be considered a medium to high risk.
- Changed Winter Weather from Low to High because of the damage that was caused by Winter Storm Uri and Mara in the past two years.

**Table 9.16-14. Hazard Ranking Input**

Hazard	Ranking
Dam/Levee Failure	Medium
Disease Outbreak	High
Drought	Medium
Extreme Temperature	Medium
Flood	High
Geologic Hazards	High
Hurricane/Tropical Storm	Medium
Severe Weather	High
Tornado	Medium
Wildfire	Low
Winter Weather	High

### Critical Facilities

The table below identifies the number of critical facilities and community lifelines in the community located in hazard areas. The community reviewed the list of facilities and lifelines to determine appropriate mitigation measures for the facilities, where appropriate. Refer to Section 4.3 (Hazard Profiles) for details on the risk assessment and the facilities and lifelines exposed to each hazard of concern.



Table 9.16-15. Potential Flood Losses to Critical Facilities

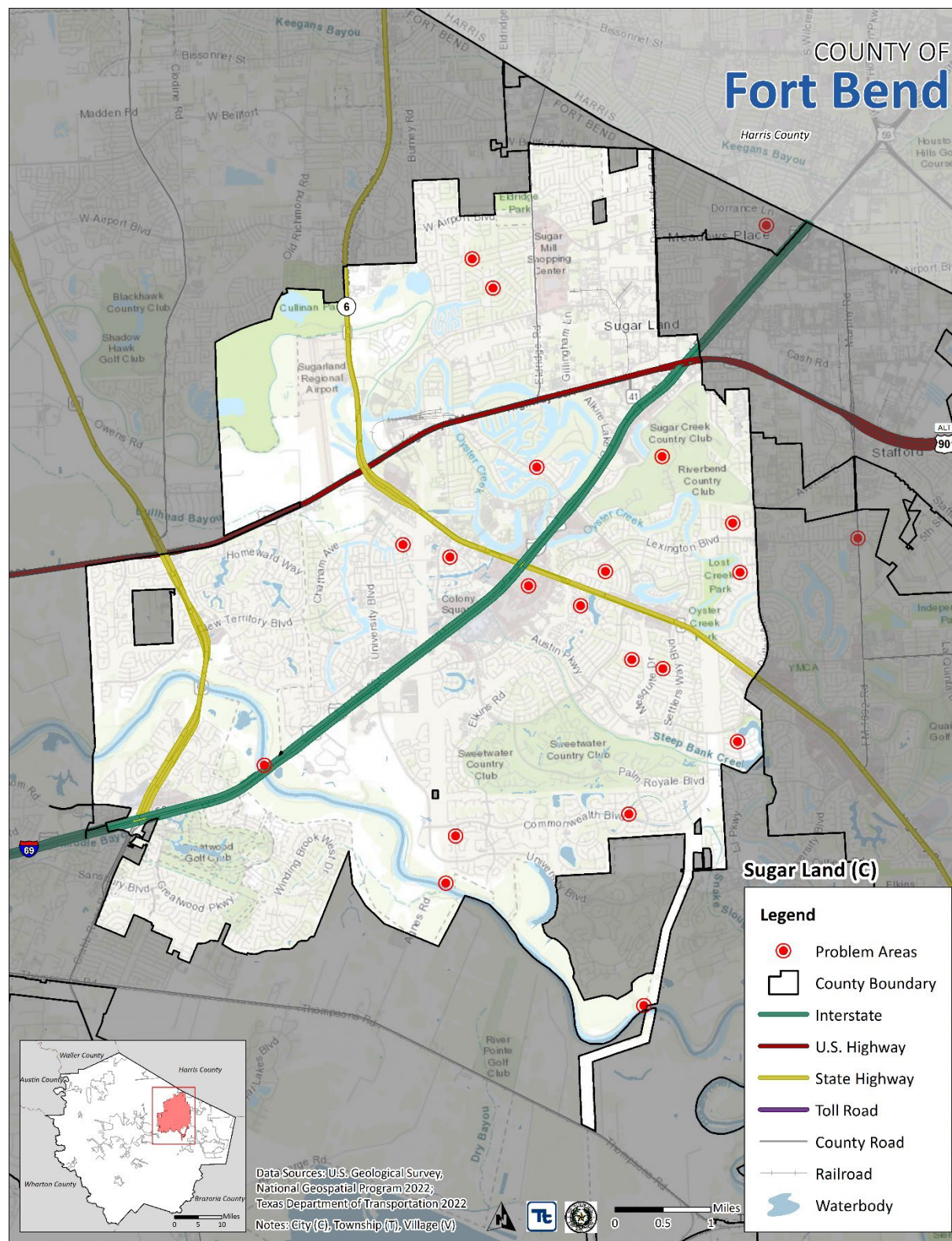
Jurisdiction	1-Percent Annual Chance Flood Event Hazard Area		Wildfire Hazard Area – Moderate Risk		Inland Erosion (K- Factor: >= 0.49) Hazard Area		Expansive Soils (Linear Extensibility >6%) Hazard Area		Dam Inundation Hazard Area - Barker Reservoir Dam Inundation Area		Dam Inundation Hazard Area - Lake Somerville Dam Inundation Area		Dam Inundation Hazard Area - Kitty Hollow Dam Inundation Area	
	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines
Sugarland (C)	100	100	0	0	202	187	401	360	63	63	396	374	0	0

Source: Fort Bend County; Hazus v5.1; FEMA 2022; Fort Bend Drainage District 2023





Figure 9.16-6. City of Sugar Land Hazard Area Extent and Location Map- Problem Areas





### Identified Issues

After review of the City of Sugar Land's hazard event history, hazard rankings, jurisdiction specific vulnerabilities, hazard area extent and location, and current capabilities, the City of Sugar Land identified the following vulnerabilities within their community:

- The Imperial Park Recreation Center does not have a generator and operates as a shelter.
- The TE Harman Center does not have a generator and operates as a shelter.
- Schools do not have emergency notification systems installed.
- The City does not have equipment to protect against power surges.
- Children are unsafe in schools during high wind events due to debris that could break windows and injure them.
- The City is currently a Category 7 member of the CRS Program and wants to reduce flood insurance cost.
- There is limited education opportunities for homeless/vulnerable populations.
- There are vulnerable members of the population without cooling systems to help protect them against extreme cold temperatures.
- There is limited guidance on information about lightning injuries.
- The public is not fully aware of the importance of water conservation during a drought event.
- The City has not informed the public on proper shelter-in-place procedures.
- The City does not have a severe winter storm outreach program.
- The City does not have a plan for vaccination and first responders training regarding disease outbreak.
- The City experiences erosion along the Brazos River that compromises the stability of the Levees.
- The City experiences flooding issues in Austin Park/Chimneystone.
- The City experiences drainage issues in the Covington Woods West area.
- The City experiences flooding relating to the Oyster Creek area which impacts critical facilities in the City.
- The City needs to survey/ install benchmarks and implement a flood protection plan.
- The City EOC and Dispatch Center is dated and the building is at risk of being impacted by hazards.
- The roads to the WWTP flood consistently and limit access to facilities.
- The chemical storage facility at the WWTP floods consistently.
- The City has flood issues relating to their RL properties in the SHFA.
- Some facilities in the SHFA consistently flood and need flood protection.
- The WWTP critical assets are at risk for flooding.
- The City experiences consistent flooding from backed up stormwater.
- The City has an increasing number of impervious services that lead to flooding.
- There are stormwater issues and water retention problems in the City.
- The City does not have high water rescue vehicles to deploy during emergencies.
- The City's LIDAR data does not include flooding and ponding models.
- The windows at critical facilities are vulnerable to hazards.
- Critical facilities are at risk for hazard events.
- Traffic lights throughout the City are vulnerable to hazards.
- The City Hurricane evacuation routes and Shelters of Last Resort - needs assessment to ensure it is updated and includes all the hazards of concern.



- The City does not have updated lightning and severe weather protocols implemented for outside events.
- The City needs to update the lightning alert and storm monitoring system.
- Lightning prevention is not up to code and some facilities are not in compliance.
- The Brazos River Erosion Study has not been updated since 2017.
- The Brazos River does not have an erosion management plan.
- The Brazos River experiences annual erosion that is not monitored.
- Development standards are allowing for soil instability which leads to damaged property.
- The SCADA system does not include dams located within the City.
- Landscape ordinances do not currently address drought tolerant practices.
- The WWTP does not have a reclamation system installed.
- The City cannot track water management throughout the City in a timely fashion.
- The City does not have a significant amount of green space.
- The City has out-of-date data regarding critical facilities for vulnerable populations.
- There is no outreach program developed for homeowners regarding hazard risk and mitigation.
- The City does not have updated technology to perform regular assessments of impacted areas.
- The City does not have software to analyze collected drone data.
- There are no standards designed to address sloughing and repair of channels.
- The roadway between the Surface Water Treatment Plant and the forebay/intake area become flooded during heavy precipitation events.
- There is no back-up power for the Homeward Way Groundwater Production plant.
- The Surface Water Treatment plant is covered in windows that are not secure in protecting equipment.
- The City does not have consistent codes for development and building in the City and ETF.
- There is no surge protection at the SWTP, which affects continuity of operations during weather events.
- The City's warning system does not cover all hazards of concern and needs enhances alert capabilities to alert residents.
- The Brazos River suffers from stabilization and erosion issues.
- There is limited coordination with the Texas Water Development Board regarding the Brazos River.
- There are conservation issues surrounding native species in construction.
- There are no emergency interconnections between the main City and New Territory water systems, main City and Greatwood water systems, and River Park and New Territory water systems.
- There are generators with limited functions at all four WWTP in the City.
- The South Plant WWTP does not have a shelter for staff.
- Six remote well locations do not have right angle drives and generators installed to perform continuity of operations.
- There are no generators located at the surface water treatment plant.
- There are no generators installed at the 10 high sites around the City that support communications and IT during disaster events.
- The City does not have generators for traffic signals.
- The City does not have proper means to provide fuel service to generator sites located throughout the City.



- There are numerous streets and areas in the City that have ponding, stormwater and drainage issues due to not meeting City criteria and infrastructure problems including\*:
  - Settlers Park
  - Riverbend North
  - Sugar Lakes
  - Sugar Creek
  - Lakes of Austin Park
  - Covington Woods
  - Telfair
  - Imperial Woods
  - Riverbend South
  - Grants Lake
  - Colony Bend Neighborhood
  - Highlands Neighborhood
  - Meadowlakes Subdivision
  - Commonwealth Neighborhood
  - FBC LID 14

*\*This issue was identified as a specific area of concern based on resident response to the Fort Bend County Hazard Mitigation public survey.*

### 9.16.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritizes actions to address over the next five years.

#### **Past Mitigation Initiative Status**

The following table indicates progress on the community's mitigation strategy identified in the 2018 HMP. Actions that are in progress are carried forward and combined with new actions as part of this plan update and are included in the tables with prioritization. Previous actions that are now ongoing programs and capabilities are indicated as such and previously presented in the Capability Assessment earlier in this annex.





Table 9.16-16. Status of Previous Mitigation Actions

Project	Responsible Party	What is the status? (e.g., In Progress, No Progress, Ongoing Capability, or Completed) If in progress or completed, please describe the funding source, cost and who is implementing.	If you did not complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?		
			Yes/No	If Yes, please describe the original problem (i.e., hazard, location, historic losses)	If Yes, identify the department/person to implement the project.
Imperial Park Generator	City Emergency Management	In Progress	Yes	-	City Emergency Management
T.E. Harman Center Generator	City Emergency Management	In Progress	Yes	-	City Emergency Management
Emergency Notification System for City Schools	Fort Bend ISD	No Progress	Yes	-	Fort Bend ISD
New Electric Equipment to Protect Against Power Surges	City Emergency Management	No Progress	Yes	-	City Emergency Management
Install Security Window Film in Fort Bend ISD City Schools	Fort Bend ISD	No Progress	Yes	-	Fort Bend ISD
CRS Program	City Emergency Management	In Progress	Yes	-	City Emergency Management
Participation in FBI JTTE	City Police Department	Ongoing	Yes	-	City Police Department
Terrorism Information to Fusion Center	City Police Department	In Progress	Yes	-	City Police Department
Training for Threat Assessments	City Police Department	In Progress	Yes	-	City Police Department
Police Department Training for Supervisors	City Police Department	In Progress	Yes	-	City Police Department
Design Threat Assessment	City Police Department	In Progress	Yes	-	City Police Department
Update City Policy for Threat Assessments	City Police Department	In Progress	Yes	-	City Police Department
Identify Top Targets for Terrorism Events	City Police Department	In Progress	Yes	-	City Police Department
Develop Terrorism Response Plans for Top Targets in City	City Police Department	In Progress	Yes	-	City Police Department
Develop Training and Planning for Top Terrorism Targets in City	City Police Department	In Progress	Yes	-	City Police Department
Extreme Heat Education and Outreach Program	Emergency Management	In Progress	Yes	-	Emergency Management
Fan and Air Conditioning Program	City Emergency Management	In Progress	Yes	-	City Emergency Management
Review and Update the Hazardous Materials and Oil Spill Response Annex	City Emergency Management with support from Fort Bend County OEM	In Progress	Yes	-	City Emergency Management with support from Fort Bend County OEM
Identify primary and alternate fuel sources and add them to the City Continuity of Operations Plan	City Emergency Management	In Progress	Yes	-	City Emergency Management
Purchase an airport fire truck	City Emergency Management	No Progress	Yes	-	City Emergency Management
Emergency Alert System for Aircrafts	City Emergency Management	In Progress	Yes	-	City Emergency Management



Project	Responsible Party	What is the status? (e.g., In Progress, No Progress, Ongoing Capability, or Completed) If in progress or completed, please describe the funding source, cost and who is implementing.	If you did not complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?		
			Yes/No	If Yes, please describe the original problem (i.e., hazard, location, historic losses)	If Yes, identify the responsible department/person to implement the project.
Outreach Materials for Lightning Injuries	City Emergency Management	No Progress	Yes	-	City Emergency Management
Water Conservation Public Outreach	City Emergency Management	Ongoing	Yes	-	City Emergency Management
Shelter-in-place procedures	City Emergency Management	In Progress	Yes	-	City Emergency Management
Winter Storm Outreach Program	City Emergency Management	In Progress	Yes	-	City Emergency Management
General Public and First Responders Planning	City Emergency Management	Ongoing	Yes	-	City Emergency Management
Project Brazos	Fort Bend County	In Progress	Yes	-	Fort Bend County
Austin Park/Chimneystone Drainage Project	City of Sugar Land	In Progress	Yes	-	City of Sugar Land
Covington Woods West	City of Sugar Land	In Progress	Yes	-	City of Sugar Land
Oyster Creek Diversion Channel and Storage Facility in Tract 2	City Engineering	In Progress	Yes	-	City Engineering
City-wide Benchmark System Update	City Engineering	In Progress	Yes	-	City Engineering
New Emergency Operations Center	City Engineering and Public Works	In Progress	Yes	-	City Engineering and Public Works
New Territory WWTP Road Elevation	City Engineering and Public Works	No Progress	Yes	-	City Engineering and Public Works
New Territory WWTP Flood Protection	City Engineering and Public Works	In Progress	Yes	-	City Engineering and Public Works
Structural Elevation & Acquisition Program	City Engineering/Emergency Management	No Progress	Yes	-	City Engineering/Emergency Management
Flood/Dry-proofing critical facilities	City Engineering/Emergency Management	No Progress	Yes	-	City Engineering/Emergency Management
Elevation of WWTP Critical Assets	City Engineering and Public Works	No Progress	Yes	-	City Engineering and Public Works
Stormwater Needs Assessment	City of Sugar Land Engineering and Public Works	Ongoing	Yes	-	City of Sugar Land Engineering and Public Works
Stormwater impact fee	City Engineering	Complete	No	-	City Engineering
Development Code Changes - Impervious Surface	City Engineering	In Progress	Yes	-	City Engineering
Development Code Changes - Water Retention	City Engineering	In Progress	Yes	-	City Engineering
High Water Rescue Vehicle	Emergency Management	No Progress	Yes	-	Emergency Management
Updated LIDAR Data	City Engineering	Ongoing	Yes	-	City Engineering





Project	Responsible Party	What is the status? (e.g., In Progress, No Progress, Ongoing Capability, or Completed) If in progress or completed, please describe the funding source, cost and who is implementing.	If you did not complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?		
			Yes/No	If Yes, please describe the original problem (i.e., hazard, location, historic losses)	If Yes, identify the responsible department/person to implement the project.
Waste Water Treatment Back-up Power Supply	City Engineering/Public Works	No Progress	No	-	City Engineering/Public Works
Power supply hardening to critical facilities	City Engineering	No Progress	No	-	City Engineering
Window Hardening	Public Works	No Progress	Yes	-	Public Works
Critical Facility Hardening	City Engineering/Emergency Management	In Progress	Yes	-	City Engineering/Emergency Management
Traffic Light Hardening	Public Works	In Progress	Yes	-	Public Works
Hurricane Sheltering and Evacuation Needs Assessment and Outreach Program	Emergency Management	In Progress	Yes	-	Emergency Management
Lightning/ Severe Weather protocols for outside events.	ISD/Parks Department	In Progress	Yes	-	ISD/Parks Department
Update Lightning Alert and Severe Storm Monitoring and warning capabilities	Public Works	In Progress	Yes	-	Public Works
Lightning Prevention Needs Assessment	City Engineering/ Environmental and Neighborhood Services	No Progress	Yes	-	City Engineering/ Environmental and Neighborhood Services
Update Erosion Study	City Engineering	Ongoing	Yes	-	City Engineering
Erosion Management Plan	City Engineering	In Progress	Yes	-	City Engineering
Project Brazos	City Engineering and Fort Bend County	In Progress	Yes	-	City Engineering and Fort Bend County
Design Standards Update for Soil Stabilization	City Engineering	In Progress	Yes	-	City Engineering
SCADA Update for Dams	Public Works	In Progress	Yes	-	Public Works
Drought Conservation Plan Update	Public Works	Complete	No	-	Public Works
Update Integrated Water Resource Plan	Public Works	Complete	No	-	Public Works
Update Landscape Ordinance	Public Works	No Progress	Yes	-	Public Works
WWTP Reclaim Systems	City Engineering/Public Works	In Progress	Yes	-	City Engineering/Public Works
Purchase Advanced Metering Infrastructure System	Public Works	In Progress	Yes	-	Public Works
Development Code Changes - Green Space Requirements	City Engineering	In Progress	Yes	-	City Engineering
Vulnerable Population/ Critical Facilities Database	Emergency Management	Ongoing	Yes	-	Emergency Management
Homeowner Outreach Program	Emergency Management	In Progress	Yes	-	Emergency Management
Drone Purchase	Communications	Complete	Yes	-	Communications
Software Purchase	Communications	Complete	Yes	-	Communications
Establish Design Standards for Channel Repair	City Engineering	In Progress	Yes	-	City Engineering



Project	Responsible Party	What is the status? (e.g., In Progress, No Progress, Ongoing Capability, or Completed) If in progress or completed, please describe the funding source, cost and who is implementing.	If you did not complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?		
			Yes/No	If Yes, please describe the original problem (i.e., hazard, location, historic losses)	If Yes, identify the responsible department/person to implement the project.
Surface Water Treatment Plant Access Road Elevation	City Engineering and Public Works	In Progress	Yes	-	City Engineering and Public Works
Back-up power for Homeward Way Production Plan	Public Works	In Progress	Yes	-	Public Works
SWTP Hurricane Shutters	Public Works	No Progress	Yes	-	Public Works
ETJ Code Update	Code Enforcement Division	In Progress	Yes	-	Code Enforcement Division
SWTP Surge Protection	Public Works	In Progress	Yes	-	Public Works
Update City's Warning System Update	Emergency Management/ 911-Dispatch	In Progress	Yes	-	Emergency Management/ 911-Dispatch
Implement Stone toe protection for Brazos River	City Engineering	In Progress	Yes	-	City Engineering
Brazos River Initiative	City Engineering and Fort Bend County	In Progress	Yes	-	City Engineering and Fort Bend County
Update Design Standards utilize native species in construction	City Engineering	In Progress	Yes	-	City Engineering
Water Systems Update	Public Works	In Progress	Yes	-	Public Works
Back-up Generators at New Territory (West); Greatwood; North Plant; South Plant WWTP	Public Works	In Progress	Yes	-	Public Works
South Plant WWTP Shelter	Public Works	No Progress	Yes	-	Public Works
Remote well right angle drive and generator	Public Works	In Progress	Yes	-	Public Works
Surface Water Plant Generator	Public Works	In Progress	Yes	-	Public Works
Generators for City's Wireless System	Public Works	In Progress	Yes	-	Public Works
Back-up Power supply for traffic signals.	Public Works	In Progress	Yes	-	Public Works
Fuel Trailer	Public Works	No Progress	Yes	-	Public Works

**Additional Mitigation Efforts**

In addition to the mitigation initiatives completed in the table above, the City of Sugar Land identified the following mitigation efforts completed since the last HMP:

- None Identified

Since the adoption of the County's first HMP, the City of Sugar Land has made significant mitigation progress in the following areas:

- None Identified

**Proposed Hazard Mitigation Initiatives for the HMP Update**

Fort Bend County participated in a mitigation action workshop in March 2023 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards (January 2013) and FEMA Mitigation Assistance Resource Guide for Texas (2020).

The table below indicates the range of proposed mitigation action categories. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table to further demonstrate the wide-range of activities and mitigation measures selected.

**Table 9.16-17. Analysis of Mitigation Actions by Hazard and Category**

Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Dam/Levee Failure	X	X		X	X		X		X	X
Disease Outbreak	X	X		X	X		X		X	X
Drought	X	X	X	X	X		X	X	X	X
Extreme Temperature	X	X	X	X	X		X	X	X	X
Flood	X	X	X	X	X		X	X	X	X
Geologic Hazards	X	X	X	X	X		X	X	X	X
Hurricane/Tropical Storm	X	X		X	X	X	X		X	X
Severe Weather	X	X		X	X	X	X		X	X
Tornado	X	X		X	X	X	X		X	X
Wildfire	X	X		X	X		X		X	X
Winter Weather	X	X		X	X		X		X	X

Note: Mitigation categories are described below the Mitigation Initiatives.



The table below summarizes the specific mitigation initiatives the City of Sugar Land would like to pursue in the future to reduce the effects of hazards. The initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities.

Table 9.16-18. Proposed Hazard Mitigation Initiatives

Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Sugar Land-001	Imperial Park Generator	Problem: The Imperial Park recreation center does not have a generator and operates as a shelter.  Solution: Purchase and install a generator for the Imperial Park Recreation Center. This center serves as an emergency shelter for residents.	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	2,3	Within 2 years	City Emergency Management	FEMA HMGP and PDM/BRIC; City Budget	Shelter will be able to be open during outages.	\$250,000	High	SIP	SP, ES
2023-City of Sugar Land-002	T.E. Harman Center Generator	Problem: The TE Harman Center does not have a generator and operates as a shelter.  Solution: Purchase and install a generator for the T.E. Harman Center. This center serves as an emergency shelter for residents.	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	2,3	Within 2 years	City Emergency Management	FEMA HMGP and PDM/BRIC; City Budget	Shelter will be able to be open during outages.	\$250,000	High	SIP	SP, ES
2023-City of Sugar Land-003	Emergency Notification System for City Schools	Problem: Schools do not have emergency notification systems installed.  Solution: Purchase and install emergency notification systems at all City of Sugar Land schools to ensure they have the newest technology, including integrated siren	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	1,3	One Year	Fort Bend ISD	Fort Bend ISD		\$400,000	High	EAP	ES



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		and strobes and alert beacons.										
2023-City of Sugar Land-004	New Electric Equipment to Protect Against Power Surges	Problem: The City does not have equipment to protect against power surges.  Solution: Purchase and install new electric equipment to protect equipment against power surges.	Severe Weather	2	One Year	City Emergency Management	City Budget	Protects new equipment from power surges.	\$25,000	High	SIP	PP
2023-City of Sugar Land-005	Install Security Window Film in Fort Bend ISD City Schools	Problem: Children are unsafe in schools during high wind events due to debris that could break windows and injure them.  Solution: Apply security window film to existing windows in Fort Bend ISD City of Sugar Land schools to protect students from wind-borne debris during high winds situations such as thunderstorms and tornadoes.	Hurricane/Tropical Storm, Severe Weather	2	One Year	Fort Bend ISD	Fort Bend ISD	Protects Children from hazards when in schools.	\$500,000	High	SIP	PP, ES
2023-City of Sugar Land-006	CRS Program	Problem: The City is currently a category 7 member of the CRS Program and wants to reduce flood insurance cost.  Solution: Develop a program to lower the CRS number from 7 to 6.	Flood	1,2	Within 5 years	City Emergency Management	City Budget	Reduced flood insurance rate and better protection.	\$10,000+	High	LPR	PI



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Sugar Land-007	Extreme Heat Education and Outreach Program	Problem: There is limited education opportunities for homeless/vulnerable populations.  Solution: Education/outreach for homeless or vulnerable populations sensitive to extreme heat conditions on mitigation techniques to avoid heat related illness.	Extreme Temperature	1	Within 1 year	Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	Better education regarding Extreme Temperatures.	\$20,000	High	EAP	PI
2023-City of Sugar Land-008	Fan and Air Conditioning Program	Problem: There are vulnerable members of the population without cooling systems to help protect them against extreme cold temperatures.  Solution: Create a program with non-profit organizations to distribution of fans and portable air conditioning units to vulnerable Sugar Land residents.	Extreme Temperature	1,2	Within 2 years	City Emergency Management	City Budget, Staff Time		<\$10,000	High	EAP	PR
2023-City of Sugar Land-009	Outreach Materials for Lightning Injuries	Problem: There is limited guidance on information about lightning injuries.  Solution: Provide guidance to the public regarding prevention of damage and injuries from lightning.	Severe Weather	1,2	1 year	City Emergency Management	City Budget, Staff Time	Residents will be more knowledgeable about lightning.	<\$10,000	High	EAP	PR, PI
2023-City of Sugar Land-010	Water Conservation Public Outreach	Problem: The public is not fully aware of the importance of water conservation during a drought event.	Drought	1,2	1 year	City Emergency Management	City Budget, Staff Time		<\$10,000	High	EAP	PI



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		Solution: Educate the public on the importance of water conservation and steps the public can take to limit water waste.										
2023-City of Sugar Land-011	Shelter-in-place procedures	Problem: The City has not informed the public on proper shelter-in-place procedures.  Solution: The City will provide guidance to the public in shelter-in-place procedures.	Hurricane/Tropical Storm, Flood	1,2	1 year	City Emergency Management	City Budget, Staff Time	Residents will be more knowledgeable about shelter-in-place procedures.	<\$10,000	High	EAP	PI
2023-City of Sugar Land-012	Winter Storm Outreach Program	Problem: The City does not have a severe winter storm outreach program.  Develop a severe winter storm outreach program for City of Sugar Land citizens.	Winter Weather	1,2	2 years	City Emergency Management	City Budget, Staff Time	Residents will be more knowledgeable about severe winter storms.	<10,000	High	EAP	PI
2023-City of Sugar Land-013	General Public and First Responders Planning	Problem: The City does not have a plan for vaccination and first responders training regarding disease outbreak.  Solution: Coordinate with Fort Bend County Health and Human Services in planning and exercises for vaccination and prophylaxis of the general public and first responders.	Disease Outbreak	4	1 year	City Emergency Management	City Budget	The general public will be more protected from hazard events.	Staff Time	High	LPR	ES
2023-City of Sugar Land-014	Project Brazos	Problem: The City experiences erosion along the Brazos River that compromises the stability of the Levees.	Geologic Hazards, Flood	2	5+ years	Fort Bend County	CDBG-MIT; TWDB FIF; HMGP; PDM	The four sites located in the City will be more stable.	>\$100,000	High	SIP	SP





Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		Solution: Project consists of 13 sites – 4 are in City of Sugar Land. Project includes design and construction to prevent additional erosion along the Brazos River that is compromising stability of the Levees.										
2023-City of Sugar Land-015	Austin Park/Chimneystone Drainage Project	<p>Problem: The City experiences flooding issues in Austin Park/Chimneystone.</p> <p>Solution: Design and construct a new channel to connect to LID#2. This will help reduce or eliminate flooding to 250+ homes in this area.</p>	Flood	2,3	Within 3 years	City of Sugar Land	HMGP; TWDB Loan; CDBG-MIT	Flooding issues will be reduced.	\$60.5 million	High	SIP	SP
2023-City of Sugar Land-016	Covington Woods West	<p>Problem: The City experiences drainage issues in the Covington Woods West area.</p> <p>Solution: Improve and upgrade drainage in the Covington Woods West area of the City. This will help reduce street ponding.</p>	Flood	2,3	Within 3 years	City of Sugar Land	CDBG-MIT	Flooding issues will be reduced.	\$3 million	High	SIP	SP
2023-City of Sugar Land-017	Oyster Creek Diversion Channel and Storage Facility in Tract 2	<p>Problem: The City experiences flooding relating to the Oyster Creek area which impacts critical facilities in the City.</p> <p>Solution: The proposed project includes the design and construction of a drainage solution (diversion channel and wet detention</p>	Flood, Severe Weather	2	5+ years	City Engineering	TWDB	Critical facilities experience less flooding and additional properties will also experience less flooding.	\$27.4 million	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		pond) to reduce the risk of flooding and associated damages to the Oyster Creek area and reduce the economic impact to critical facilities. The proposed project will remove the City of Sugar Land Airport, the Police Training Academy and the Central Unit Prison properties from the 100-year (Atlas 14) floodplain while minimizing any adverse downstream impacts. The project includes the construction of a 95 acres wet detention pond that will enhance and protect wetlands and park land in the project area.										
2023-City of Sugar Land-018	City-wide Benchmark System Update	<p>Problem: The City needs to survey/ install benchmarks and implement a flood protection plan.</p> <p>Solution: Survey and installation of the benchmarks. Implement flood protection plan (describe additional benefits and applications) modeling to construction.</p>	Flood	4,5	Within 3 years	City Engineering	HMGF	The community will be better protected from flood hazards.	\$20,000	High	LPR	PP
2023-City of Sugar Land-019	New Emergency Operations Center	<p>Problem: The City EOC and Dispatch Center is dated and the building is at risk of being impacted by hazards.</p> <p>Solution: Construct new EOC and Dispatch Center – The current EOC and Dispatch</p>	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado,	1,2	Within 5 years	City Engineering and Public Works	UASI, HSGP	The New EOC will be able to perform continuity of operations.	\$11.5 million	High	SIP, EAP	PP, PR



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		Center is over 25 Years old. Due to increased growth of the City and risk over the past 25 years, a larger facility is needed to address capacity needs. The new facility will be located on property directly behind the current Police Station within the flood plain.	Wildfire, Winter Weather									
2023-City of Sugar Land-020	New Territory WWTP Road Elevation	Problem: The roads to the WWTP flood consistently and limit access to facilities.  Solution: During heavy rainfall events, the roads to the WWTP become flooded and access to the facility can only be obtained by boat. The projects propose is to elevate the access roads to the WWTP.	Flood	2,3	5+ years	City Engineering and Public Works	TWDB, HMGP	The City will experience less flooding on the roads once they are elevated.	\$230,000	High	SIP	SP
2023-City of Sugar Land-021	New Territory WWTP Flood Protection	Problem: The chemical storage facility at the WWTP floods consistently.  Solution: Purchase and install flood walls to protect chemical storage facilities at the WWTP that store hazardous materials utilized in the treatment process.	Flood	2,3	5+ years	City Engineering and Public Works	FEMA HMGP, FMA/BRIC, CDBG	The chemical storage facility will be better protected.	\$250,000	High	SIP	SP
2023-City of Sugar Land-022	Structural Elevation & Acquisition Program	Problem: The City has flood issues relating to their RL properties in the SHFA.  Solution: Develop a home elevation and/or acquisition program to prioritize the reduction of flood risk for	Flood	1,2	5+	City Engineering/Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	The SRL and RL properties will be elevated, and flood will be reduces.	TBD	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		severe repetitive loss properties and those structures in the SHFA.										
2023-City of Sugar Land-023	Flood/Dry-proofing critical facilities	Problem: Some facilities in the SHFA consistently flood and need flood protection.  Solution: Develop a program to prioritize the flood/dry-proofing of critical facilities in the SHFA.	Flood	2,3	5+	City Engineering/Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	Properties located in the SHFA will be better protected from flooding.	TBD	High	SIP	SP
2023-City of Sugar Land-024	Elevation of WWTP Critical Assets	Problem: The WWTP critical assets are at risk for flooding.  Solution: Elevate lift stations, critical assets and electrical components out of risk to flooding.	Flood	2,3	2+ years	City Engineering and Public Works	FEMA HMGP, FMA/BRIC, CDBG	The WWTP critical assets are better protected.	\$1,000,000	High	SIP	SP
2023-City of Sugar Land-025	Stormwater Needs Assessment	Problem: The City experiences consistent flooding from backed up stormwater.  Solution: City-wide Flood Prevention and Drainage Needs Assessment to identify drainage projects and additional flood mapping needs.	Flood	2,3	5+ years	City of Sugar Land Engineering and Public Works	HMGP, TWDB Loan	The City will not flood as much.	\$600,000	High	SIP	SP
2023-City of Sugar Land-026	Development Code Changes - Impervious Surface	Problem: The City has an increasing number of impervious services that lead to flooding.  Solution: Limiting the percentage of allowable impervious surface for new	Flood	1,4,5	5+ years	City Engineering	City Budget	The City will experience less flooding.	Staff Time	High	SIP	SP





Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		development and re-developed sites City-wide.										
2023-City of Sugar Land-027	Development Code Changes - Water Retention	Problem: There are stormwater issues and water retention problems in the City.  Solution: Coordinating with developers to construct on-site retention basins for excessive stormwater and a firefighting water source.	Flood	1,4,5	5+ years	City Engineering	City Budget	The City will have improved water retention.	Staff Time	High	LPR	PP
2023-City of Sugar Land-028	High Water Rescue Vehicle	Problem: The City does not have high water rescue vehicles to deploy during emergencies.  Solution: High Water Rescue Vehicle to be deployed during emergency events to support first responder efforts and residents with rescue & evacuation.	Flood	2	Within 1 year	Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	Increased rescue and response capabilities.	20,000	High	EAP	ES
2023-City of Sugar Land-029	Updated LIDAR Data	Problem: The City's LIDAR data does not include flooding and ponding models.  Solution: Update 2014 City-wide LIDAR to update the City's flooding and ponding models.	Flood	2	3+ years	City Engineering	FEMA, TWDB	Improved LIDAR capabilities.	50,000	High	LPR	PI
2023-City of Sugar Land-030	Window Hardening	Problem: The windows at critical facilities are vulnerable to hazards.	Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado,	2,3	2+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Critical facilities will be better protected from hazards.	\$25,000	High	SIP	SP, ES



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		Solution: Obtain ballistic Resistant glass/Film for Critical Facilities.	Wildfire, Winter Weather									
2023-City of Sugar Land-031	Critical Facility Hardening	Problem: Critical facilities are at risk for hazard events.  Solution: Installing hardening measures for Critical facilities – Emergency Operations Center, fire stations, police, City Hall, WWTP to be more resistant wind, hurricane and hail.	Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	2,3	5+ years	City Engineering/Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	Critical facilities will be better protected.	\$10,000,000	High	SIP	SP
2023-City of Sugar Land-032	Traffic Light Hardening	Problem: Traffic lights throughout the City are vulnerable to hazards.  Solution: Traffic Lights-stabilizer, minimize cracking in mast arms and increase damage resistance in high wind events.	Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	2	3+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Traffic lights will not need as many repairs from hazard events.	\$800,000	High	SIP	PP
2023-City of Sugar Land-033	Hurricane Sheltering and Evacuation Needs Assessment and Outreach Program	Problem: The City Hurricane evacuation routes and Shelters of Last Resort - needs assessment to ensure it is updated and includes all the hazards of concern.  Solution: Hurricanes evacuation routes and Shelters of Last Resort - needs assessment and education and outreach program to identify and accommodate sheltering people who are stalled in traffic on a main evacuation	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	4,5	3+ years	Emergency Management	FEMA HMGP, FMA/BRIC, CDBG, UASI, HSGP,	An improved evacuation route.	\$50,000	High	LPR	PI, PR



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		route from the coastal communities and to communicate designated shelters and evacuation routes as a result of the study.										
2023-City of Sugar Land-034	Lightning/ Severe Weather protocols for outside events.	Problem: The City does not have updated lightning and severe weather protocols implemented for outside events.  Solution: Schools & parks-update and develop lightning protocols for all outdoor City events to ensure all attendees at outside events are aware of safety precautions.	Severe Weather	1	2+ years	ISD/Parks Department	FEMA HMGP, FMA/BRIC, CDBG, UASI, HSGP	City residents will be more knowledgeable of how hazards affect outside events.	\$25,000	High	LPR	PR
2023-City of Sugar Land-035	Update Lightning Alert and Severe Storm Monitoring and warning capabilities	Problem: The City needs to update the lightning alert and storm monitoring system.  Solution: Implement a service to detect lightning strikes within a certain mile radius. Warning for fires, and for any outdoor activities. Establish warning thresholds that indicate when not operate, utility preparation, and overall protection of public safety.	Severe Weather	1, 2,3	Within 1 year	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The City residents will be more knowledgeable due to updated warning capabilities.	\$50,000	High	EAP	ES
2023-City of Sugar Land-036	Lightning Prevention Needs Assessment	Problem: Lightning prevention is not up to code and some facilities are not in compliance.	Severe Weather	1,4,5	2+ years	City Engineering/ Environmental and Neighborhood Services	FEMA HMGP, FMA/BRIC, CDBG	Lightning prevention will be updated and in compliance.	\$75,000	High	LPR	PR



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		Solution: Needs Assessment to evaluate if City's critical facilities are up to code on lightning and identify projects for facilities that are not in compliance.										
2023-City of Sugar Land-037	Update Erosion Study	Problem: The Brazos River Erosion Study has not been updated since 2017.  Solution: Update the 2017 Brazos River Erosion Study.	Geologic Hazards	1,4	3+ years	City Engineering	FEMA HMGP, FMA/BRIC, CDBG	The Erosion Study will include up to date information.	\$100,000	High	NSP	NR
2023-City of Sugar Land-038	Erosion Management Plan	Problem: The Brazos River does not have an erosion management plan.  Solution: Develop an erosion management plan for the Brazos River.	Geologic Hazards	5	2+ years	City Engineering	FEMA HMGP, FMA/BRIC, CDBG	The Brazos River will experience reduces erosion.	\$100,000	High	LPR	PP, PR
2023-City of Sugar Land-039	Project Brazos	Problem: The Brazos River experiences annual erosion that is not monitored.  Solution: Monitor annual erosion to the Brazos River (Drone/ LIDAR capability).	Geologic Hazards	1,2	5+ years	City Engineering and Fort Bend County	FEMA HMGP, FMA/BRIC, CDBG	The City will have better resources relating to erosion of the Brazos River.	\$50,000	High	EAP	NR, PR
2023-City of Sugar Land-040	Design Standards Update for Soil Stabilization	Problem: Development standards are allowing for soil instability which leads to damaged property.  Solution: Update design standards for development and redevelopment projects to incorporate soil stabilization techniques.	Geologic Hazards	1,2	5+ years	City Engineering	City Budget	The City will experience less soil instability.	Staff Time	High	LPR	PR
2023-City of Sugar	SCADA Update for Dams	Problem: The SCADA system does not include dams located within the City.	Dam/Levee Failure, Drought, Flood	2,5	2+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Data of Dams within the City will be documented.	\$100,000	High	EAP	PI





Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
Land-041		Solution: Update SCADA system to include data on dams located within the City.										
2023-City of Sugar Land-042	Update Landscape Ordinance	Problem: Landscape ordinances do not currently address drought tolerant practices.  Solution: Incorporating drought tolerant or xeriscape practices into landscape ordinances to reduce dependence on irrigation in City of rights-of-way.	Drought	2,5	Within 1 year	Public Works	City Budget	The City will have drought tolerant landscape.	Staff Time	High	LPR	PR, PP
2023-City of Sugar Land-043	WWTP Reclaim Systems	Problem: The WWTP does not have a reclamation system installed.  Solution: Expanding reclaim systems at south WWTP plant from 1/mgd to 2/mgd. For the North pant installing a new reclaim system for additional capacity up to 2/mgd.	Drought	2,3	5+ years	City Engineering/Public Works	FEMA HMGP, FMA/BRIC, CDBG	The City will have a reclamation from the WWTP to combat drought conditions.	\$25,000,000	High	SIP	SP
2023-City of Sugar Land-044	Purchase Advanced Metering Infrastructure System	Problem: The City cannot track water management throughout the City in a timely fashion.  Solution: Purchase and install Advanced Metering Infrastructure (AMI) which is an integrated system of customer water meters, communication networks and data management systems that provide real	Drought	4	3+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Improve drought conditions.	\$20,000,000	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		time water use information to the City and its residents.										
2023-City of Sugar Land-045	Development Code Changes - Green Space Requirements	Problem: The City does not have a significant amount of green space.  Solution: Establishing a "green infrastructure" program to link, manage, and expand existing parks, preserves, greenways, etc. (easements).	Drought, Extreme Temperature, Flood, Geologic Hazards	2,5	5+ years	City Engineering	City Budget	The City will have increased green space.	Staff Time	High	NSP	NR
2023-City of Sugar Land-046	Vulnerable Population/ Critical Facilities Database	Problem: The City has out of date data regarding critical facilities for vulnerable populations.  Solution: Update/ Develop data base to define and identify critical facilities for vulnerable populations such as Nursing homes and medical service providers.	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	1,4	2+ years	Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	The City will have more updated data.	\$50,000	High	EAP	PI
2023-City of Sugar Land-047	Homeowner Outreach Program	Problem: There is no outreach program developed for homeowners regarding hazard risk and mitigation.  Solution: Develop quarterly program to inform homeowners of hazard risk, hazard reducing materials, techniques, and funding opportunities [Water saving techniques (rain barrels, appliance/ rebate programs for smart meters) and Hail	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	1	2+ years	Emergency Management	FEMA HMGP, FMA/BRIC, CDBG	The City will be better prepared during hazard events.	\$50,000	High	EAP	PI



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		resistance materials and insurance incentives].										
2023-City of Sugar Land-048	Drone Purchase	Problem: The City does not have updated technology to perform regular assessments of impacted areas.  Solution: Purchase a drone with the appropriate camera to perform regular assessments of impacted areas for data collection related to mitigation efforts.	Dam/Levee Failure, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	4	Within a year	Communications	FEMA HMGP, FMA/BRIC, CDBG	The City will be able to perform regular assessments of impacted areas.	\$50,000	High	EAP	ES
2023-City of Sugar Land-049	Software Purchase	Problem: The City does not have software to analyze collected drone data.  Solution: Purchase and install software to manage and analyze collected drone data in relation to mitigation efforts.	Dam/Levee Failure, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather Tornado, Wildfire, Winter Weather	4	Within a year	Communications	FEMA HMGP, FMA/BRIC, CDBG	The City will be able to analyze data.	\$50,000	High	EAP	PP
2023-City of Sugar Land-050	Establish Design Standards for Channel Repair	Problem: There are no standards designed to address sloughing and repair of channels.  Solution: All parties (county, City, LID's) to establish design standards to address sloughing and repair of the channel for Ditch H.	Flood	5	3+ years	City Engineering	FEMA, TWDB	Standards will be set for channel repair and redesign.	\$500,000	High	LPR	PP
2023-City of Sugar Land-051	Surface Water Treatment Plant Access Road Elevation	Problem: The roadway between the Surface Water Treatment Plant and the forebay/intake area become	Flood	2,3	5+ years	City Engineering and Public Works	TWDB	The road will have limited flooding.	\$1,000,000	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		flooded during heavy precipitation events.  Solution: During flooding events, the roadway between the Surface Water Treatment Plant and the fore bay/intake area become flooded, preventing access to the fore bays and intake for operations and maintenance. The City will elevate roadway between the SWTP main area and fore bays to deter flooding.										
2023-City of Sugar Land-052	Back-up power for Homeward Way Production Plant	Problem: There is no back-up power for the Homeward Way Groundwater Production plant  Solution: Upgrade/Replace generator with an appropriately sized generator at Homeward Way Groundwater Production Plant. Current generator capacity is insufficient to power plant during utility power loss.	Dam/Levee Failure, Drought, Extreme Temperature Flood Geologic Hazards Hurricane/Tropical Storm, Severe Weather Tornado, Wildfire, Winter Weather	2,3	2+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	There will be back-up power and continuity of operations.	\$350,000	High	SIP	SP
2023-City of Sugar Land-053	SWTP Hurricane Shutters	Problem: The Surface Water Treatment plant is covered in windows that are not secure in protecting equipment.  Solution: Add hurricane shutters to Surface Water Treatment Plant control room because it has windows covering the South	Hurricane/Tropical Storm	2,3	2+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Personal and critical equipment will be better protected.	20,000	High	SIP	SP





Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		and East walls so this will protect personnel and critical equipment.										
2023-City of Sugar Land-054	ETJ Code Update	<p>Problem: The City does not have consistent codes for development and building in the City and ETF.</p> <p>Solution: Develop and establish consistent code requirements and enforcement between the City's building codes and development in the ETJ.</p>	Dam/Levee Failure, Drought, Extreme Temperature Flood Geologic Hazards Hurricane/Tropical Storm, Severe Weather Tornado, Wildfire, Winter Weather	5	3+ years	Code Enforcement Division	FEMA HMGP, FMA/BRIC, CDBG	Codes and regulations will align more.	Staff Time	High	LPR	PP
2023-City of Sugar Land-055	SWTP Surge Protection	<p>Problem: There is no surge protection at the SWTP which affects continuity of operations during weather events.</p> <p>Solution: Install surge protection at the SWTP to incoming power supply due to power surges cause by severe weather events.</p>	Severe Weather	2	2+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The SWTP will be able to perform continuity of operations.	\$200-500K	High	SIP	SP
2023-City of Sugar Land-056	Update City's Warning System Update	<p>Problem: The City's warning system does not cover all hazards of concern and needs enhances alert capabilities to alert residents.</p> <p>Solution: Enhance City warning system (Reverse 911) to include additional hazards and alert capabilities, especially tornado/ high winds with</p>	Severe Weather	5	Within 1 year	Emergency Management/ 911-Dispatch	FEMA HMGP, FMA/BRIC, CDBG, UASI, HSGP	The City's residents will be better prepared.	\$100K	High	SIP	ES



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		more City focus on informing public.										
2023-City of Sugar Land-057	Implement Stone toe protection for Brazos River	Problem: The Brazos River suffers from stabilization and erosion issues.  Solution: Implement proposed USACE stone toe protection plans for sample area due to stabilize and reduce Brazos River erosion and encroachment to levees.	Dam/Levee Failure, Geologic Hazards	3	3+ years	City Engineering	FEMA HMGP, FMA/BRIC, CDBG	The Brazos River will become more stabilized.	\$100M	High	SIP	SP
2023-City of Sugar Land-058	Brazos River Initiative	Problem: There is limited coordination with the Texas Water Development Board regarding the Brazos River.  Solution: Increase coordination efforts with the Texas Water Development Board to update information on the Brazos River and increase multi-agency coordination.	Geologic Hazards	4	5+ years	City Engineering and Fort Bend County	FEMA HMGP, FMA/BRIC, CDBG	There will be more coordination regarding the Brazos River.	Staff Time	High	LPR	PR
2023-City of Sugar Land-059	Update Design Standards utilize native species in construction	Problem: There are conservation issues surrounding native species in construction.  Solution: Further conservation efforts to encourage more natural and native grasses and plants in construction through increased design standards.	Drought	3, 4	5+ years	City Engineering	TWDB	Native species will be used more in construction.	\$50,000	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Sugar Land-060	Water Systems Update	<p>Problem: There are no emergency interconnections between the main City and New Territory water systems, main City and Greatwood water systems, and RiverPark and New Territory water systems</p> <p>Solution: Construct emergency interconnections between the main City and New Territory water systems, main City and Greatwood water systems, and RiverPark and New Territory water systems due to lack of emergency interconnections between City water systems.</p>	Drought	2	5+ years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The City will have emergency interconnections between water systems.	\$40,000,00	High	SIP	ES
2023-City of Sugar Land-061	Back-up Generators at New Territory (West); Greatwood; North Plant; South Plant WWTP	<p>Problem: There are generators with limited functions at all four WWTP in the City.</p> <p>Solution: Install and replace generators to increase capacity of available back-up power at all 4 WWTP that services the City.</p>	Flood, Hurricane/Tropical Storm, Severe Weather, Winter Weather	2,3	1 years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The WWTP will be able to perform continuity of operations.	\$6,000,000	High	SIP	ES
2023-City of Sugar Land-062	South Plant WWTP Shelter	<p>Problem: The South Plant WWTP does not have a shelter for staff.</p> <p>Solution: Purchase and construct shelter for WWTP staff who must remain at the facility during disaster events to ensure continuous operations at the facility.</p>	Flood, Hurricane/Tropical Storm, Severe Weather, Winter Weather	2,3	2 years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The WWTP staff will have a shelter during disaster events to perform continuity of operations.	\$500,000	High	SIP	ES



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Sugar Land-063	Remote well right angle drive and generator	Problem: Six remote well locations do not have right angle drives and generators installed to perform continuity of operations.  Solution: Purchase and install right angle drives and generators at 6 remote well locations that provide water supply, located throughout the City.	Flood, Hurricane/Tropical Storm, Severe Weather, Tornado, Winter Weather	2,3	1 years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The remote well's will be able to perform continuity of operations.	\$6,000,000	High	SIP	ES
2023-City of Sugar Land-064	Surface Water Plant Generator	Problem: There are no generators located at the surface water treatment plant.  Solution: Purchase and install (3) 750kw generators at the surface water treatment plant which provides water supply to the City.	Flood, Hurricane/Tropical Storm, Severe Weather, Tornado, Winter Weather	2,3	1 years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	The Surface Water Treatment Plant will be able to perform continuity of operations.	\$10,000,000	High	SIP	ES
2023-City of Sugar Land-065	Generators for City's Wireless System	Problem: There are no generators installed at the 10 high sites around the City that support communications and IT during disaster events.  Solution: Purchase and install generators at 10 high sites around the City to support communications and IT infrastructure during disaster events.	Flood, Hurricane/Tropical Storm, Severe Weather, Tornado, Winter Weather	1,5	1 years	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Communication and IT help will be able to commence during hazard events.	\$200,000	High	SIP	ES
2023-City of Sugar	Back-up Power supply for traffic signals.	Problem: The City does not have generators for traffic signals.	Flood, Hurricane/Tropical Storm, Severe	2,3	1 year	Public Works	FEMA HMGP, FMA/BRIC, CDBG	Traffic signals will be able to operate during power outages.	\$150,000	High	SIP	ES



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
Land-066		Solution: Purchase 45 portable generators for traffic signals.	Weather, Tornado, Winter Weather									
2023-City of Sugar Land-067	Fuel Trailer	<p>Problem: The City does not have proper means to provide fuel service to generator sites located throughout the City.</p> <p>Solution: Purchase 1000-gallon fuel trailer to provide fuel service to various generator sites located throughout the City.</p>	Flood, Hurricane/Tropical Storm, Severe Weather, Tornado, Winter Weather	2,5	1 year	Public Works	FEMA HMGP, BRIC, CDBG	The City will be able to safely and efficiently provide fuel service to generators.	\$40,000	High	EAP	ES
2023-City of Sugar Land-068	Stormwater, Ponding and Drainage Study	<p>Problem: There are numerous streets and areas in the City that have ponding, stormwater and drainage issues due to not meeting City criteria and infrastructure problems including:</p> <ul style="list-style-type: none"><li>• Settlers Park</li><li>• Riverbend North</li><li>• Sugar Lakes</li><li>• Sugar Creek</li><li>• Lakes of Austin Park</li><li>• Covington Woods</li><li>• Telfair</li><li>• Imperial Woods</li><li>• Riverbend South</li><li>• Grants Lake</li><li>• Colony Bend Neighborhood</li><li>• Highlands Neighborhood</li><li>• Meadowlakes Subdivision</li></ul>	Flood, Hurricane/Tropical Storm, Severe Weather, Winter Weather	2	Less than 5 years	City Administration, Engineer	FMA, BRIC, HMGP	The City will experience less flooding.	TBD after engineering study	High	SIP	SP



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
		<ul style="list-style-type: none"><li>Commonwealth Neighborhood</li><li>FBC LID 14</li></ul> <p>Solution: The City will perform an engineering study throughout the City with a focus on the areas of concern listed above. Once a cost effective solution is identified, the City will implement that solution.</p>										

\*Mitigation initiative is related to a critical facility and/or community lifeline

Notes: Not all acronyms and abbreviations defined below are included in the table.

**Acronyms and Abbreviations:**

CRS Community Rating System  
FEMA Federal Emergency Management Agency  
HMA Hazard Mitigation Assistance  
N/A Not applicable  
NFIP National Flood Insurance Program

**Potential FEMA HMA Funding Sources:**

FMA Flood Mitigation Assistance Grant Program  
HMGP Hazard Mitigation Grant Program  
BRIC Building Resilient Infrastructure and Communities Program

**Timeline:**

The time required for completion of the project upon implementation.

**Cost:**

The estimated cost for implementation.

**Benefits:**

A description of the estimated benefits, either quantitative and/or qualitative.

**Mitigation Category:**

- Local Plans and Regulations (LPR)—These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP)—These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures, as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP)—These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP)—These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

**CRS Category:**

- Preventative Measures (PR)—Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP)—These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI)—Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR)—Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP)—Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.





- *Emergency Services (ES)—Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

The prioritization criteria provided in Volume 1, Section 6 (Mitigation Strategy) identify 14 evaluation/prioritization criteria to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as High, Medium, or Low. The table below provides a summary of the prioritization of all proposed mitigation initiatives for the HMP update.

**Table 9.16-19. Summary of Prioritization of Actions**

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Sugar Land-001	Imperial Park Generator	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-002	T.E. Harman Center Generator	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-003	Emergency Notification System for City Schools	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-004	New Electric Equipment to Protect Against Power Surges	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2023-City of Sugar Land-005	Install Security Window Film in Fort Bend ISD City Schools	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-006	CRS Program	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2023-City of Sugar Land-007	Extreme Heat Education and Outreach Program	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-008	Fan and Air Conditioning Program	1	1	1	1	1	1	0	0	1	1	1	1	1	0	11	High
2023-City of Sugar Land-009	Outreach Materials for Lightning Injuries	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-010	Water Conservation Public Outreach	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-011	Shelter-in-place procedures	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2023-City of Sugar Land-012	Winter Storm Outreach Program	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High



Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Sugar Land-013	General Public and First Responders Planning	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2023-City of Sugar Land-014	Project Brazos	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-015	Austin Park/Chimneystone Drainage Project	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-016	Covington Woods West	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-017	Oyster Creek Diversion Channel and Storage Facility in Tract 2	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-018	City-wide Benchmark System Update																
2023-City of Sugar Land-019	New Emergency Operations Center	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-020	New Territory WWTP Road Elevation	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-021	New Territory WWTP Flood Protection	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-022	Structural Elevation & Acquisition Program	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-023	Flood/Dry-proofing critical facilities	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-024	Elevation of WWTP Critical Assets	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-025	Stormwater Needs Assessment	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2023-City of Sugar Land-026	Development Code Changes - Impervious Surface	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-027	Development Code Changes - Water Retention	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-028	High Water Rescue Vehicle	1	0	0	1	1	1	0	0	1	1	1	1	1	1	10	High
2023-City of Sugar Land-029	Updated LIDAR Data	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High



Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Sugar Land-030	Window Hardening	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-031	Critical Facility Hardening	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-032	Traffic Light Hardening	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-033	Hurricane Sheltering and Evacuation Needs Assessment and Outreach Program	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-034	Lightning/Severe Weather protocols for outside events	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-035	Update Lightning Alert and Severe Storm Monitoring and warning capabilities	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-036	Lightning Prevention Needs Assessment	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-037	Update Erosion Study	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-038	Erosion Management Plan	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-039	Project Brazos	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-040	Design Standards Update for Soil Stabilization	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-041	SCADA Update for Dams	1	1	1	1	1	1	0	1	1	1	0	0	1	0	10	High
2023-City of Sugar Land-042	Update Landscape Ordinance	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2023-City of Sugar Land-043	WWTP Reclaim Systems	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-044	Purchase Advanced Metering Infrastructure System	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High



Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Sugar Land-045	Development Code Changes - Green Space Requirements	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2023-City of Sugar Land-046	Vulnerable Population/ Critical Facilities Database	1	1	1	1	1	1	1	1	1	1	0	1	1	0	12	High
2023-City of Sugar Land-047	Homeowner Outreach Program	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-048	Drone Purchase	1	1	1	1	1	1	0	1	1	1	1	1	0	0	11	High
2023-City of Sugar Land-049	Software Purchase	1	1	1	1	1	1	0	1	1	1	1	1	0	0	11	High
2023-City of Sugar Land-050	Establish Design Standards for Channel Repair	1	1	1	1	1	1	0	1	1	1	1	1	0	0	11	High
2023-City of Sugar Land-051	Surface Water Treatment Plant Access Road Elevation	1	1	0	1	1	1	1	0	1	1	1	1	1	1	12	High
2023-City of Sugar Land-052	Back-up power for Homeward Way Production Plant	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-053	SWTP Hurricane Shutters	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-054	ETJ Code Update	1	1	1	1	1	1	1	0	1	1	1	1	1	0	12	High
2023-City of Sugar Land-055	SWTP Surge Protection	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-056	Update City's Warning System Update	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-057	Implement Stone toe protection for Brazos River	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-058	Brazos River Initiative	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High
2023-City of Sugar Land-059	Update Design Standards Utilize Native Species in Construction	0	1	1	1	1	1	1	1	1	1	1	1	1	0	12	High



Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Sugar Land-060	Water Systems Update	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-061	Back-up Generators at New Territory (West); Greatwood; North Plant; South Plant WWTP	1	1	1	1	1	1	0	0	1	1	1	1	1	1	12	High
2023-City of Sugar Land-062	South Plant WWTP Shelter	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Sugar Land-063	Remote Well Right Angle Drive and Generator	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-064	Surface Water Plant Generator	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2023-City of Sugar Land-065	Generators for City's Wireless System	1	1	1	1	1	1	0	0	1	1	1	1	1	1	12	High
2023-City of Sugar Land-066	Back-up Power Supply for Traffic Signals	1	1	0	1	1	1	0	1	1	1	1	1	1	1	12	High
2023-City of Sugar Land-067	Fuel Trailer	1	1	0	1	1	1	0	0	1	1	1	1	1	0	10	High
2023-City of Sugar Land-068	Stormwater, Ponding, and Drainage Study	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High

Note: Volume 1, Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).